ECONOMIC REPORT

OF THE

PRESIDENT

TRANSMITTED TO CONGRESS

JANUARY 2025

TOGETHER WITH THE

ANNUAL REPORT OF THE

COUNCIL OF ECONOMIC ADVISERS

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Economic Report of the President

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Economic Report of the President

January 9, 2025

To the Congress of the United States:

In the last four years, America has overcome some of the most challenging economic conditions in our history. When I took office, our economy was in the grips of worst pandemic in a century, and decades of trickle-down policies had left us especially vulnerable to its shocks. Hundreds of thousands of businesses had closed, and millions of Americans risked losing their homes. Unemployment was high and the risk of long-term damage was real.

My Administration responded with a new economic playbook to rebuild our economy from the middle out and bottom up, not the top down. Since then, we've made historic investments in our nation and in the industries of the future. We've stood by unions and helped to create a record 16 million jobs. We've fought to lower costs for consumers, and to give small businesses a fair chance to compete. Today, our economy has not only recovered, it has emerged stronger, laying the foundation for a promising new chapter in the American comeback story.

My Council of Economic Advisers has prepared this report examining actions taken to both ease the pandemic's immediate impact and strengthen our economy over the long-term, to help ensure we learn the right lessons as a nation and to build on the historic progress we've made.

Our work began right away with the American Rescue Plan, one of the most consequential recovery packages in history. To reopen our economy, we knew we had to defeat COVID-19, so we launched unprecedented vaccination efforts. We got immediate economic relief out to tens of millions of families who needed it most. We expanded the Child Tax Credit, cutting child poverty in half to its lowest rate in history. And we sent funding directly to every state, city, and town in the nation, keeping police on the beat and teachers in the classroom, families in their homes and small businesses on their feet, preventing a wave of scarring bankruptcies, defaults, and evictions.

At the same time, the pandemic had snarled supply chains and set off widespread labor shortages, driving up costs worldwide. In response, my Administration immediately convened businesses and labor to unclog our ports and get goods flowing. Russia's unprovoked and unjustified invasion of Ukraine further increased food and gas prices. In response, I directed the largest release of fuel from our strategic reserve in history to ensure that our energy markets were well supplied, and we challenged oil and gas companies to reinvest record profits in domestic production, which has reached an all-time high under my Administration. And we took steps to promote competition across industries, boosting transparency and lowering costs for consumers.

Our approach worked. Inflation is down significantly from its peak and is now close to pre-pandemic levels. Together, we've achieved the elusive "soft landing" of lower inflation, steady employment, strong economic growth, and rising real wages – which most observers said was impossible.

But ending the economic crisis alone was never enough. I ran for President to set the American economy on a stronger long-term course, by breaking from the trickle-down orthodoxy that has failed our nation for decades. That theory holds that by cutting taxes for the very wealthy, benefits will trickle down to everyone else. But in truth, not a lot has ever trickled down onto most folks' kitchen tables. Instead, inequality grew and America slid deeper into debt.

I have a different approach. I believe the best way to build America is to invest in America, in American products and American people. And the best way to grow our economy is to grow the backbone of our nation: the middle class. That's what my Investing in America agenda has done, through landmark laws that shore up our infrastructure, our manufacturing base, and our people. Together, these are some of the most significant investments in America since the New Deal.

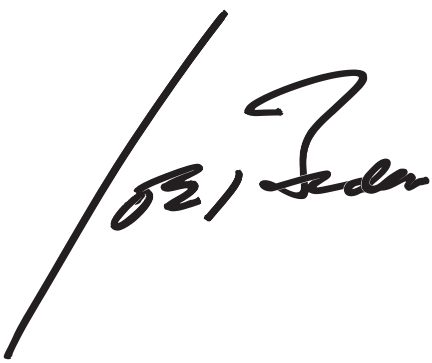
For decades, American infrastructure has been neglected. But our Bipartisan Infrastructure Law is finally modernizing the nation's roads, bridges, ports, airports, transit systems, and more; removing every lead pipe in America, so every child can drink clean water; and providing affordable high-speed internet for every American, no matter where they live. And it's making sure these projects are done with American products and American workers, creating hundreds of thousands of good-paying new jobs, many of them union jobs.

For too long, American factories have moved overseas, taking vital industries with them. Now, our CHIPS and Science Act is bringing manufacturing home, already attracting nearly $450 billion in manufacturing investments to build massive new semiconductor factories, equipping America to lead the industries of future. At the same time, our Inflation Reduction Act is making the most significant investment in fighting climate change in history, not only putting America on track to halve carbon emissions by 2030 and promoting our energy abundance and security, but also creating hundreds of thousands of good-paying clean-energy jobs.

I know all too well, Americans still too often struggle to afford life-saving prescription drugs, and sometimes are even forced to choose between medicine and rent. It’s wrong. The Inflation Reduction Act also takes historic steps to change that, capping total out-of-pocket costs for seniors on Medicare at $2,000 a year; slashing insulin for seniors to $35 a month, down from as much as $400; and finally giving Medicare the power to negotiate lower drug prices across the board. And it has expanded health insurance through the Affordable Care Act, bringing the share of uninsured Americans to record lows.

The impact of these efforts is just starting – and the full effects will be felt over the next decade - but there is no question that our nation today is the best-positioned on earth to win the competition for the 21st century. We’ve laid a foundation of possibilities that will make life a little easier for millions of Americans and can propel America forward for decades.

Today, we hand the incoming Administration the world’s strongest economy. The next four years will determine if America builds on that strength, or slides back into the old trickle-down approach that only benefits those at the very top. I believe that the transformative investments we’ve made are already deeply rooted in our nation, and therefore too costly, politically and economically, to reverse. At this inflection point, I hope that our playbook serves as a model for how to fight for the middle class and give working families a fair shot, forging a stronger, more secure and prosperous America for generations to come.



The Annual Report of the Council of Economic Advisers

Letter of Transmittal

Council of Economic Advisers
Thursday, January 9, 2025

Mr. President:

The Council of Economic Advisers herewith submits its 2025 *Annual Report* in accordance with the Employment Act of 1946, as amended by the Full Employment and Balanced Growth Act of 1978.

Sincerely yours,

Jared Bernstein
Chair

Heather Boushey
Member

C. Kirabo Jackson
Member

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Introduction

The Biden-Harris Administration entered office as the country was in the grip of a once-in-a-century global pandemic. The economy was in the throes of one of the deepest macroeconomic shocks since the Great Depression, and while unemployment was down from its peak, it was still highly elevated. The Administration took immediate and decisive action to offset the impact of the two-sided pandemic shock—to both the economy's supply and demand sides—and lay the groundwork for a lasting, durable, and inclusive recovery.

The *2025 Economic Report of the President*, the fourth and last of the Administration, provides careful analyses of how the Administration has implemented public policy to achieve the President's economic goals. It begins by reviewing macroeconomic trends over the past four years, illustrating the path from economic uncertainty to robust growth and a historically strong labor market. It then delves into specific topics within labor markets, tax policy, healthcare, climate policy, international trade, and education to examine how policy implementation can make a tangible, positive difference in the lives of families and communities.

Many of these policy details rarely make headlines either on traditional or social media. But, as this volume shows, well-designed policies can help struggling families and address consequential market failures, just as failing to make such interventions can stall or reverse progress.

For example, chapter 4 of this *Report* highlights more than a dozen specific healthcare policies that together helped boost health insurance enrollment to a record high. Chapter 5 highlights numerous policies summing to the largest-ever U.S. investment in clean energy, which are helping to bend the arc of U.S. carbon emissions. Chapter 6 highlights how investment incentives created through the Inflation Reduction Act have attracted record foreign direct investment. Addressing the sobering reality of pandemic-era learning losses, chapter 7 highlights numerous actions taken by federal policymakers to aid academic recovery following the pandemic.

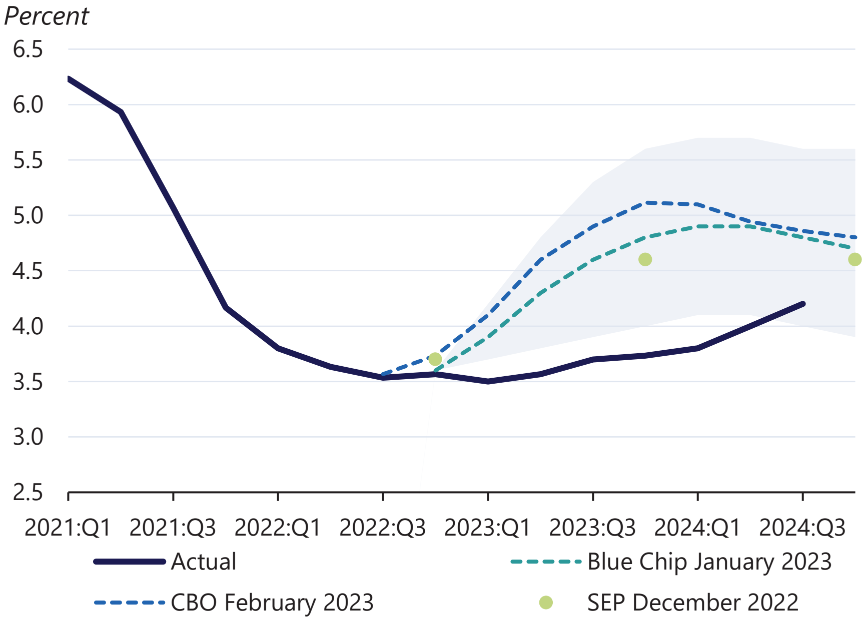
Elsewhere, this *Report* highlights additional policy action that may be needed to respond to broad economic trends. Chapter 2 explores structural changes to the U.S. labor market brought about by remote work and potential new policy challenges and opportunities. Chapter 3 explains why U.S. participation in the Global Tax Deal is necessary for shoring up tax revenue from multinational corporations operating across numerous tax regimes in various countries. Taken together, the *Report's* chapters illustrate the difference that competent policy creation and implementation can make in building an economy based on fairness, opportunity, and broadly shared growth.

Chapter 1: Four Years in Review and the Years Ahead

The U.S. post-pandemic recovery is an unusual and, in many ways, remarkable period in macroeconomic history. Among the most notable trends is the speed at which the U.S. economy returned to full employment and how durable full employment has been. When President Biden took office in January 2021, the unemployment rate was still elevated at 6.4 percent and payroll employment was well below its pre-pandemic level. In far less time than in past recoveries, the economy surpassed the pre-pandemic level of real GDP, entering a robust expansion that consistently exceeded forecasters' expectations. Figure i-1 shows how the actual unemployment rate came in lower than even the most optimistic Blue Chip forecasts through the second quarter of 2024. This uniquely strong job market helped support real wage and income gains, which in turn bolstered consumer spending. The Biden-Harris investment agenda was also consequential to the recovery and long-term health of the economy by crowding in private capital in support of key sectors, including clean energy and semiconductors.

During the pandemic, nearly all advanced economies experienced a spike in inflation, which climbed to levels not seen in decades. At the time of this writing, the spike had largely dissipated in the United States. What factors were behind inflation's rise and fall? The CEA has long shown that the inflation surge was driven by the collision of strong demand and snarled supply. This view has been further supported by the extent of disinflation

Figure i-1. Unemployment Rate



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Sources: Bureau of Economic Analysis; Congressional Budget Office; Blue Chip Economic Indicators; Federal Reserve Board of Governors; CEA calculations.

Note: Data are seasonally adjusted. All forecasts (besides Blue Chip) were finalized before 2022:Q4 data were released. Summary of Economic Projections (SEP) data reflect median Federal Open Market Committee projections, Q4 level. Shaded area indicates the difference between Blue Chip Top 10 average and Blue Chip Bottom 10 average estimates.

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that occurred as supply chains unsnarled. Chapter 1 carefully reviews the details of inflation's roundtrip.

The chapter concludes with two policy lessons from the past four years. Hitting back hard and fast against exogenous shocks is one key lesson, both to quickly return to full employment and to avoid scarring effects that can persistently damage economic performance. The second lesson is the urgent need to reform one of the nation's first lines of counter-cyclical defense: the unemployment insurance (UI) program. The enormous expansion of UI during the COVID-19 era served as a critical stabilizer, but it also stretched the capacity of an antiquated system. In the spirit of "fixing the roof when the sun is shining," policymakers would be smart to engage in needed reforms, many of which are cited in chapter 1. The chapter concludes with the Administration's 10-year forecast.

Chapter 2: How Remote Work Is Reshaping the Economy

The rise of remote work is one of the more economically important labor market legacies of the pandemic. Chapter 2 is largely motivated by the figure below, which shows an elevated level of remote work relative to just a few years ago (figure i-2). Many employers and workers have continued to operate in either fully remote or hybrid work models since the pandemic, with improved technology and new workplace practices supporting the trend.

It will take time for researchers to fully understand the economic implications of this fundamental shift in the structure of work. Available evidence suggests that remote work comes with benefits and costs to employers and employees. It is a valued job amenity that can reduce barriers to accessing the labor market—for example, for those with disabilities or caregiving responsibilities. Remote work is also likely to leave an imprint on the geographic pattern of economic activity as it loosens locational constraints to matching workers with suitable jobs. At the same time, remote work poses real challenges to businesses because some of the traditional benefits

Figure i-2. Share of Paid Workdays That Are Remote

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Sources: Barrero, Bloom, and Davis (2021a); CEA calculations.
Note: Remote work share is defined as the share of full paid days worked from home. Pre-2020 estimates are derived from the American Time Use Survey. Estimates beginning in May 2020 are from the Survey of Working Arrangements and Attitudes. Gray bars indicate recessions.
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of in-person work—teamwork, collaboration, and mentoring—may be more difficult to achieve remotely.

With these economic considerations come a collection of public policy issues. Remote work is most common among workers with high education and income levels and, as such, reinforces some pre-existing patterns of labor market inequality. Policymakers must also grapple with changes in economic activity patterns, such as central business districts experiencing reduced demand for commercial real estate. As this key structural shift plays out, maximizing its benefits and minimizing its costs will require careful investigation of its economic implications.

Chapter 3: Aligning the International Tax System with the Globalized Economy

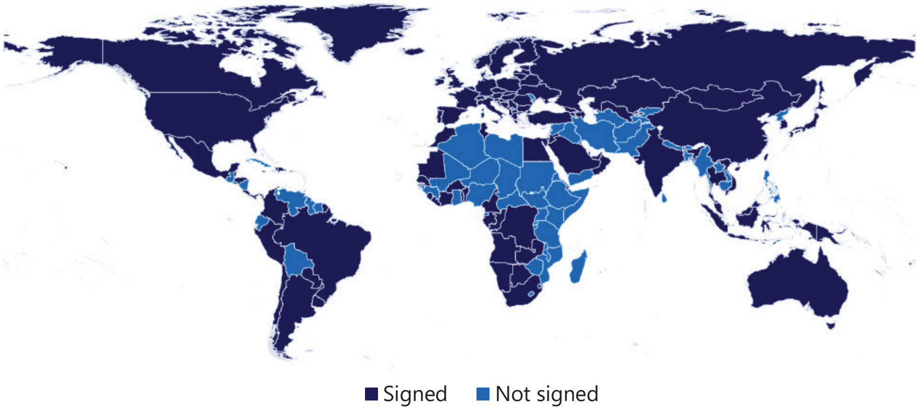
The Administration has long argued that the United States needs to put its fiscal accounts on a more sustainable path. The Administration's budgets have focused on deficit reduction by proposing increased taxes on corporations and high-wealth individuals. Chapter 3 explores a critical aspect of protecting the corporate tax base: reforming the way countries, including the United States, tax multinational corporations.

The chapter focuses on how the Global Tax Deal—a coordinated international framework agreed upon by the United States and more than 130 other countries—seeks to align the international tax system and globalized economy (figure i-3). Despite unilateral country efforts to curb cross-border tax planning by multinational corporations, including the U.S. Tax Cuts and Jobs Act, an estimated $2 trillion of global multinational profits were taxed at effective rates below 15 percent from 2017 to 2020. The ability of multinationals to exploit differences in tax regimes across countries motivates the proposals discussed in the chapter.

In a global economy, countries have an incentive to decrease their corporate tax rates to attract economic activity. Without coordination, such incentives encourage a "race to the bottom" in corporate tax rates across countries. Given this structure of corporate tax competition, multinationals spend significant resources shifting profits around the globe to reduce their tax burden. At the same time, the rapid growth of digital services has raised questions about which countries have taxing rights over digital activity and led to a rise in unilateral Digital Services Taxes.

The Global Tax Deal addresses these challenges through two pillars. Under one pillar of the agreement, large multinationals would face a global minimum tax rate of 15 percent. The deal also includes mechanisms that provide strong incentives for countries to join, thus curbing the race to reduce corporate tax rates. The other pillar of the agreement outlines a

Figure i-3. Countries That Agreed to the October 2021 Global Tax Deal Framework



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Sources: Organisation for Economic Co-operation and Development; CEA calculations.
Note: Figure shows which countries signed the October 2021 *Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy* as of June 9, 2023.
2025 Economic Report of the President

coordinated approach to levying taxes based in part on where large multinationals' customers are located. Specifically, this pillar reallocates a portion of a large multinational's taxable income to the countries where its customers are located even if it has no physical presence in those countries.

The chapter argues that replacing international tax competition with cooperation would improve economic efficiency, protect revenues, and improve tax fairness by aligning the international tax system with the globalized economy.

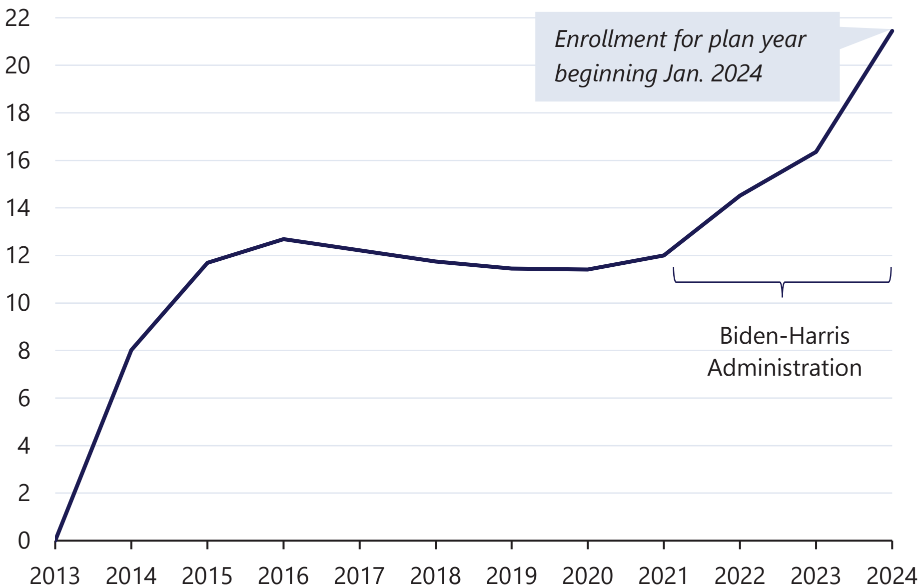
Chapter 4: Expanding and Strengthening U.S. Health Insurance Coverage

Figure i-4, from chapter 4, is a powerful illustration of the impact of both useful and damaging healthcare policy. The figure shows the millions of individuals enrolled in the Affordable Care Act Health Insurance Marketplace. Enrollment initially grew quickly, with the Marketplace providing coverage for about 12 million individuals by 2015. But as the chapter discusses, the Trump Administration took active steps to discourage signups for Marketplace coverage. In contrast, the Biden-Harris Administration removed barriers to enrollment by increasing outreach and simplifying ways to sign up for coverage. At the same time, those eligible were provided support to pay for coverage through increased premium tax credits. The results were record coverage in the Marketplace and the lowest-ever uninsured rate.

Numerous policies contributed to the results; table i-1 lists more than a dozen that the Administration introduced or expanded to raise health coverage among American families. Chapter 4 documents the many positive effects of acquiring health coverage, including not only improved medical outcomes, but also long-term benefits such as increased labor supply, earnings, and overall wellbeing.

Figure i-4. Marketplace Enrollment at the End of Open Enrollment

Number of individuals who selected a marketplace plan (millions)



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Sources: Centers for Medicare & Medicaid Services; Department of Health and Human Services.

Note: Data for each year denote plan selections during the open enrollment period for that plan year.

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Table i-1. Notable Biden-Harris Administration Health Insurance Policies

Expanding Access to Marketplace Coverage
• Increased generosity of Premium Tax Credits to help purchase Marketplace coverage
• Created a special open enrollment period in 2021 in response to the pandemic
• Extended the annual open enrollment period to 10 weeks
• Substantially increased funding for advertising and enrollment assistance
• Established a year-round special enrollment period for those with incomes less than 150 percent of the federal poverty level
• Fixed the family glitch to extend financial assistance to eligible family members
• Protected consumers from junk health plans with short-term duration limits and coverage disclaimers
Protecting and Extending Medicaid Coverage
• Raised federal matching funds to encourage states to adopt ACA Medicaid expansions
• Provided states with the option to extend postpartum Medicaid coverage from 60 days to 12 months
• Required states to provide 12 months of continuous eligibility for children in Medicaid and CHIP
• Minimized declines in coverage following the end of pandemic-era continuous Medicaid coverage
Strengthening Prescription Drug Coverage and Reducing Costs Under Medicare
• Limited out-of-pocket insulin spending under Medicare Parts B and D to $35 per month/prescription
• Expanded the Low-Income Subsidy Program under Medicare Part D
• Capped out-of-pocket prescription drug spending under Part D beginning in 2024
• Gave Medicare the authority to negotiate prices of certain high-price drugs

Chapter 5: Achieving a Net Zero Carbon Dioxide Emissions Economy in the United States

The Administration set ambitious goals for reducing CO_2 emissions and passed historic legislation to safeguard a future where continued economic progress can coincide with a safe and stable climate. Table i-2 highlights some of the Administration's major climate commitments and policies. Figure i-5 shows trends to date in CO_2 emissions by economic sector.

Chapter 5 presents a framework for the next steps in a net zero CO_2 emissions strategy, highlighting four distinct components guided by a concept in environmental economics known as the equimarginal principle. The principle, which might be summarized as "picking the lowest-hanging fruit first," highlights the fact that each sector of the economy faces unique costs and challenges to decarbonization.

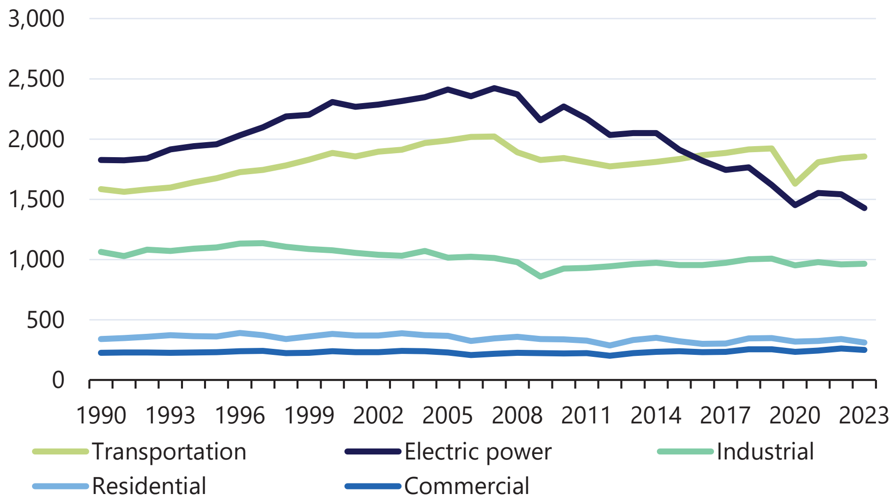
The first strategic component of reaching the Administration's goals is achieving net zero CO_2 emissions in the electricity sector, broadly considered to be technologically possible and less expensive than other abatement options. The linchpin of the step is increasing energy storage and transmission capacity so variable renewables like wind and solar power can be efficiently deployed even when and where the wind is not blowing and the sun is not shining. Second, the United States can reduce CO_2 emissions significantly by powering more economic activity with clean electricity, a process known as electrification.

Given current and near-term technology expectations, significant parts of economic activity and commerce are more costly to electrify than others. Thus, the final two components of the chapter's framework focus on (i) how to decarbonize economic activities that cannot be electrified and (ii) using negative emissions technologies to capture and store CO2 emissions that would be more costly to eliminate.

The chapter highlights an ambitious suite of policies necessary to implement the framework. The ideas build on Administration measures that provide investors, firms, and households with incentives to research and implement methods of producing and storing clean electricity, expanding its use, and applying other decarbonization strategies in areas where electrification is more difficult.

Figure i-5. Energy-related CO_2 Emissions by Sector, 1990-2023

Million metric tons CO_2



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Sources: Energy Information Administration; CEA calculations.

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Table i-2. Selected Biden-Harris Administration Climate Commitments and Major Policies

Climate Commitments

- On day one of taking office, the Administration rejoined the international Paris Climate Accords, which intends to limit global temperature increases to below 1.5–2°C above pre-industrial levels. The Administration set a target of reducing greenhouse gas (GHG) emissions by 50–52 percent by 2030 from 2005 levels and achieving a net zero GHG emissions U.S. economy by 2050.

Expanded Role of Federal Climate Leadership

- The Administration established the first White House Office of Domestic Climate Policy and elevated the role of Special Presidential Envoy for Climate to prioritize domestic and international decarbonization efforts and engagements.
- Historic federal actions and nationwide climate strategies across sectors include the U.S. National Blueprint for Transportation Decarbonization, the Administration's efforts to achieve 100 percent clean electricity by 2035, the U.S. Industrial Decarbonization Roadmap, the U.S. Buildings Decarbonization Blueprint, the Administration's climate-smart agriculture efforts and Nature-Based Solutions Roadmap, the U.S. Methane Emissions Reduction Action Plan, the National Climate Resilience Framework, and more.

Clean Energy Tax Credits

- Under the IRA, production tax credits can be claimed for renewable and clean electricity, zero-emissions nuclear power, advanced manufacturing, clean fuel, and hydrogen.
- Additionally, consumers can claim tax credits for energy efficiency home improvements such as heat pump purchases as well as qualifying electric vehicle (EV) purchases and electric and alternative fueling infrastructure under the IRA.
- Investment tax credits can also be claimed for investment in a variety of clean energy projects. As of October 2024, announced private investment in clean energy manufacturing and infrastructure, clean power, and EVs and batteries under the Administration has totaled over $400 billion.

Clean Energy Demonstrations and Deployment

- Through IRA, BIL, and CHIPS, over $100 billion has been invested directly in accelerating the deployment of clean energy, clean buildings, and clean manufacturing as well as making communities more resilient to climate change and providing clean water across the United States.
- The Department of Energy has taken steps to speed up the commercialization of emerging energy technologies through a $25 billion fund for clean energy demonstrations and increased project financing by the Loan Programs Office.

Buy Clean Initiative

- The Administration prioritized the procurement of American-made, lower-carbon construction materials in federally funded projects.

Grid Enhancement and Expansion

- The Administration has taken a number of steps to improve the reliability of the grid through measures that speed up the buildout of new transmission and increase the efficiency of existing infrastructure. This includes administering over $10 billion to modernize the grid through the Grid Resilience and Innovation Partnerships Program and improving the process for environmental reviews under the National Environmental Policy Act.

Greenhouse Gas Standards and Reduction Efforts

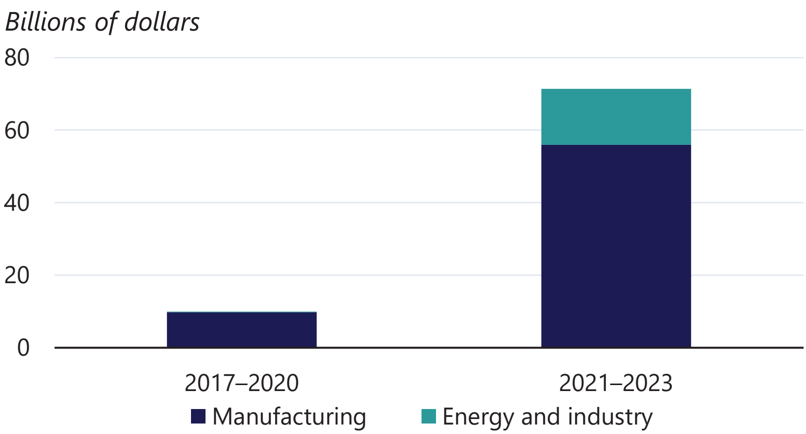
- Under the Administration, the Environmental Protection Agency (EPA) has finalized rules and standards to reduce GHG emissions from fossil fuel-fired power plants and vehicles. Additionally, the EPA implemented a first-of-its-kind fee for methane emissions.

Chapter 6: America's Role in International Capital Flows

International capital flows have evolved in important ways over the course of the Administration, reflecting changes in geopolitics and specific policy actions. Chapter 6 describes recent trends in U.S. external balances by focusing on the evolution of the financial account of the balance of payments. The resilience and strength of the U.S. post-pandemic recovery helped to make the United States a premier destination for foreign investment, providing an important source of capital for productive American enterprises. The country has increased its dominance of global flows, receiving a much higher share of international capital flows in recent years compared to pre-pandemic levels.

Cross-border investments comprise familiar financial assets, like stocks and bonds, and foreign direct investment, which often goes toward building factories and equipment. The Administration's investment agenda in infrastructure, clean energy, and semiconductor technology has served as a rich and productive target for foreign capital (see figure i-6). Notably, incentives created by the IRA and CHIPS Act have helped crowd in foreign investments to the United States, often reaching areas of the country that have traditionally faced economic distress.

Figure i-6. Announced Investment in Clean Energy Projects by Foreign Companies



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Sources: Clean Investment Monitor; CEA calculations.

Note: Energy and industry refers to new or expanded facilities to produce clean energy, capture carbon dioxide emissions, or decarbonize industrial activity. Manufacturing refers to the construction or expansion of factories that manufacture clean energy, clean vehicle, building electrification, or carbon management technology.

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The Administration has also taken consequential actions to protect American workers, producers, and taxpayers from violations of rules-based trade, particularly against China's long-applied strategy of capturing global market share, gained via subsidies and non-market policies and practices. The Administration has worked to address urgent national security challenges—for example, by blocking exports of advanced technologies to those who might use them against the United States and curtailing outbound investments that undermine U.S. strategic interests.

Although trade deficits are often cited as a scorecard of U.S. competitiveness, chapter 6 rejects this view. If foreign capital inflows—which mirror trade deficits in the international accounts—support productive investments, they are unequivocally positive, helping to boost domestic production and support high-quality U.S. jobs. Indeed, the United States' post-pandemic recovery has been uniquely characterized by rising productivity and high levels of business investment. International financing has played a critical role in advancing these lasting and transformative achievements.

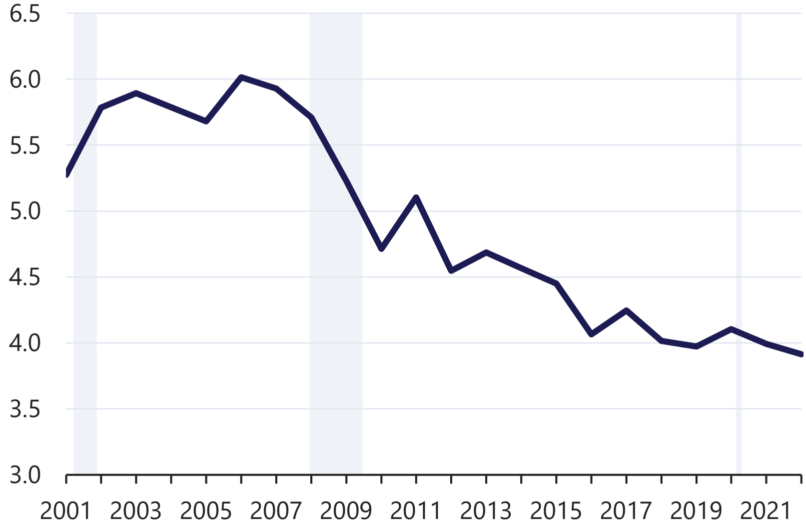
Chapter 7: Economic Impacts and Opportunities for Innovation in the K-12 Education System

Chapter 7 focuses on a set of challenges facing the country's kindergarten through 12th-grade (K-12) education system. The COVID-19 pandemic significantly disrupted K-12 schooling, with profound consequences for student achievement, attendance, and engagement. Ongoing recovery efforts must address both pandemic disruptions and longstanding structural shortcomings and inequities in the K-12 system. Although the federal share of K-12 funding is relatively small (around 9 percent), the Federal Government has a critical role to play in stabilizing education expenditures during recessions, facilitating greater resource equity across districts, shaping education policy through laws and incentives, funding innovation and research, and expanding data collection to inform improvement efforts.

Staffing all classrooms with well-prepared and qualified educators remains a central obstacle to improving K-12 education. As figure i-7 shows, the nation's supply of new teacher licensures relative to its number of school-age children fell by 26 percent from 2001 to 2022. The steady decline of entry into the teaching profession, coupled with increasing turnover and the localized nature of teacher labor markets, has resulted in one out of every eight K-12 public school teaching positions being either vacant or staffed by underqualified teachers.

One explanation for the overall decline in teacher supply is the continued erosion of pay relative to other occupations requiring college degrees. Evidence in chapter 7 shows that teachers face a negative wage premium, Figure i-7. New Teacher Licensures

Licensures per 1,000 school-age children



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Sources: Title II of the Higher Education Act; American Community Survey accessed via IPUMS; National Center for Education Statistics; CEA calculations.

Note: Gray bars indicate recessions. School-age is defined as age 5 to 17. Data are not reported for school year 2008–2009, so that data point is imputed linearly. In 2020 and 2021, two and one states, respectively, did not report licensures, so data are also imputed linearly for those states. Academic year licensure data are adjusted using population estimates from the spring of the academic calendar. X-axis labels represent the spring year of the academic calendar.

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with median wages 20 percent lower than those of comparable workers in other occupations. Attracting and retaining diverse and effective educators will require making the profession more attractive to potential future teachers through increased pay and opportunities for career advancement, safer schools with reduced gun violence, and improved financial aid for those who commit to K-12 teaching.

Actions by the Administration to bolster academic recovery efforts, accelerate the return to pre-pandemic staffing levels, expand high-quality pathways into the teaching profession, enhance scholarship and debt relief programs for teachers, and modernize school infrastructure exemplify how the Federal Government is fundamental to improving K-12 education. Table i-3 lists some of these specific actions.

Table i-3. Actions by the Biden-Harris Administration to Strengthen K-12 Education

Stabilizing State and District Education Expenditures
• Secured $130 billion in supplemental funding via the ARP • Increased funding for Title I, Part A by $2 billion and the Individuals with Disabilities Education Act by $1.5 billion
Accelerating Academic Recovery and Student Engagement
• Launched the National Partnership for Student Success, organizing 320,000 Americans to serve as K-12 tutors, mentors, and student-success coaches • Targeted more than $1 billion in funding for school-based health centers and mental health professionals through the Bipartisan Safer Communities Act and Department of Education grant programs • Increased federal funding for K-12 career and technical education • Advanced evidence-based practices to address chronic absenteeism with more than $250 million in grant funding, technical assistance, and data toolkits
Strengthening the Teacher Workforce
• Fixed the application and certification process for the Public Service Loan Forgiveness and Teacher Education Assistance for College and Higher Education (TEACH) Grant programs to make teacher education more affordable • Supported states, districts, and institutions of higher education to establish high-quality teacher preparation models, such as Grow-Your-Own Programs and teacher residencies, through grant funding and guidance • Created registered apprenticeships programs for teachers in 46 states • Provided grants to Historically Black Colleges and Universities, Tribally Controlled Colleges and Universities, and Minority Serving Institutions to expand teacher preparation programs • Developed a pipeline of future special education teachers through Office of Special Education Programs Personnel Preparation grants
Improving School Infrastructure
• Secured historic new funding as part of the ARP and BIL to improve school HVAC systems, modernize buildings, and build fleets of electric buses • Advanced efforts to identify and replace lead pipes in schools through the BIL
Reducing Gun Violence in Schools
• Signed the Bipartisan Safer Communities Act which provide $1 billion to create safer schools and address students' mental health needs • Established the Office of Gun Violence Prevention and an Emerging Firearms Threats Task Force

★★★★★★

Chapter 1

Four Years in Review and the Years Ahead

When President Biden was inaugurated on January 20, 2021, the U.S. economy was still severely damaged by the COVID-19 pandemic. The unemployment rate stood at 6.4 percent, with more than 2.5 times as many workers filing continuing unemployment claims than they had in 2019 and more than 9 million fewer jobs being held relative to one year prior. Over the course of the Biden-Harris Administration, the U.S. economy has not only rebounded from the pandemic, but also has seen one of the fastest, most robust economic recoveries on record.

The pandemic shocked both demand and supply, causing extended shutdowns in entire sectors of the U.S. economy and reshaping demand for goods, services, and housing. A recession nearly twice as deep as the Great Recession followed. As the American Rescue Plan (ARP) quickly ramped up widespread vaccination against COVID-19, the negative pandemic-induced supply shock largely reversed and the U.S. economy resurged, though supply and demand imbalances persisted in some sectors given pent-up demand and the tight labor market. Given the severity of the pandemic recession, the pace and durability of the recovery and subsequent expansion have surpassed expectations based on past recessions, with U.S. growth far outpacing other advanced economies.

During the Administration, the U.S. economy has achieved the lowest average unemployment rate of any administration in more than 50 years and reached its all-time lowest unemployment rates for Black and Latino workers. A record 20 million new business applications have been filed since the start of the Administration, and nearly 17 million jobs have been created. Combined with historic investments from the Inflation Reduction Act (IRA), CHIPS and Science Act (CHIPS), and Bipartisan Infrastructure Law (BIL), the Administration's policies have helped to fast-track economic recovery and invest in America's future economic growth.

At the same time, the intersection of strong demand and constrained supply led to increased inflation in the United States and many other advanced economies. U.S. inflation peaked in June 2022 at 9.1 percent year-over-year, as measured by the Consumer Price Index. Since then, inflation has returned to near pre-pandemic levels as demand and supply have come into better balance.

This chapter explores the components of the U.S. pandemic recession, economic recovery, and ongoing expansion. The chapter begins by comparing the recovery with forecasts, then examines trends in output, consumption, investment, and inflation. The chapter concludes by analyzing the labor market, worker welfare measures, and policy lessons and offering the Administration's official forecast for the decade ahead.

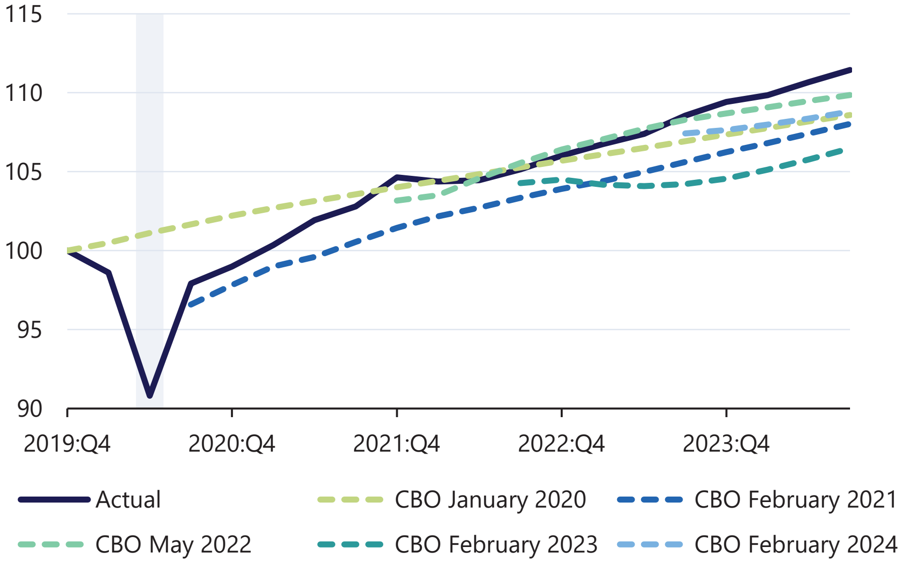
A Unique Recovery

The U.S. pandemic recovery has been robust and swift compared to recoveries from prior recessions, and further, the recovery and subsequent expansion have consistently outpaced forecasts. As of the third quarter of 2024 (hereafter, 2024:Q3), actual real GDP exceeded every projection made by the Congressional Budget Office (CBO) from January 2020 through June 2024, as shown in figure 1-1.[1] The cumulative increase in real GDP from 2019:Q4 to 2024:Q3 was 11.4 percent, 2.9 percentage points greater than predicted by the CBO's final pre-pandemic forecast in January 2020, which did not account for a recession. Moreover, GDP growth was almost

[1] Figure 1-1 shows the first forecast released each calendar year from 2020 through 2024. As of 2024:Q3, actual real GDP exceeded all forecasts made between January 2020 and June 2024, the most recent forecast at the time of publication.

Figure 1-1. Real Gross Domestic Product and CBO Forecasts

Index (2019:Q4 = 100)



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Sources: Bureau of Economic Analysis; Congressional Budget Office; CEA calculations.
Note: Gray bar indicates recession. Data are seasonally adjusted. CBO projections may not line up with actual data due to revisions.
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4 percentage points stronger than expected in the CBO's February 2023 forecast, the first projection made after inflation peaked in June 2022.[2]

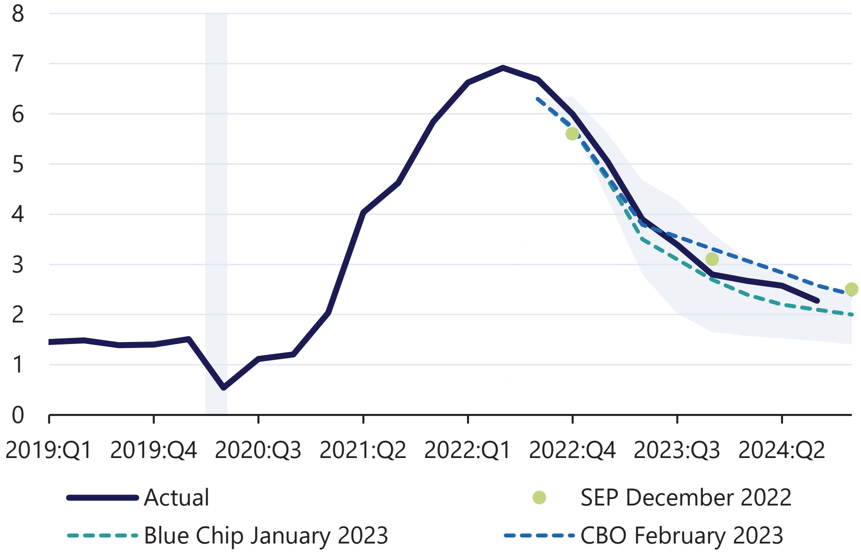
Professional forecasts made around the end of 2022, with disinflation underway, suggested that a period of substantially elevated unemployment and slow growth would be necessary to bring inflation down. Instead, the actual sacrifice ratio—a measure of the increase in unemployment required to achieve a 1 percentage point decrease in inflation—has been far lower than pre-pandemic empirical estimates (Tetlow 2022; Cecchetti and Rich 1999; Ball 1994). The U.S. economy has achieved rapid and broad-based disinflation during a period of historically low unemployment and strong growth.

As shown in figure 1-2, inflation over the past two years has been in line with projections made after inflation's peak. While most analysts

[2] CBO forecasts are labeled based on their release dates, but forecasts can be locked several months prior to their release. For example, the February 2023 forecast is based on data released as of December 6, 2022, while the May 2022 forecast is based on data released as of March 2, 2022. Inflation as measured by the Personal Consumption Expenditures Price Index peaked in June 2022.

Figure 1-2. PCE Price Index

Percent change (year-over-year)



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Sources: Bureau of Economic Analysis; Congressional Budget Office; Blue Chip Economic Indicators; Federal Reserve Board of Governors; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted. All forecasts were finalized before 2022:Q4 data were released. Summary of Economic Projections (SEP) data reflect median FOMC projections, Q4/Q4 percent change. Shaded area indicates the difference between Blue Chip Top 10 average and Blue Chip Bottom 10 average estimates.

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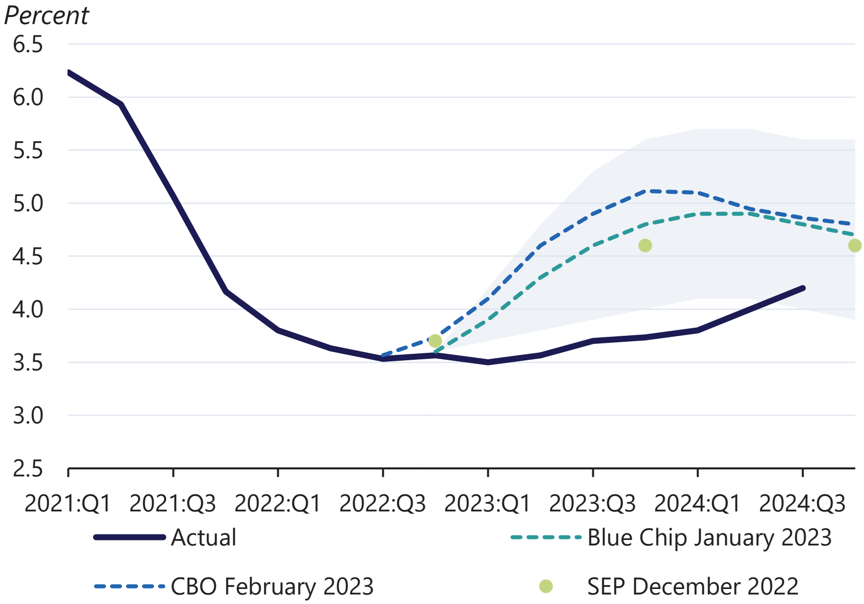
projected that steady disinflation would require a sustained increase in unemployment, the unemployment rate remained below even the average of the 10 most optimistic Blue Chip Economic Indicators projections from 2023:Q1 through 2024:Q2, as shown in figure 1-3. As of 2024:Q3, the unemployment rate was below the CBO and Blue Chip consensus forecast projections.

The unique macroeconomic conditions and policy choices following the onset of the pandemic ushered in a rapid recovery that repeatedly defied forecasters' expectations of rising unemployment. If the CBO and Blue Chip forecasters' expectations had come to fruition, approximately 2 million additional Americans would have been out of work at the end of 2023. Beating the forecasts had real impacts for Americans: Working families' livelihoods remained intact, and as inflation slowed and real wages and incomes grew, these additional workers remained in the labor force to reap these gains.

Figure 1-3. Unemployment Rate



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Sources: Bureau of Economic Analysis; Congressional Budget Office; Blue Chip Economic Indicators; Federal Reserve Board of Governors; CEA calculations.

Note: Data are seasonally adjusted. All forecasts (besides Blue Chip) were finalized before 2022:Q4 data were released. Summary of Economic Projections (SEP) data reflect median FOMC projections, Q4 level. Shaded area indicates the difference between Blue Chip Top 10 average and Blue Chip Bottom 10 average estimates.

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Keeping millions more workers employed in a strong labor market with real wage gains has allowed the economic benefits of full employment to take hold. As the CEA has documented, full employment expansions particularly benefit demographic groups with comparatively lower labor force participation rates and higher unemployment rates (CEA 2024a). The U.S. labor market has broken multiple records under the Administration, gains made possible by data-driven policymaking and an unwavering focus on supporting American families.

Macroeconomic Developments

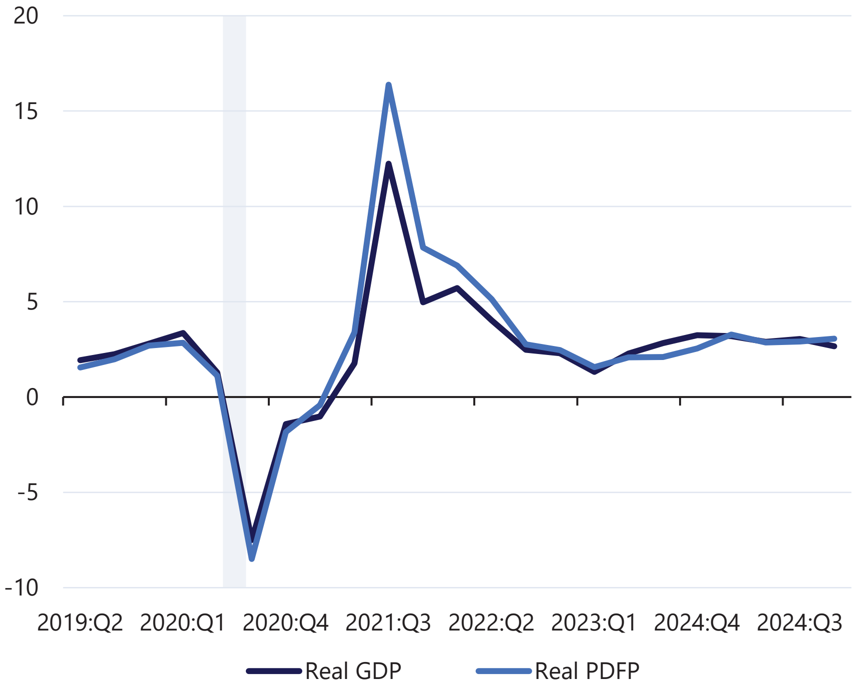
Over the past four years, the U.S. economy has outpaced recoveries following past domestic crises as well as pandemic recoveries in other advanced economies on two critical dimensions: recovery speed and subsequent expansions in GDP and consumption.

GDP

Quantified in terms of real GDP growth, the period between January 2021 and September 2024 was one of sustained expansion, as shown in figure 1-4. The four-quarter percent changes in real GDP and real private domestic final demand (PDFP), a measure of consumption and private fixed investment that better predicts future economic growth than GDP itself (CEA 2015), have been positive since 2021:Q1. Between 2020:Q4 and 2024:Q3, real GDP has grown by 12.6 percent and real PDFP has grown by 14.6 percent.

Figure 1-4. Real GDP and PDFP

Percent change (year-over-year)



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Source: Bureau of Economic Analysis.

Note: Data are seasonally adjusted and based on 2017-chained dollars. Gray bar indicates recession.

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Table 1-1. Historical Comparisons

	Real GDP Per Capita			Real PCE Per Capita		
	Peak to Trough (Percent Change)	*Five Years from Peak (Percent Change)*	*Duration (Quarters)*	*Peak to Trough (Percent Change)*	*Five Years from Peak (Percent Change)*	*Duration (Quarters)*
Great Depression	-32.7%	-27.5%	44	-20.8%	-	-
Great Recession	-5.1%	-0.8%	21	-3.5%	-0.6%	23
Pandemic Recession	-9.3%	9.5%	5	-10.4%	12.0%	5
Average (All Others)	-3.1%	9.2%	8	-1.6%	9.4%	7

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Sources: Bureau of Economic Analysis; Barro and Ursua (2008); Maddison (1995); CEA calculations.

Note: Peak is defined as the last period before either GDP per capita or real PCE per capita decreases during an economic recession as defined by the National Bureau of Economic Research. Trough is defined as the lowest point within a recession. Duration is the number of quarters from the peak until that peak is exceeded. Data prior to 1947 are annual from Maddison (1995) and Barro and Ursua (2008). For the Pandemic Recession, the percent change from the peak to 2024:Q3 is used, since five years have not passed. "Average" includes all other NBER-defined recessions from 1947 to present. For PCE per capita during the Great Depression, the data needed to calculate five years from peak and duration are unavailable.

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The Recovery in Context

Real GDP per capita exceeded its pre-recession peak after just five quarters, a remarkably short duration from peak to recovery by historical standards, as reported in table 1-1. For example, following the Great Recession, real GDP per capita did not surpass its 2007:Q4 peak until 2013:Q1, a duration of 21 quarters. The two recessions featured different drivers and dynamics; the Great Recession was associated with a severe financial crisis, and history shows that such events tend to be followed by protracted recoveries (Reinhart and Rogoff 2009; Jordà, Schularick, and Taylor 2013). In contrast, the pandemic recession featured a massive negative supply shock that largely reversed as the ARP facilitated widespread vaccination of Americans against COVID-19. The speed, resilience, and durability of the pandemic recession recovery are notable given that economic activity overcame a peak-to-trough depth nearly double that of the Great Recession. Policies that supported strong demand over this period likely contributed to the historically rapid recovery from the pandemic recession (de Soyres, Santacreu, and Young 2022).

To capture the post-recovery expansion, table 1-1 reports cumulative real per capita GDP growth in the five years after selected recessions began.[3] From 2019:Q4 through 2024:Q3, real per capita GDP increased by 9.5 percent. Five years after the Great Recession began, per capita GDP still had not recovered; despite the severity of the pandemic recession, the GDP recovery and subsequent expansion mirror more minor recessions.

The differences are particularly stark in terms of consumer spending. While the peak-to-trough decline in real per capita personal consumption expenditures during the pandemic recession was almost triple that of the Great Recession, consumer spending recovered in around one fourth of the time and increased by 12.0 percent between 2019:Q4 and 2024:Q3. In contrast, five years after the Great Recession began, consumer spending was below the pre-recession level.

The U.S. post-pandemic recovery was also rapid by international standards. As shown in figure 1-5, U.S. real GDP exceeded its prior peak in five quarters, two quarters faster than the average among the remaining G7 countries. The figure also reveals a shallower real GDP trough in the United States relative to most other G7 economies.

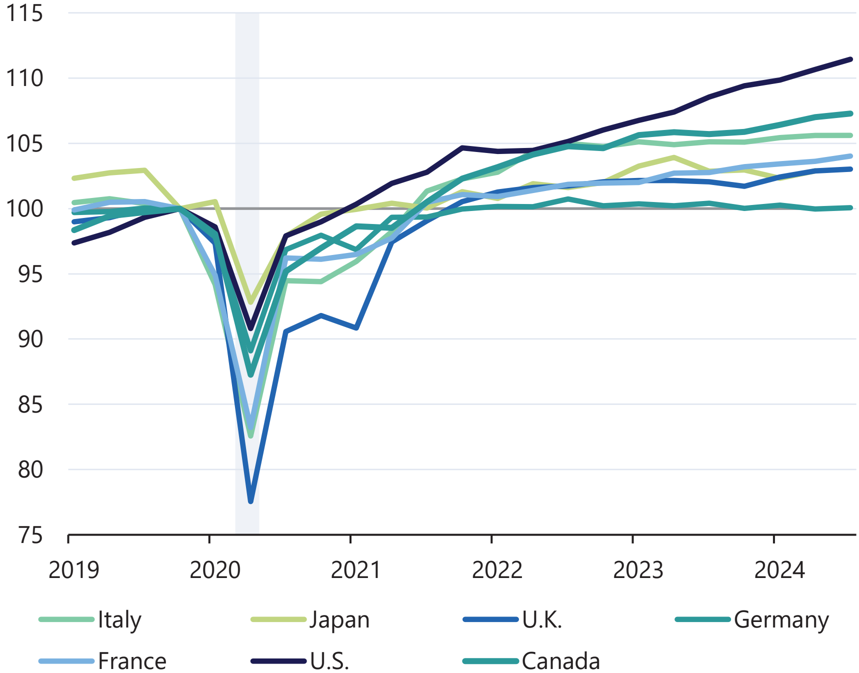
Real GDP has expanded in most G7 countries since the eve of the pandemic, following a strong collective international response. However, U.S. real GDP growth since the pre-pandemic peak, at 11.4 percent, is more than double the next-largest expansion. One likely driver is the strong discretionary fiscal support in the United States relative to other advanced economies, which supported U.S. consumer spending (de Soyres, Santacreu, and Young 2022). Consumption comprises a larger share of U.S. GDP than that of other advanced economies.

While food and energy price shocks following Russia's invasion of Ukraine hit European economies especially hard, high inflation rates in the wake of the pandemic and Russia's invasion were a near-global phenomenon. Figure 1-6 shows that despite U.S. growth far outpacing growth in other G7 economies, the cumulative increases in core inflation have been more comparable. The common experience of high pandemic-induced inflation across advanced economies highlights the importance of supply-side factors in driving the surge in inflation and subsequent disinflation (de Soyres et al. 2024).

[3] As of 2024:Q3, it has been 19 quarters since the pre-pandemic peak in GDP (2019:Q4), one quarter short of the five-year horizon reported for the remaining recessions in table 1-1.

Figure 1-5. Real GDP Recovery in the G7

Index (2019:Q4 = 100)



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Sources: Statistics Canada; The National Institute of Statistics and Economic Studies; Federal Statistical Office of Germany; Italian National Institute of Statistics; Cabinet Office, Government of Japan; U.K. Office for National Statistics; U.S Bureau of Economic Analysis; CEA calculations.

Note: Gray bar indicates U.S. recession. Data are seasonally adjusted.

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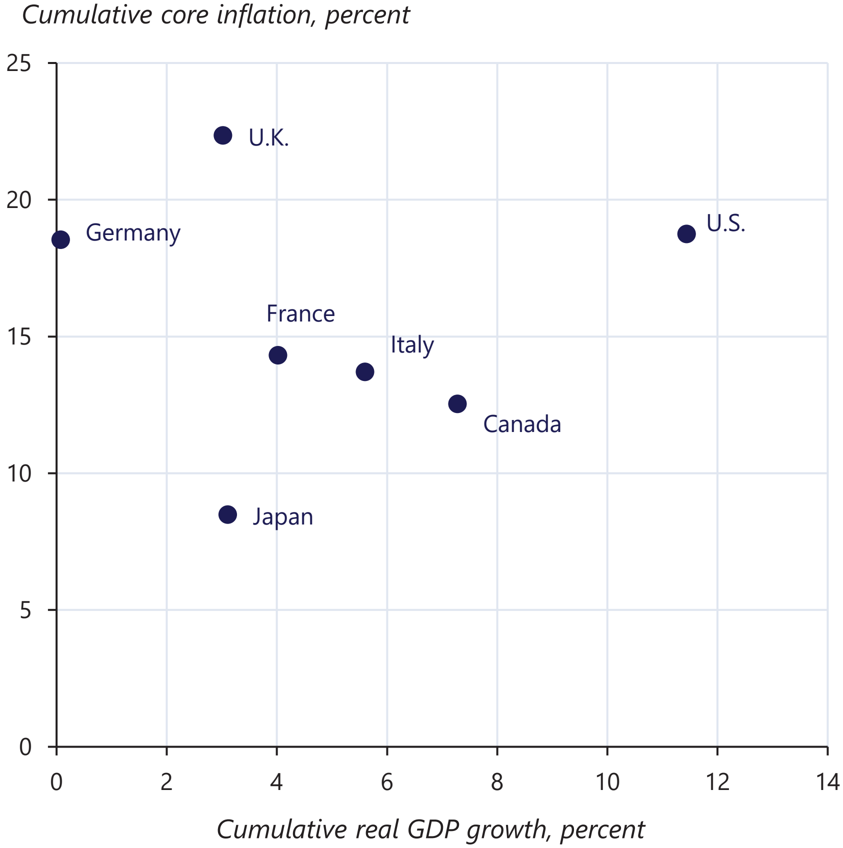
Figure 1-6. Cumulative Core Inflation and Real GDP Growth in the G7, 2019:Q4 to 2024:Q3



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Sources: Statistics Canada; The National Institute of Statistics and Economic Studies; Federal Statistical Office of Germany; Deutsche Bundesbank; Italian National Institute of Statistics; Cabinet Office, Government of Japan; Statistics Bureau of Japan, Ministry of Internal Affairs and Communications; U.K. Office for National Statistics; U.S Bureau of Economic Analysis; U.S Bureau of Labor Statistics; CEA calculations.
Note: All inflation data are harmonized except for the U.S., which uses core CPI excluding owner-equivalent rents. Japan and Canada's inflation metrics are core CPI measures harmonized for cross-country comparison, not the Harmonzied Index of Consumer Prices series.
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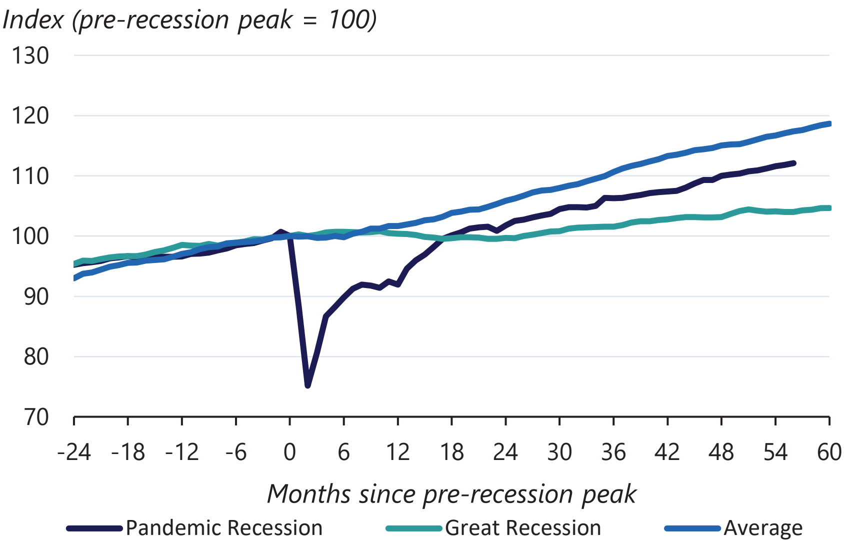
Consumption

Consumer spending accounts for more than two thirds of U.S. GDP and has been a strong driver of growth during the current economic expansion. Real spending surpassed its pre-pandemic level in January 2021 and has risen consistently over the past four years, with cumulative growth outpacing GDP growth. Robust consumer spending is due in part to policies like the ARP—which shored up household balance sheets—as well as to real wage gains and rising household net worth. The sharp reduction in services spending after the pandemic began, while an initial drag on total consumption, subsequently supported increased goods consumption. As of October 2024, real consumer spending had increased over its pre-pandemic level for durables, nondurables, and services.

Shifts in Consumer Demand

The composition of demand shifted substantially in response to pandemic-induced demand and supply shocks, and spending patterns on both goods and services were highly unusual relative to past recessions. As public health imperatives kept Americans at home during the pandemic's acute phase, households dramatically reduced spending on in-person services. Figure 1-7 shows that the scope of the collapse was unprecedented, as services consumption tends to remain relatively steady even in recessions.

Figure 1-7. Real Core Services ex. Housing Spending Across Recessions



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Sources: Bureau of Economic Analysis; CEA calculations.
Note: Data are seasonally adjusted. Nominal series are deflated using their respective price indexes, then indexed to 100 at the peak before the recession as defined by the National Bureau of Economic Research. "Average" includes all other post-1959 recessions.
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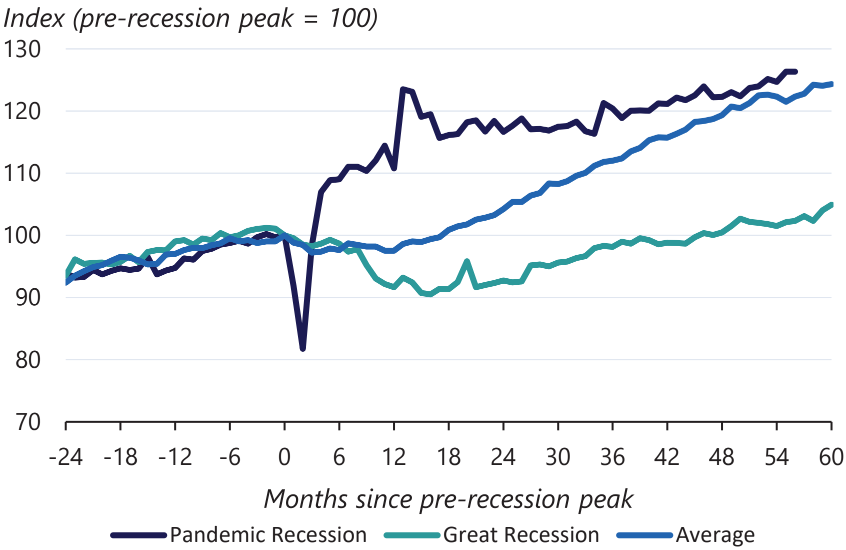
The reduction in services consumption effectively increased disposable personal income, while consumer demand simultaneously rose in categories like household furnishings and at-home entertainment. Notably, durable goods spending increased dramatically, surpassing its pre-recession peak three months after the pandemic-induced recession began. This result is surprising given the pro-cyclicality of durables consumption (Berger and Vavra 2015); for comparison, durables spending remained depressed for 47 months after the Great Recession. Because consumers rarely repurchase durables like appliances and furniture quickly, economists assumed that consumers were front-loading purchases and anticipated a subsequent decline in durables spending (Tauber and Van Zandweghe 2021). Instead, real consumer spending on durables remained above pre-pandemic levels and even increased from mid-2021 through 2024, with overall goods consumption remaining correspondingly strong.

The Services Shortfall and Goods Consumption

Figure 1-8 shows the extent to which pandemic-era goods consumption diverged from goods spending in past recessions and recoveries. Strong

Figure 1-8. Real Core Goods Spending Across Recessions



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Sources: Bureau of Economic Analysis; CEA calculations.
Note: Data are seasonally adjusted. Nominal series are deflated using their respective price indexes, then indexed to 100 at the peak before the recession as defined by the National Bureau of Economic Research. "Average" includes all other post-1959 recessions.
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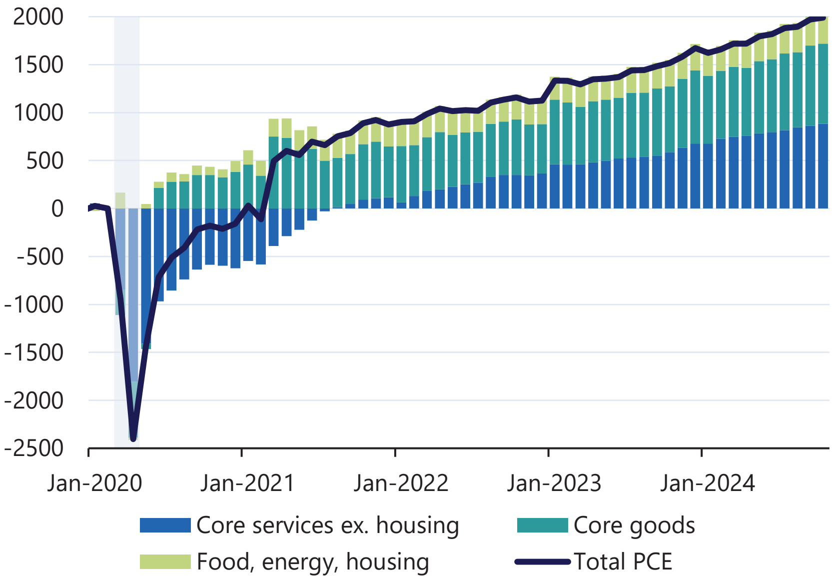
goods consumption has been an essential driver of the current economic expansion, but it is not the full story. Because services account for around two thirds of total consumption, the unprecedented services spending shortfall dwarfs the increase in goods consumption over the period of the services shortfall: Only around half of the disposable income saved by abstaining from core services consumption was redirected contemporaneously to core goods consumption.[4]

A conservative estimate of the services shortfall is the gap between monthly actual spending on non-housing core services and pre-pandemic spending.[5] Figure 1-9 displays changes in real spending by category,

Figure 1-9. Change in PCE and Major Components from February 2020

Billions of 2017 dollars



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted.

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[4] The same holds for total goods and services. Over the period between March 2020 and June 2021, during which total services spending remained below its pre-pandemic level, the cumulative increase in total goods consumption relative to the February 2020 level accounts for 57 percent of the cumulative decrease in total services consumption. Over the period between March 2020 and July 2021, during which core services spending remained below its pre-pandemic level, the cumulative increase in core goods consumption relative to the February 2020 level accounts for 47 percent of the cumulative decrease in core services consumption.

[5] Throughout this section, the pre-pandemic level refers to February 2020. Monthly data are employed to account for the large month-to-month swings in consumer spending.

benchmarked to February 2020 levels. Between March 2020 and July 2021—the period during which core services spending remained depressed—the cumulative core services shortfall was more than double the cumulative surplus in core goods spending.

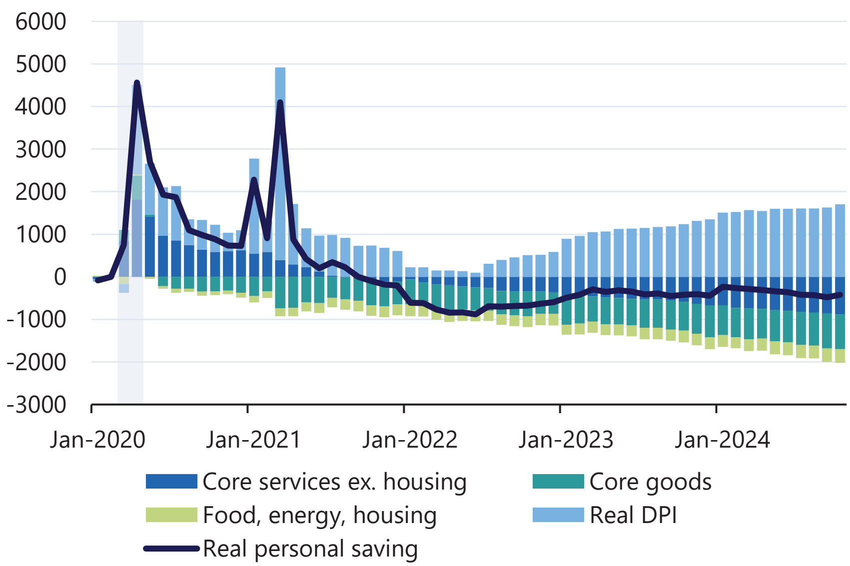
This finding has two implications for the macroeconomic dynamics of the past four years. First, fiscal support did not increase aggregate goods consumption beyond what was accounted for by aggregate forgone services consumption from March 2020 through July 2021. In fact, real consumer spending on goods could have doubled and still been fully offset by the decrease in non-housing services spending. Second, these dynamics meant that household balance sheets were strong: Households had the resources to support the economic recovery long after the pandemic-era fiscal support ended.

Excess Saving

Figure 1-10 displays changes in real personal saving relative to pre-pandemic saving as a function of changes in real disposable personal income (DPI)

Figure 1-10. Change in Real Saving and Selected Components from February 2020

Billions of 2017 dollars



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted. Personal saving is deflated using the PCE price index. Real personal saving does not equal real DPI less real PCE due to personal interest payments and current transfer payments.

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less changes in consumer spending. From March 2020 through August 2021, the level of monthly real personal saving exceeded pre-pandemic saving. Increases in real DPI above its pre-pandemic level contributed positively to changes in saving from January 2021 through October 2024, though the positive contributions from increases in real DPI were offset by negative contributions from other categories from August 2021 through October 2024. Through mid-2021, the services shortfall also contributed to a record increase in personal saving, offsetting the drag from increased goods consumption. Accordingly, households reallocated forgone services spending toward future consumption and improved their overall financial situations, including by paying down debt (Aladangady et al. 2023).

The increase in personal saving was unprecedented relative to saving trends in both past recessions and periods of economic expansion. Following the accumulation of pandemic-era excess saving, the saving rate fell to 2 percent in June 2022. As of October 2024, it was 4.4 percent, slightly below the 2000–2019 average of 5.2 percent, as shown in figure 1-11.

Times of economic uncertainty increase households' desire to save in order to protect against future income shocks (Leland 1968; Carroll and Samwick 1998). With higher disposable incomes, households could satisfy this precautionary saving motive without dampening consumption.

Figure 1-11. Personal Saving Rate

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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Gray bars indicate recessions. Data are seasonally adjusted.

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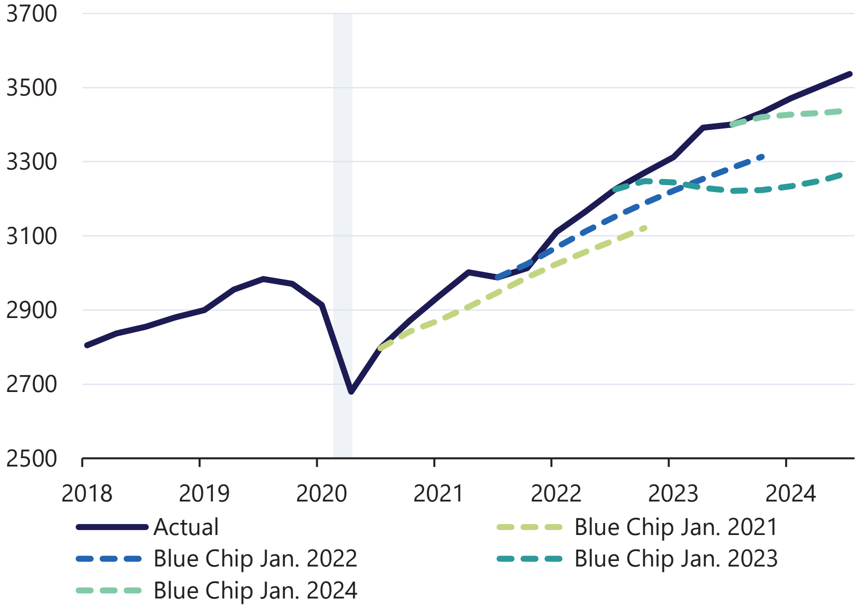
Additionally, pandemic-era excess saving acted as a buffer for households enduring health crises or job loss, though these households were still worse off than those not directly facing pandemic-related shocks (Aladangady et al. 2023). For households without immediate financial constraints, excess saving facilitated a form of consumption smoothing over the past four years.

Investment

Over the last four years, business fixed investment (i.e., real private non-residential fixed investment) has exceeded multiple forecast expectations, as shown in figure 1-12. Growing at an annualized rate of 3.8 percent in 2024:Q3, real non-residential investment has cumulatively grown 23.2 percent during the Administration. As the CEA noted in the 2024 *Economic Report of the President*, the growth is partially due to firms enhancing domestic capacity to increase supply chain resilience and due to incentivized manufacturing investment from the IRA and CHIPS (CEA 2024b).

Figure 1-12. Real Private Nonresidential Fixed Investment

Billions of 2017 dollars



Council of Economic Advisers

Sources: Bureau of Economic Analysis; Blue Chip Economic Indicators; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted. Blue Chip growth rates are applied to actual data for the first quarter of the forecast.

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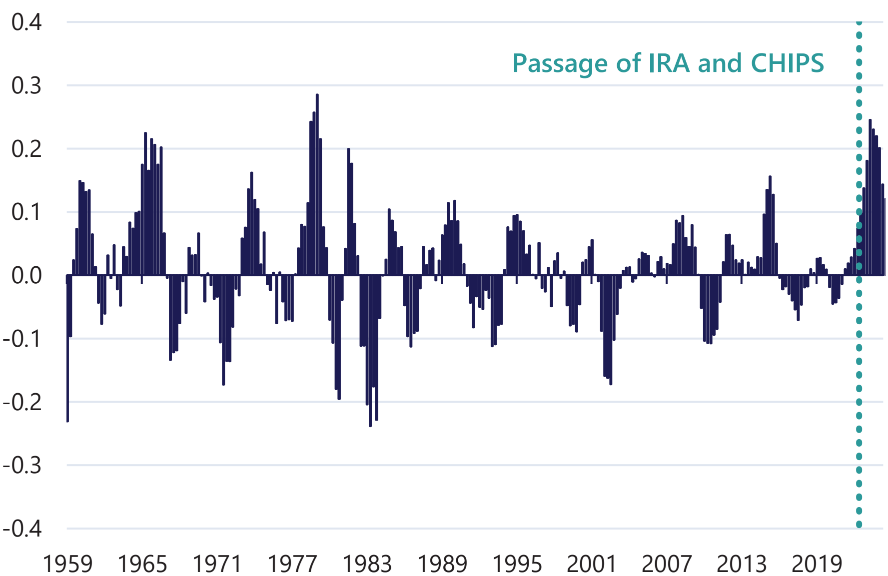
Incentivized public investment often spurs, or crowds in, private investment (Dreger and Reimers 2016; Pereira 2001); total private investment commitments hit $1 trillion as of November 2024.

Public investment crowding in private investment likely explains several economic records set during the Administration. As seen in figure 1-13, real business investment in manufacturing structures as a contribution to real GDP growth reached a near-record high in 2024. Real construction spending on manufacturing more than doubled between January 2021 and September 2024, suggesting that construction activity of manufacturing facilities has risen.

On residential investment, the story is less rosy. Although real private residential investment grew 12 percent from 2019:Q4 through 2022:Q2, it subsequently quickly fell to pre-pandemic levels as interest rates began climbing. With construction costs also high, both new single-family and multi-family housing starts slowed. Housing supply has not kept pace with demand, exacerbating a decade-in-the-making housing shortage estimated

Figure 1-13. Contribution of Real Private Fixed Investment in Manufacturing Structures to Real GDP Growth

Contribution to year-over-year real GDP growth, percentage point



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Data are seasonally adjusted.

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to total 1.5 million to 4.5 million units (Calanog, Metcalfe, and Fagan 2023; Zillow 2024).

Policy Environment

Many of the economic trends in this chapter were affected by the fiscal and monetary policy environments. This section tracks their evolution during the four years of the Administration and details implications for financial conditions and mortgage rates.

Fiscal Policy

Throughout the Administration, there has been significant legislation not only to recover from the pandemic, but also to make historic investments in future U.S. economic growth. Though they have not been adopted, the Administration's budgets have also proposed tax changes and spending cuts to achieve a more sustainable fiscal path.

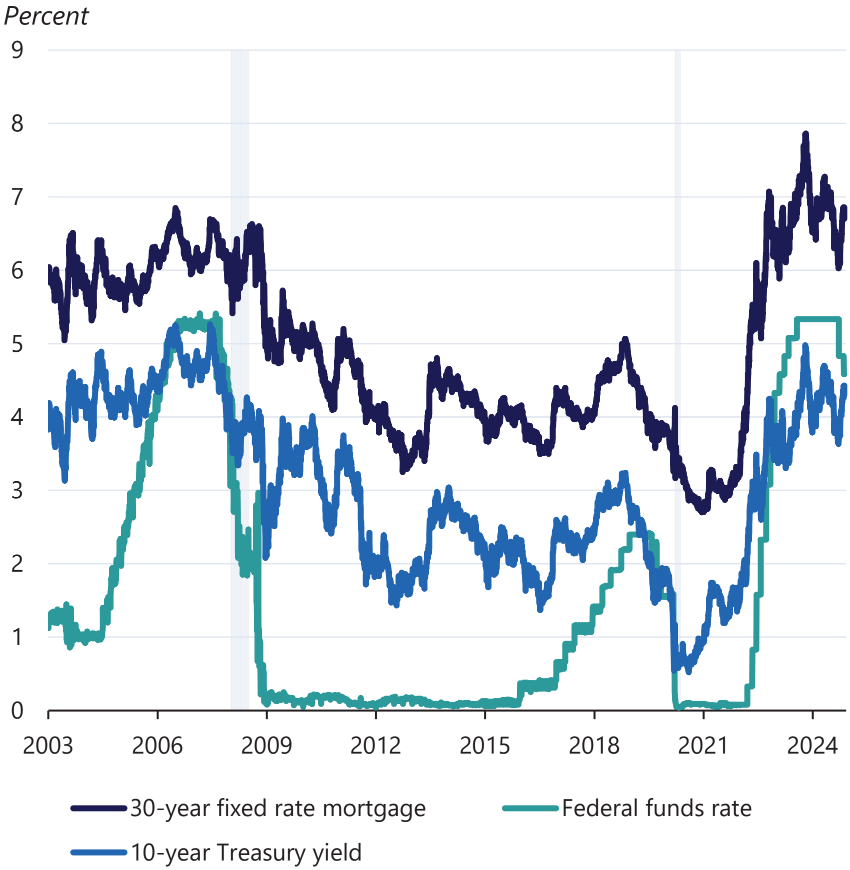
The signature COVID-19 response legislation of the Administration was the ARP, signed into law on March 11, 2021. At $1.9 trillion, the ARP covered a host of areas, from mounting a national vaccine program, stimulus checks, and childcare subsidies to expanded unemployment benefits and support for small businesses and state and local governments. A substantial, multi-pronged response to the widespread devastation of COVID-19, the ARP helped facilitate the strong economic recovery and impacted many of the macroeconomic indicators described in this chapter.

Beyond pandemic-specific legislation, there are three sizeable pieces of investment legislation. Signed into law on November 15, 2021, the BIL authorized $1.2 trillion to improve transportation infrastructure, invest in clean energy and climate resilience, and roll out broadband infrastructure across the country (White House 2024a; DOT 2024). CHIPS, signed on August 9, 2022, is designed to build up a domestic semiconductor manufacturing industry and protect the United States' advantage in high-tech manufacturing in part by crowding in private semiconductor investment (DOC 2024). The IRA, signed into law on August 16, 2022, lowered prescription drug prices, ramped up domestic clean energy production and increased tax revenue through raising the minimum tax on large corporations and enhancing IRS enforcement (White House 2024b; IRS 2024).

Monetary Policy

Households and businesses faced three distinct interest rate environments over the past four years that shaped their consumption, saving, and investment decisions (see figure 1-14). The first was a period of very low interest rates. The Federal Open Market Committee (FOMC) lowered the target

Figure 1-14. Selected Nominal U.S. Interest Rates



Council of Economic Advisers
Sources: Federal Home Loan Mortgage Corporation; Federal Reserve Bank of New York; Federal Reserve Board of Governors.
Note: Mortgage rates reflect the conventional 30-year fixed mortgage rate derived from median daily values of coupon rates and the weekly Freddie Mac U.S. Primary Mortgage Market Survey. Federal funds rate corresponds to the midpoint of the target range. Gray bars indicate recessions.
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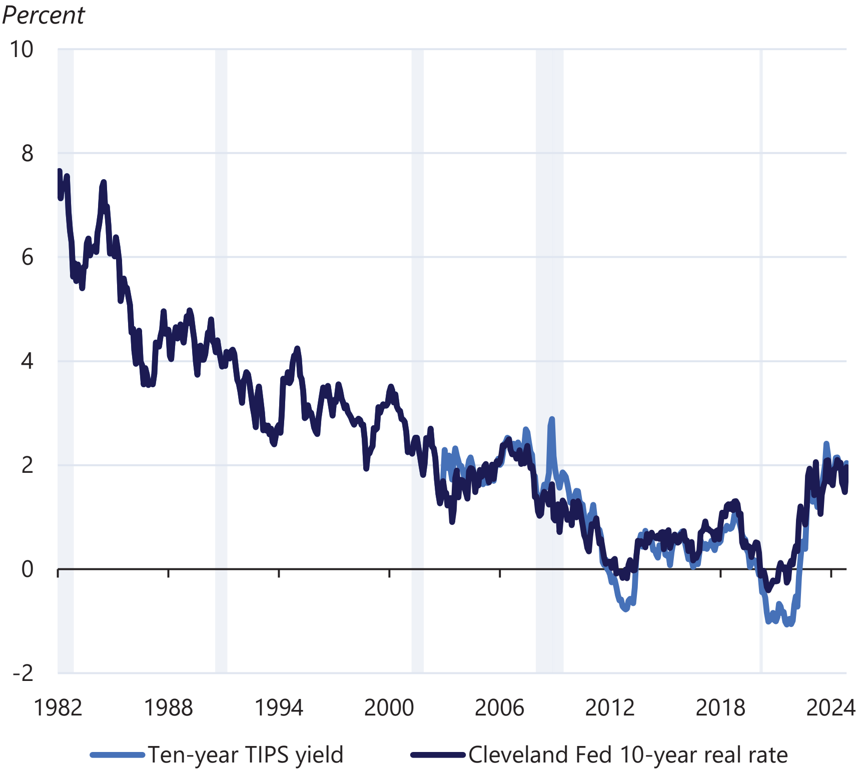
range for the nominal federal funds rate to nearly zero on March 15, 2020, a decrease of 1.5 percentage points from two weeks prior. The move brought the effective federal funds rate back to the zero lower bound for the second time in modern history, less than five years after the first such instance concluded, and the FOMC maintained the near-zero target for two years. This rapid interest rate reduction was accompanied by a slate of emergency lending facilities targeting small and medium-sized firms, large corporations, state and local governments, financial institutions, and securities markets, among other sectors (Federal Reserve Board of Governors 2023). Many of these programs were aimed at ensuring that credit markets were functioning, ultimately supporting the flow of credit to households and businesses. Crucially, actions by the Federal Reserve, including large-scale asset purchases, went beyond ensuring market functioning and provided the economy substantial monetary support (Milstein and Wessel 2024).

The second interest rate environment began in March 2022, when the FOMC began increasing the federal funds rate target range due to the upswing in inflation as strong demand outpaced constrained supply. From March 2022 through July 2023, the FOMC increased the federal funds rate target range by 525 basis points, the largest increase over a tightening cycle since the 1980s. From July 2023 to September 2024, the federal funds rate remained at this higher level.

The final interest rate environment began in September 2024, when the FOMC once again lowered the federal funds rate, judging that policy normalization was appropriate as inflation was on track to return to the Federal Reserve's target level (FOMC 2024).

To capture household and business borrowing costs, figure 1-15 displays ex-ante real interest rate measures, which subtract expected inflation. Market- and model-based measures of long-run real interest rates reached historic lows at near zero or negative rates throughout 2021 and early 2022. As the FOMC began to tighten policy, long-run real interest rates reached 2 percent in 2023; as of November 2024, they remained around 2 percent. While the shift from extraordinarily low real interest rates to moderately positive rates implies tighter borrowing conditions, long-run real interest rates are within range of the years prior to the Great Recession and remain well below the real interest rates of the 1980s, reflecting a decades-long downward trend (Obstfeld 2023).

Figure 1-15. Real Interest Rates



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Sources: Federal Reserve Bank of Cleveland; Federal Reserve Board of Governors.

Note: Model-based estimates from the Federal Reserve Bank of Cleveland are based on fixed income markets and survey-based measures. TIPS refers to Treasury inflation-protected securities whose principal and interest payments are adjusted for inflation. Gray bars indicate recessions.

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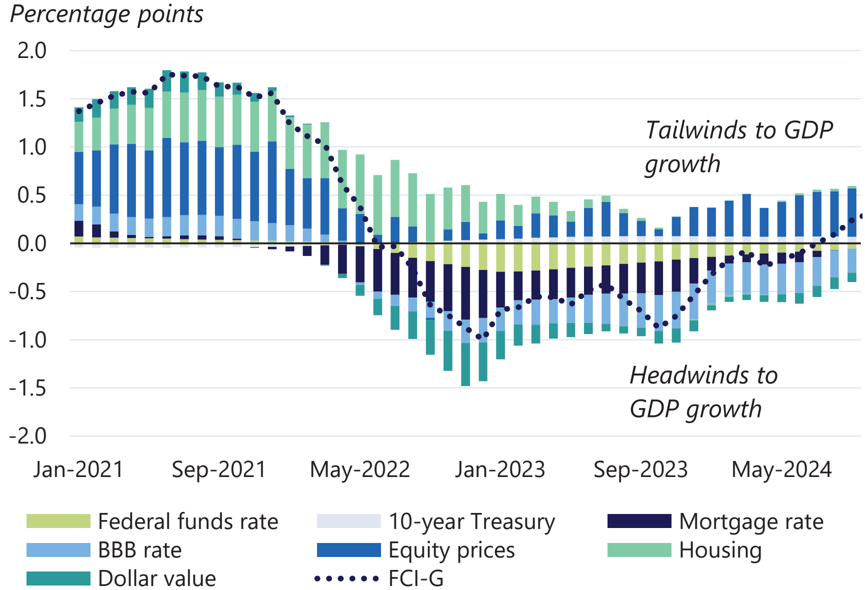
Financial Conditions

Firms and households have faced a range of financial conditions over the past four years, owing in part to the three distinct monetary policy environments. Figure 1-16 shows the contributions to GDP growth of key financial indicators, including the federal funds rate, the 10-year Treasury yield, mortgage rates, and equity and home prices. Much of the economic impact from relatively tighter financial conditions throughout 2022 can be attributed to falling equity prices, monetary policy tightening, and rising interest rates on mortgages and corporate bonds. From May 2022 through October 2024, the restrictive monetary policy stance from the federal funds rate acted as a headwind to future growth, but headwinds from the federal funds rate were more than offset by increases in equity prices from November 2023 through October 2024 (Ajello et al. 2023).

Figure 1-16. Contributions to GDP Growth, per the Federal Reserve's Financial Conditions Impulse on Growth (FCI-G)



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Sources: Federal Reserve Board of Governors; CEA calculations.
Note: Data are from FCI-G (baseline), and inverted such that the figure is read as a fiscal impact measure, which shows cumulative effects on GDP growth one year ahead.
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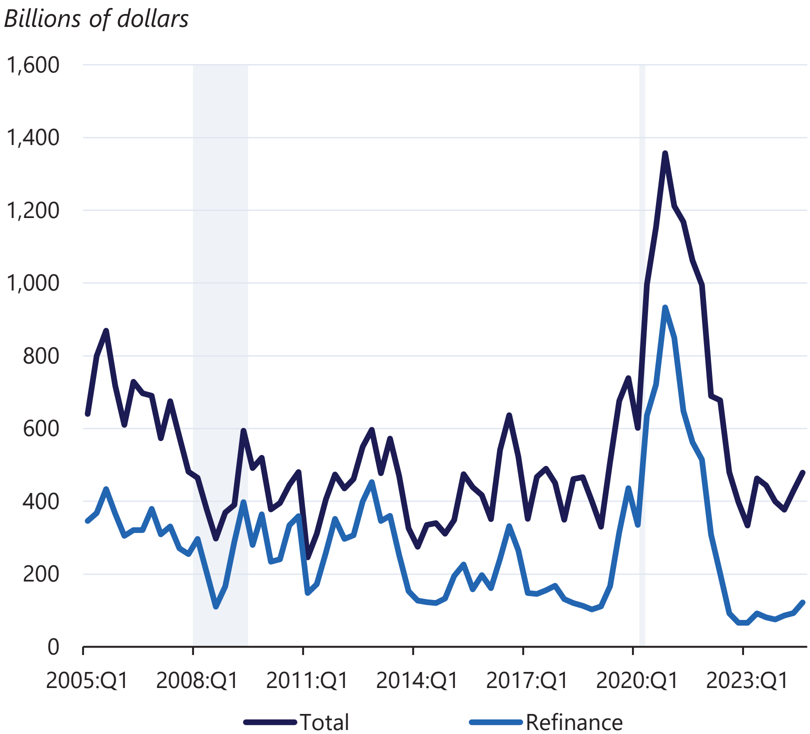
Mortgage Rates

As monetary policy drove mortgage rates to historic lows in 2021 (see figure 1-14), mortgage-holding households were incentivized to refinance; low rates and pandemic-induced increases in housing demand also incentivized new buyers (Gamber, Graham, and Yadav 2023). Total mortgage originations spiked as interest rates fell, driven by refinancing as well as new mortgage originations, as shown in figure 1-17. The refinance share of total originations reached 70 percent in 2021:Q1. This dynamic, paired with the unusually rapid transition from expansionary to contractionary monetary policy, contributed to a "lock-in" effect—as mortgage rates rose sharply, a large share of households had already refinanced to ultra-low mortgage rates and were reluctant to sell—significantly reducing housing market turnover (Quigley 1987; Batzer et al. 2024). As shown in figure 1-16, rising mortgage rates were a significant drag on growth beginning in 2022.

Figure 1-17. Mortgage Originations



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Source: Mortgage Bankers Association.
Note: Data are seasonally adjusted and in nominal dollars. Data represent one-to-four family properties. Gray bars indicate recessions.
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Developments in Inflation

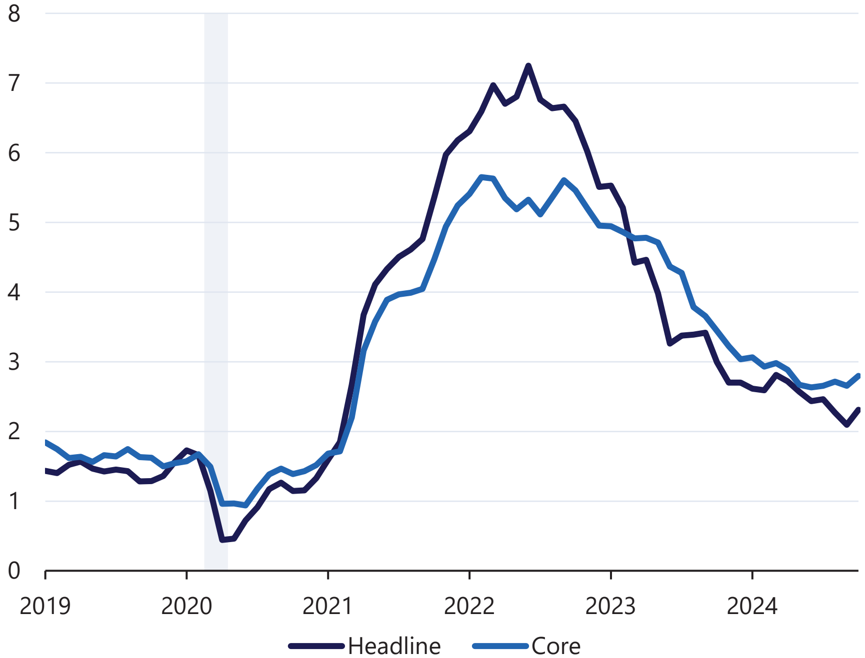
Inflation, as measured by the Personal Consumption Expenditures (PCE) Price Index, was 2.3 percent over the 12 months ending in October 2024, slightly above the Federal Reserve's long-run target of 2 percent. As shown in figure 1-18, inflation has taken a near "round trip" over the past four years (Bernstein 2024).

Inflation surged as strong demand collided with weak supply and peaked above 7 percent in June 2022.[6] A period of rapid and broad-based disinflation followed, with nearly 5 percentage points of disinflation ensuing as supply and demand normalized amid substantial monetary policy

[6] This section measures inflation using the PCE Price Index, which is consistent with the Federal Reserve's inflation target. The CEA also tracks inflation as measured by the Consumer Price Index, which peaked at 9.1 percent year-over-year in June 2022 and was 2.6 percent in October 2024 (CEA 2023a).

Figure 1-18. Headline and Core PCE Inflation

PCE inflation, year-over-year percent



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Data are seasonally adjusted. Core refers to headline less food and energy components. Gray bar indicates recession.

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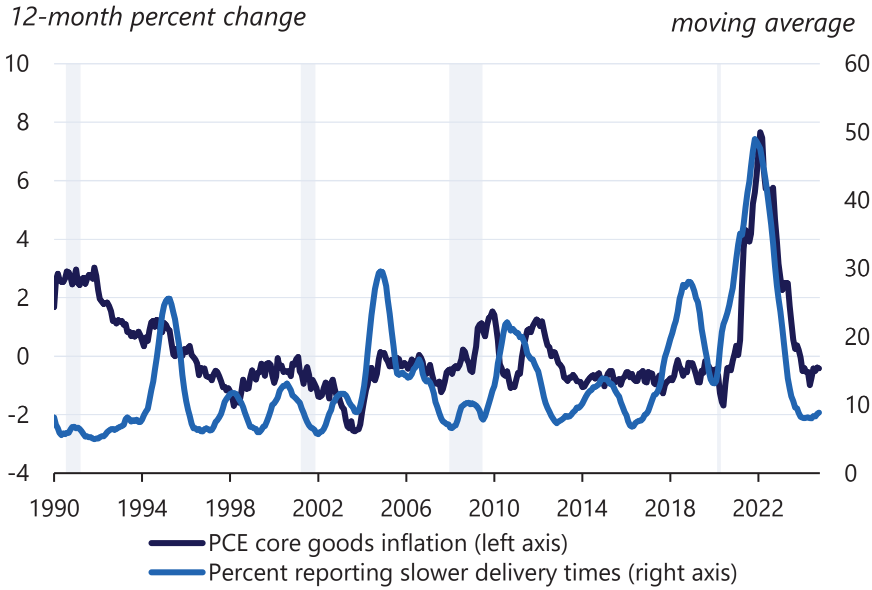
tightening. Core PCE inflation, which excludes food and energy, peaked at 5.6 percent in February 2022 and was 2.8 percent as of October 2024.

Supply Chain Disruptions

In March 2021, inventory-to-sales ratios in both the retail sector and overall economy hit record lows, with inventory shortages hampering business activity in sectors like homebuilding, and semiconductor shortages devastating the market for new and used vehicles (Helper and Soltas 2021). Global supply chain disruptions caused by Russia's invasion of Ukraine further contributed to rising prices in advanced economies, led by food and energy price shocks (Aizenman et al. 2024; Tong 2024). Figure 1-19 shows that supplier delivery lag times, one measure of supply chain pressures, lengthened during the pandemic. Movements in supplier delivery lag times coincided with the rise and fall of core goods prices.

Unsnarling supply chains was critical to restoring the balance between supply and demand. The Administration worked with the private sector to

Figure 1-19. Supply Chain Pressure and Core Goods Inflation



Council of Economic Advisers
Sources: Institute for Supply Management (ISM); Bureau of Economic Analysis; CEA calculations.
Note: Gray bars indicate recessions. Data are seasonally adjusted. ISM index represents manufacturing firms.
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resolve supply chain disruptions by establishing the Supply Chain Task Force and with legislators to pass shipping-rate reforms (White House 2021; Congress 2022). The inflationary effects of supply disruptions and disinflationary effects of their resolution highlight the fragility of global supply chains and the role of federal action to resolve disruptions.

Strong Demand Meets Constrained Supply

The pandemic's unusual dynamics—with fiscal support for household balance sheets and the shortfall in services consumption effectively increasing disposable income—led to strong demand for consumer goods. While further research is needed to determine the precise contributions to inflation of supply relative to demand, robust demand coinciding with massive negative supply shocks put upward pressure on prices (Bernanke and Blanchard 2023; di Giovanni et al. 2024).[7].

[7] See Hazell and Hobler (2024) for a literature review on the drivers of post-pandemic inflation as of November 2024.

To better understand the drivers of inflation and disinflation over the past four years, figure 1-20 displays contributions to headline inflation from five components: food, energy, housing, core goods (excluding food and energy), and core non-housing services (excluding housing and energy).

Core goods (21.8 percent weight in PCE market basket).[8] Core goods prices were a strong contributor to both sides of inflation's round trip, as strong demand met constrained supply. As goods spending intensified while services spending remained below pre-pandemic levels, core goods inflation increased quickly relative to other categories, from a pre-pandemic baseline of nearly zero. At its peak in February 2022—four months before headline PCE inflation peaked—core goods inflation contributed nearly 2 percentage points to overall inflation. Disinflation took hold as supply chains normalized (see figure 1-19), and by November 2023, yearly core goods inflation was nearly zero. From December 2023 to October 2024, core goods prices contributed negatively to yearly inflation.

Core services excluding housing (51.4 percent). Prices of core services excluding housing accelerated quickly in 2021. Following widespread vaccination against COVID-19, pent-up demand for in-person services met heavily constrained supply. Rising labor costs amid a tight labor market added upward price pressures, and inflation in this category remained above 4 percent from May 2021 through September 2023. Core services excluding housing account for about half of the PCE market basket, and as figure 1-21 shows, their outsized contribution to headline inflation stands out in historical context. By October 2024, the category had seen nearly 2 percentage points of disinflation from its peak of 5.3 percent.

Food (7.5 percent). Grocery prices began to rise early in the pandemic, as demand for food at home grew while the pandemic affected food processing facilities and grocery supply chains (Aday and Aday 2020). Food commodity price shocks caused by Russia's invasion of Ukraine worsened the problem, and food inflation was elevated throughout 2022, peaking above 12 percent in August 2022 (Aizenman et al. 2024). Because groceries make up about 9 percent of the typical American household's spending, price increases deeply affected families.[9] Grocery inflation cooled substantially in 2023 and 2024, and because wage growth outpaced grocery price growth, groceries were less expensive in real terms in October 2024 than in 2019 (CEA 2024c).

Energy (3.6 percent). Energy inflation spiked in 2021 and remained elevated throughout 2022 after pandemic-related disruptions left supply unable to keep up with demand. Crude oil prices rose in early 2022 following

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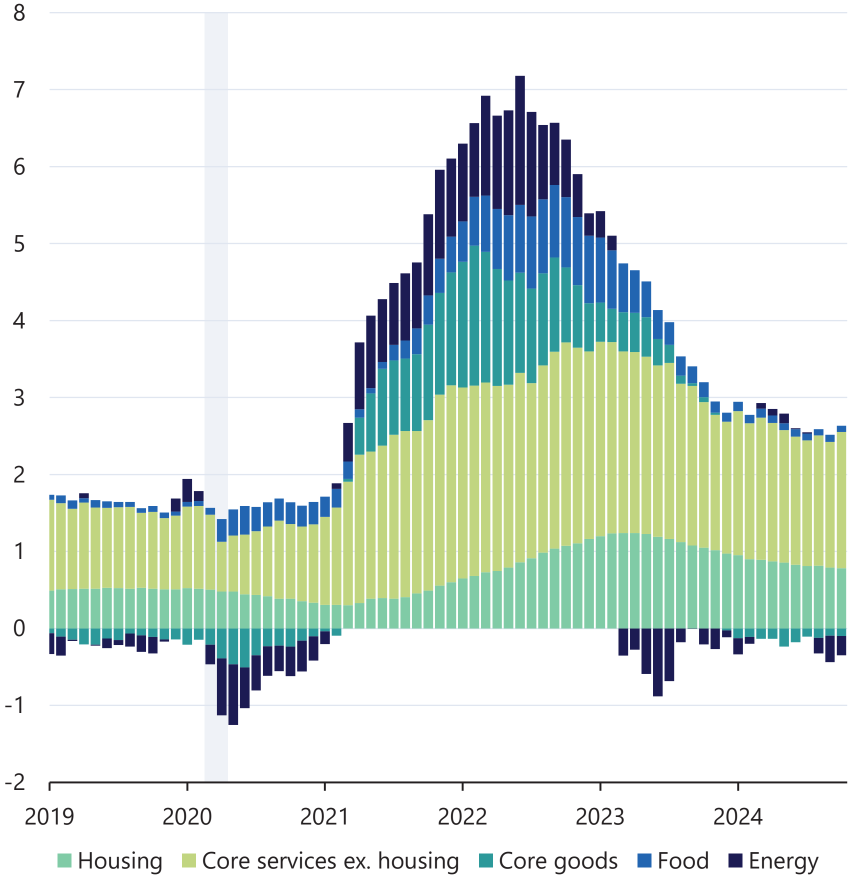
[8] PCE weights reflect nominal expenditure share for each category in the October 2024 Personal Income Report.

[9] According to the 2023 Consumer Expenditure Survey, households in the third quintile of pre-tax income spent 8.8 percent of their total annual expenditures on groceries.

Figure 1-20. Year-over-year PCE Inflation by Components

Percent



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Figure shows monthly contributions to year-over-year PCE inflation. Core goods refers to goods less food and energy components. Gray bar indicates recession.

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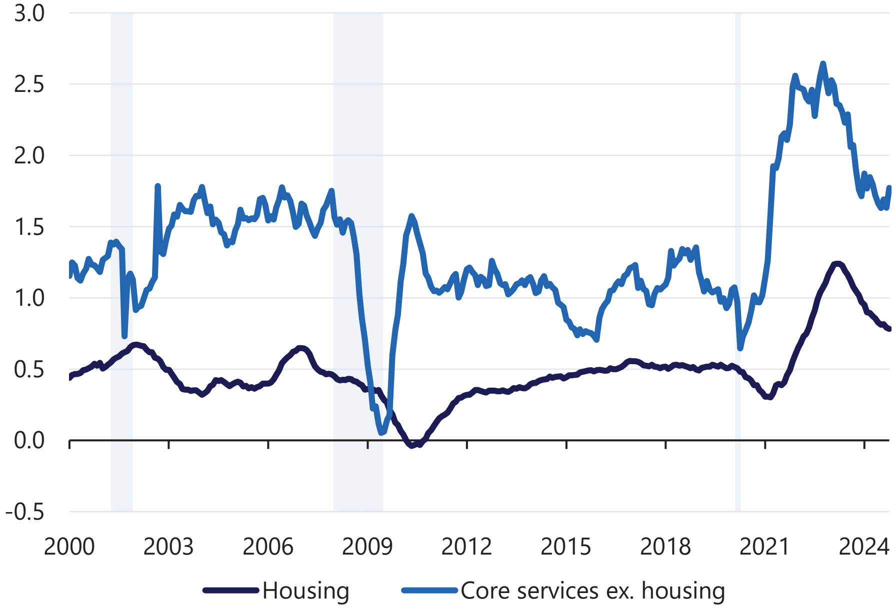
Russia's invasion of Ukraine but were stemmed by the Administration's swift activation of the Strategic Petroleum Reserve (Harris and Wolfram 2022). Strong domestic energy production, with U.S. crude oil production reaching its highest level in August 2024, was an important driver of disinflation. Since January 2023, the contributions of energy price changes to overall inflation have been small or negative. While gasoline prices rose to more than \$5 a gallon at their peak in June 2022, they had fallen by almost 40 percent to around \$3 a gallon by the end of November.

Figure 1-21. Contribution to Headline PCE Inflation

Percentage point contribution to year-over-year inflation



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Gray bars indicate recessions. Data are seasonally adjusted. Core goods, energy goods and services, and food are not included.

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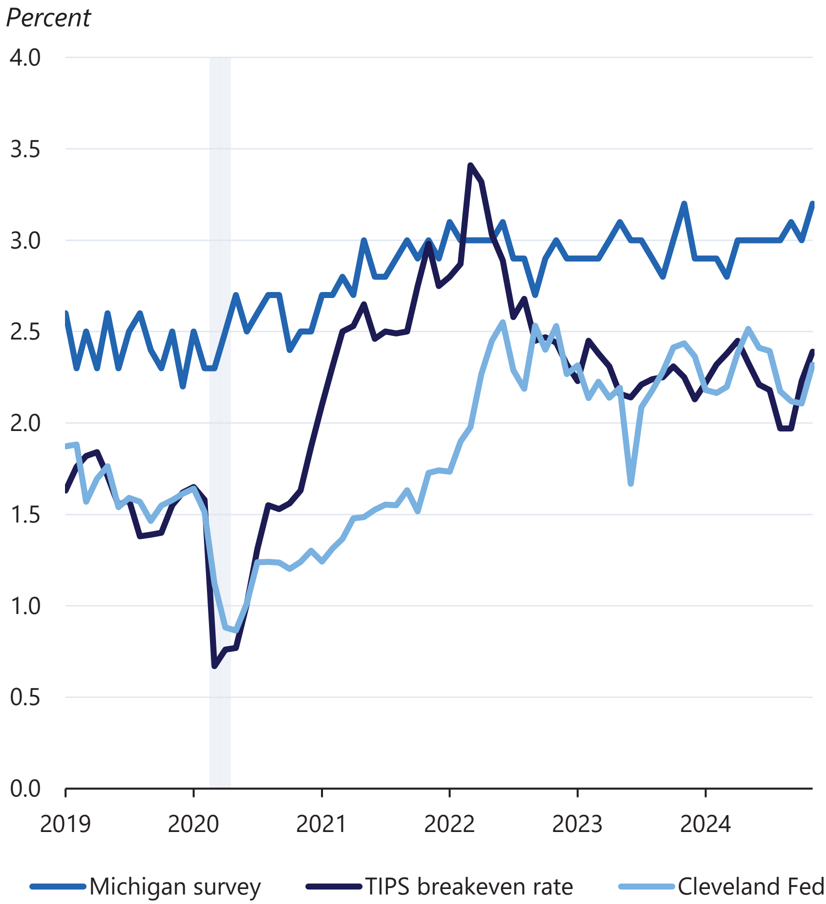
Housing (15.7 percent). Yearly housing inflation, which exceeded 3 percent prior to the onset of the pandemic, began increasing in mid-2021 and reached 8.3 percent in April 2023, likely owing to pandemic-induced demand exacerbating the housing market's structural supply shortfall (Bernstein et al. 2021).[10] Despite 4.9 percentage points of headline disinflation and 3.2 percentage points of housing disinflation, housing inflation remained elevated at 5.0 percent in October 2024 amid a tight housing market. At its peak, housing inflation contributed more than 1 percentage point to yearly PCE inflation, more than double the category's average contribution over the past two decades (see figure 1-21).

Inflation Expectations

Despite the rise and fall in actual inflation over the past four years, figure 1-22 shows that market-based long-term inflation expectations remained

[10] The contribution of housing inflation to CPI inflation is larger than its contribution to PCE inflation due to the relatively larger weight the former index places on housing.

Figure 1-22. Five-year Inflation Expectations



Council of Economic Advisers
Sources: University of Michigan Consumer Survey; Federal Reserve Bank of St. Louis; Federal Reserve Bank of Cleveland; CEA calculations.
Note: The breakeven inflation rate represents a measure of expected inflation derived from five-year Treasury constant maturity securities and five-year Treasury inflation-indexed constant maturity securities. Survey data from the University of Michigan reflects median household expectations. Model-based estimates from the Federal Reserve Bank of Cleveland are based on fixed income markets and survey-based measures. Gray bar indicates recession.
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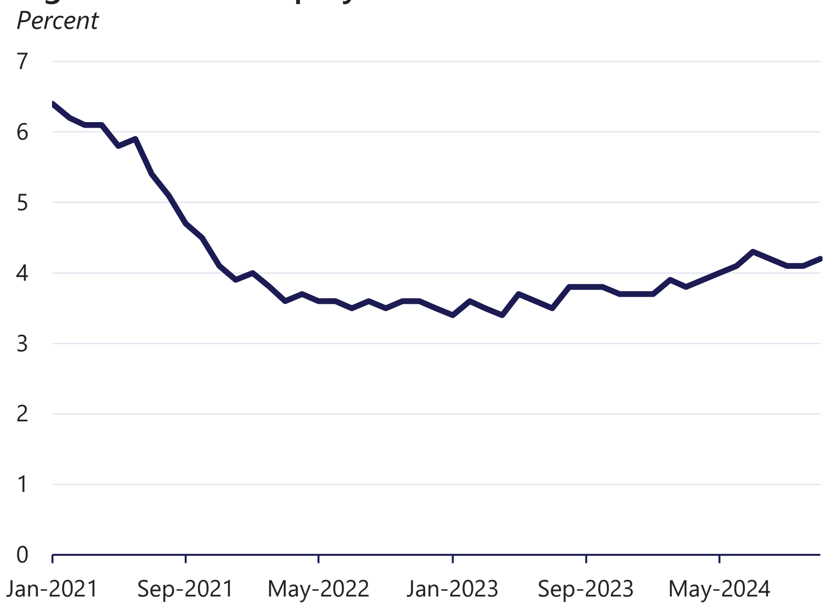
relatively close to the Federal Reserve's 2 percent inflation target, likely owing to the central bank's credibility and independence (CEA 2024d). Because expectations about future inflation directly influence current inflation, anchored expectations were an essential component of disinflation (Lee, Powell, and Wessel 2020). Longer-term household inflation expectations, at 3 percent in October 2024, remain modestly above their pre-pandemic levels. Near-term inflation expectations, particularly those of households, followed inflation's rise and fall but moved less than one-for-one with actual inflation. As of November 2024, household and market expectations of near-term inflation were close to their pre-pandemic levels.

The Labor Market: A Quick Return to Full Employment

Rebounding from a battered economy to one of the tightest labor markets in U.S. history allowed droves of unemployed workers to find jobs quickly. In January 2021, unemployment was 6.4 percent, as shown in figure 1-23, and both initial and continuing unemployment claims were substantially elevated compared with their 2019 averages. But as the economy reopened thanks to widespread COVID-19 vaccinations, the unemployment rate and unemployment insurance claims began trending down. By January 2022, the unemployment rate dropped to 4.0 percent, and by that March, initial unemployment insurance claims were below their pre-pandemic average. In January 2023, the unemployment rate reached 3.4 percent, the lowest since May 1969. Since then, the rate rose to 4.2 percent in November 2024, still

Figure 1-23. Unemployment Rate



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Source: Bureau of Labor Statistics.

Note: The data reflect the seasonally adjusted civilian unemployment rate for ages 16 and older.

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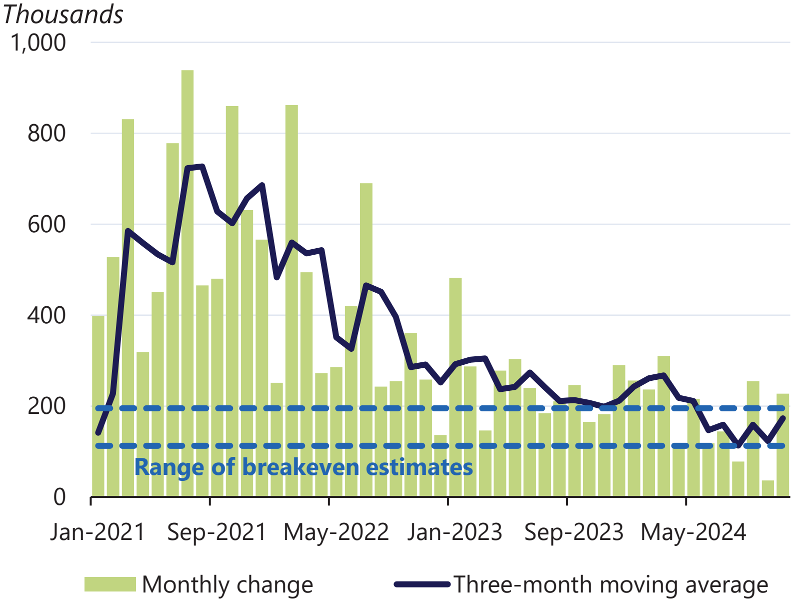
historically low but likely more consistent with stable growth and continuing disinflation.

Payroll employment growth similarly illustrates the transition from pandemic recovery to a booming labor market, followed by normalization. Over the course of 2021, payroll gains averaged a historically high 604,000 per month. By June 2022, payroll levels had regained their February 2020 pre-pandemic peak, and monthly payroll gains averaged 324,000 in the second half of the year. Since then, payroll growth has remained substantial but cooled slowly. In the three months ending in November 2024, the average pace of payroll growth was 173,000 per month.[11] Figure 1-24 illustrates the changes and shows that, despite slower monthly gains, payroll growth

Figure 1-24. Monthly Change in Nonfarm Payroll Employment



Council of Economic Advisers

Sources: Bureau of Labor Statistics; Edelberg and Watson (2024); Federal Reserve Bank of Atlanta; CEA calculations.

Note: Data are seasonally adjusted. Top dashed line is the midpoint of the breakeven estimate from Edelberg and Watson (2024). Bottom dashed line is from the Federal Reserve Bank of Atlanta "Jobs Calculator." Trailing moving averages are used.

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[11] This chapter's discussion of payroll data from the Current Establishment Survey does not incorporate the preliminary benchmark revision to the level of payrolls in March 2024 that was released in September. However, if the final benchmark revision does reduce payrolls by roughly the magnitude implied by the preliminary revision, it would not change the trends referred to in this text.

remains consistent with breakeven estimates to maintain a steady unemployment rate (Petrosky-Nadeau and Stewart 2024, Edelberg and Watson 2024).[12]

Job gains have been widespread across industries during the pandemic recovery. Even the severely damaged leisure and hospitality industry had recovered all its job losses by May 2024. The industry, which includes restaurants and hotels, was hit harder than any other sector during the pandemic and accounted for 37 percent of U.S. job losses between February and April 2020. This was a deviation from past crises, as recessions typically hit goods-producing industries harder.

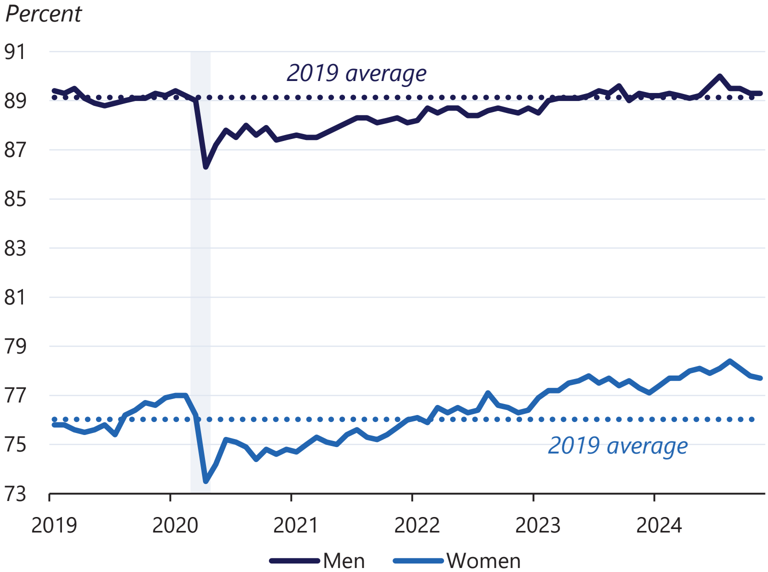
In turn, another unique condition of the pandemic emerged: Job losses skewed toward women. During the Great Recession of 2007–2009, job losses skewed male but the pandemic, in contrast, was informally dubbed a "she-cession" (Hobijn, Sahin, and Song 2010; Covington and Kent 2020). The demographic mix of leisure and hospitality workers meant pandemic job losses were more likely to be among lower wage workers who were women, non-white or Hispanic (Cortes and Forsythe 2023). During the first year of the pandemic, women with small children exhibited excess labor force exits relative to women without children (Lim and Zabek 2023). With the child care industry itself disrupted (Boesch, Lim, and Nunn 2021), families' time spent providing child care increased and women's ability to balance work and child care differed by characteristics such as education level and occupation (Goldin 2022). For example, women with more education had a greater likelihood of being able to work from home.

Just a few years later, prime age (25 to 54) women's labor force participation hit a series high in August 2024, as shown in figure 1-25. Prime age men's labor force participation also rose, hitting 90.0 percent in July 2024, its highest level since August 2009 and a partial reversal of a long-run decline. At the same time, record lows were also clocked for various unemployment rates. Black workers saw their lowest unemployment rate on record at 4.8 percent in April 2023; Hispanic workers' unemployment fell to 3.9 percent in September 2022, tying the series low. These labor market records, along with others, are at least partially attributable to labor market tightness.

In early 2021, the ARP launched a national program to ramp up vaccine access and distribute test kits to families and health centers across the country (HRSA 2022). With vaccines substantially reducing economic duress, businesses reopened and labor demand quickly increased (Agarwal and Gopinath 2021). Job openings surged, as shown in figure 1-26, rising to their highest level on record at nearly 12.2 million in March 2022, almost

[12] While breakeven estimates (i.e., how much monthly payroll growth is needed to keep pace with population growth to prevent an unemployment rate increase) vary, the academic literature broadly suggests an approximate pace of 100,000 to 200,000 jobs per month.

Figure 1-25. Prime-age LFPR for Men and Women



Council of Economic Advisers

Sources: Bureau of Labor Statistics; CEA calculations.

Note: Prime age refers to individuals ages 25 through 54. Gray bar indicates recession. Data are seasonally adjusted.

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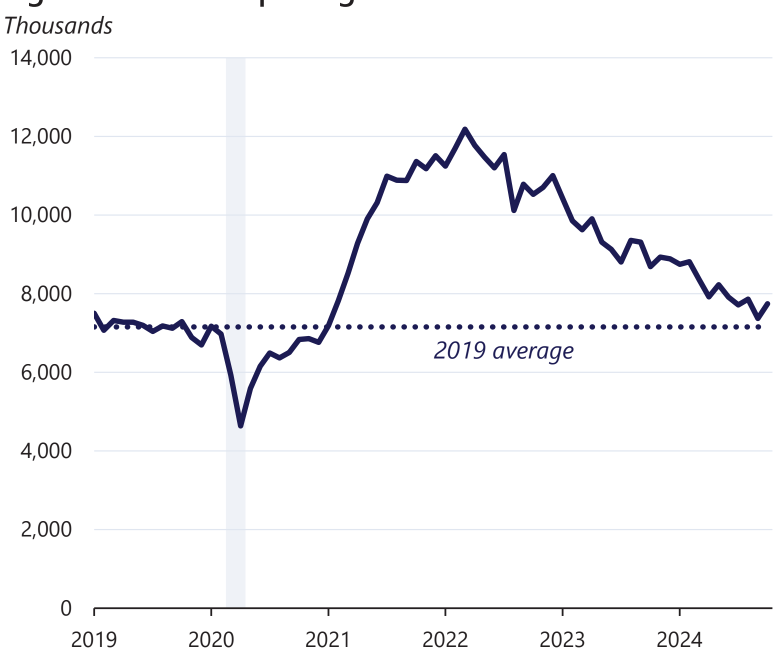
Figure 1-26. Job Openings



Council of Economic Advisers

Sources: Bureau of Labor Statistics; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted.

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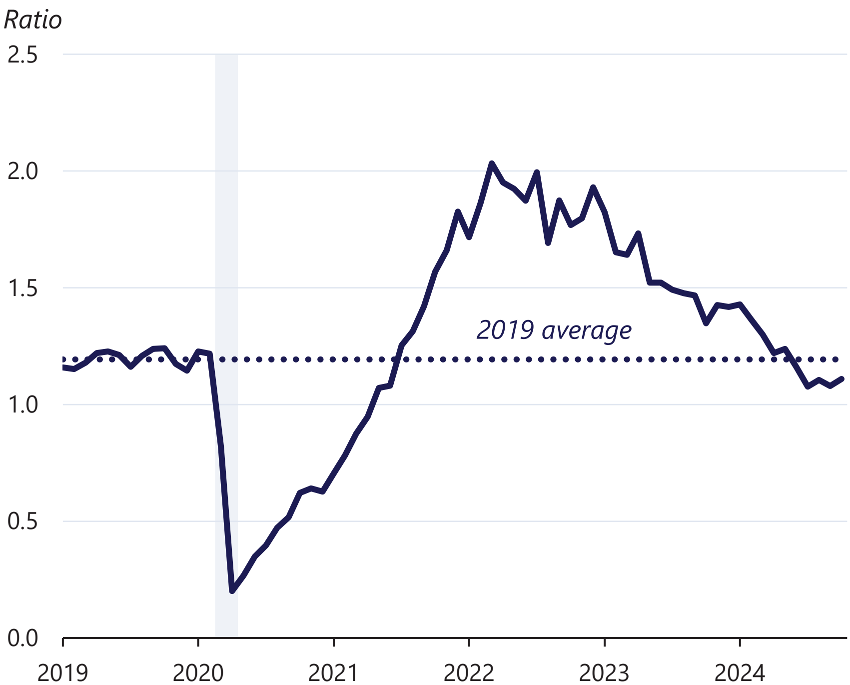
double the 2017–2019 average of 6.8 million. Labor supply did not rise commensurately; both overall and prime age labor force participation were still below their February 2020 levels in March 2022. In turn, the job openings per unemployed person ratio became substantially elevated, reaching 2 available jobs per 1 unemployed person (see figure 1-27).

A variety of factors contributed to increased labor market tightness, where labor demand exceeds supply at prevailing wages. Real consumer spending on services rebounded by July 2021, and businesses, especially those relying on in-person contact, needed labor to meet pent-up demand. On the labor supply side, a combination of health concerns (Faberman, Mueller, and Şahin 2022), child care shortages (Heggeness and Suri 2021), excess savings, and other factors likely contributed to a slow recovery.

The unusually tight labor market gave incumbent workers options. Employers increased recruiting efforts, such as raising wages and offering signing bonuses (Macaluso and Waddell 2022). Wage gains in early 2022 were particularly notable and are discussed in depth later in this chapter.

Figure 1-27. Job Openings per Unemployed Person



Council of Economic Advisers
Sources: Bureau of Labor Statistics; CEA calculations.
Note: Unemployed persons are ages 16 and older. Gray bar indicates recession. Data are seasonally adjusted.
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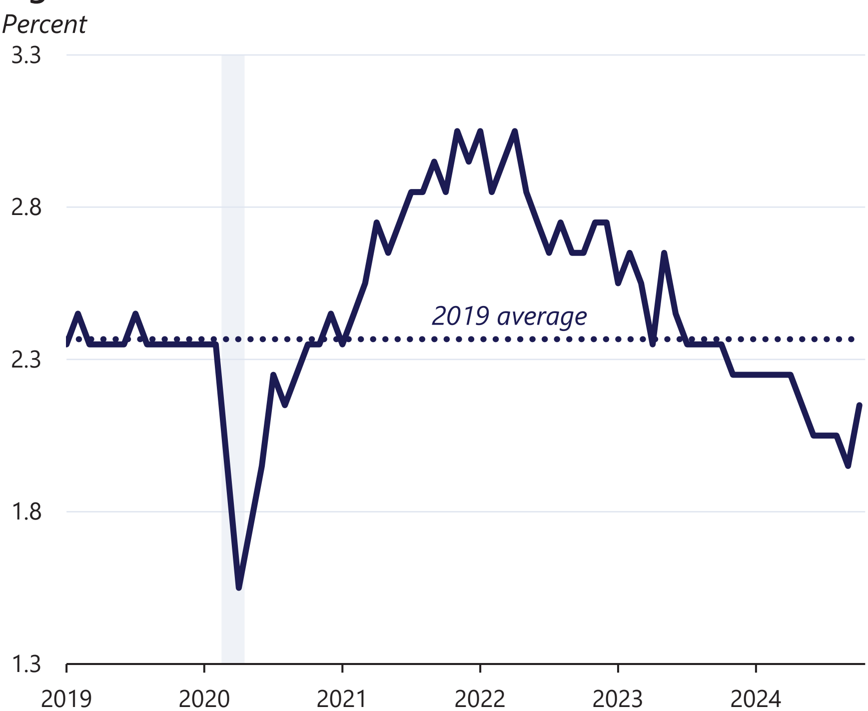
As shown in figure 1-28, the quits rate reached 3.0 percent in late 2021 and early 2022, implying that workers were more willing to leave jobs to upgrade than they were in 2019.

Job mismatch (i.e., the misallocation of job seekers and vacancies across sectors) spiked amid the labor market's sudden dip and rebound, but the effect was smaller and briefer than it was during the Great Recession (Pizzinelli and Shibata 2022). This, along with a greater U.S. policy emphasis on unemployment insurance rather than job retention subsidies—which were more consistently used in Europe (Giupponi, Landais, and Lapeyre 2022)—may have facilitated match quality improvements during what has become known as the "Great Reshuffle." (Chapter 2 of this *Report* discusses improved matching from the perspective of remote work.) Average hourly earnings saw substantial growth, remote work became more commonplace, and employers relaxed skills requirements (Forsythe et al. 2022). Those who wanted work were able to find jobs quickly and, in some cases, occupationally upskill, resulting in real wage gains (CEA 2024e).

Figure 1-28. Quits Rate



Council of Economic Advisers
Sources: Bureau of Labor Statistics; CEA calculations.
Note: Gray bar indicates recession. Data are seasonally adjusted.
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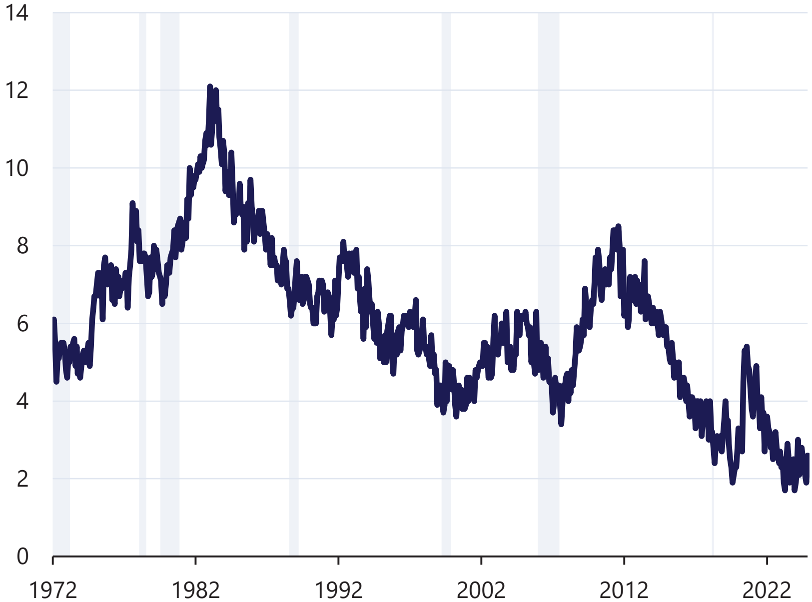
Figure 1-29. Black-white Unemployment Rate Gap

Percent



Council of Economic Advisers
Sources: Bureau of Labor Statistics; CEA calculations.
Note: The data reflect the seasonally adjusted civilian unemployment rate for ages 16 and older. Gray bars indicate recessions.
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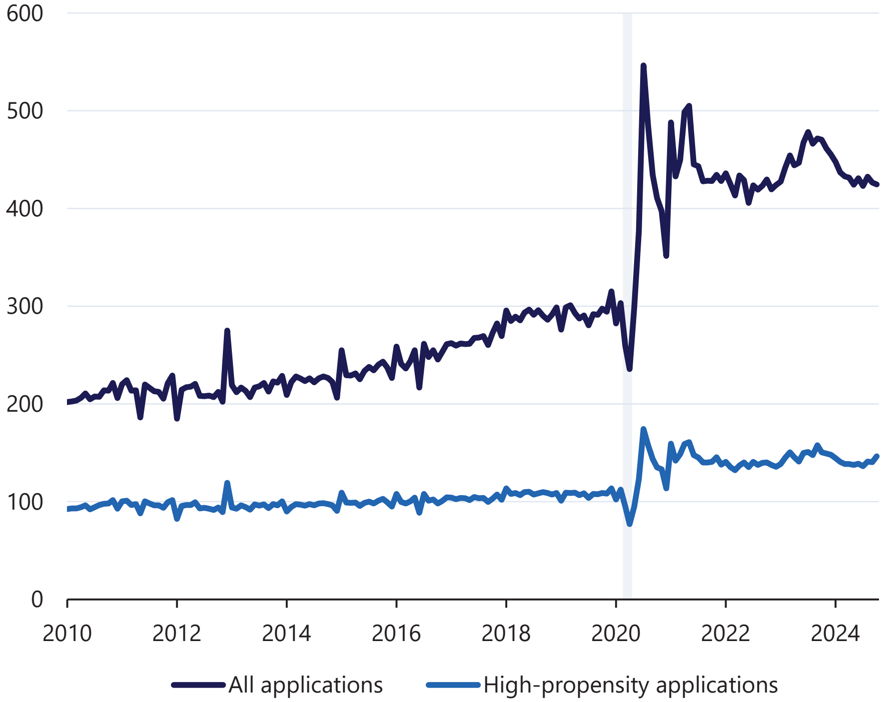
Though full employment is not a cure-all for every labor market barrier, it has helped remedy some prominent inequalities. For example, as shown in figure 1-29, the Black-white unemployment rate gap has contracted and the share of people with a disability holding a job has substantially risen compared to pre-pandemic levels. Yet disparities still exist in the labor market by gender, race, age, and criminal record (CEA 2022, 2023b, 2024a; Couloute and Kopf 2018; Choi-Allum 2024; Neumark, Burn, and Button 2019). Effective macroeconomic stabilization is required to reap the benefits of full employment, and remaining inequities underscore the need for targeted interventions to address structural, as opposed to cyclical, barriers.

Going forward, two open questions for the U.S. labor market remain. The first is how immigration intersects with present and future labor market trends. The CBO estimates total net immigration has risen (CBO 2024) and in turn, this increase may have helped align labor demand and supply. The increase likewise affects growth estimates of the population, labor force, and employment and may have allowed employment to grow more quickly than expected (Edelberg and Watson 2024). While the CBO projects immigration

Figure 1-30. Monthly Business Applications

Thousands



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Sources: Census Bureau; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted. High-propensity applications are defined by Census as applications with a high likelihood of becoming businesses with payroll.

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to return closer to historical levels by 2027, how labor supply dynamics may evolve in the immediate term remains unclear.

The second open question is the future impact of the 20 million new business applications filed in the United States since January 2021, one third of which are high-propensity business applications. As shown in figure 1-30, the monthly pace of applications remains elevated compared to pre-pandemic levels. It has been hypothesized that the application surge was driven by two waves. The first may have been pandemic-specific entrepreneurial opportunities, such as producing masks; the second may have been related to vaccines resolving uncertainty for entrepreneurs and increasing business starts (Decker and Haltiwanger 2023). Given that new businesses are an important vehicle for job creation, the surge may hold promise for tomorrow's labor market (Haltiwanger 2015).

Economic Wellbeing of Workers

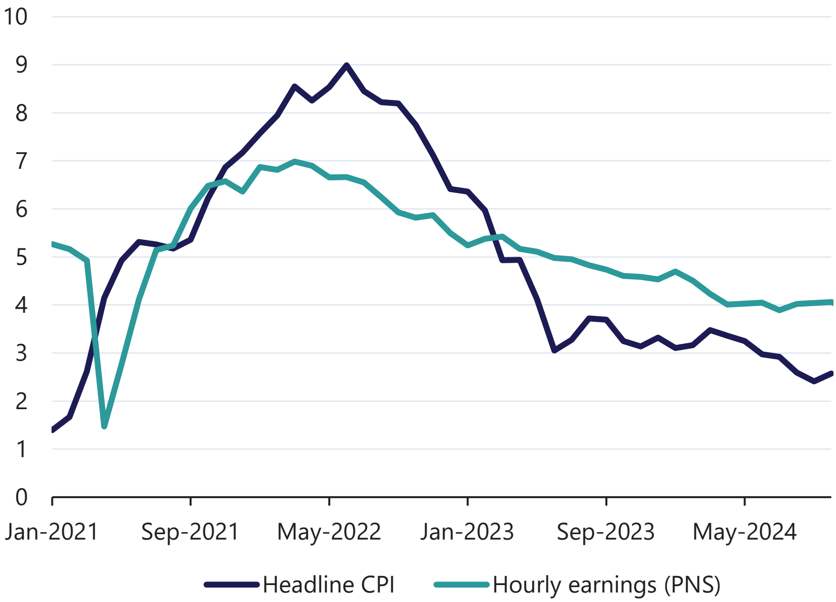
From personal income to child poverty, a holistic perspective is necessary to understand Americans' economic wellbeing over the last four years.

Dollars and Cents Measures

Production and nonsupervisory workers have seen some of the fastest nominal wage growth in decades under the Administration.[13] Excluding 2020 due to its adverse compositional effects, production and nonsupervisory workers experienced 7.0 percent average hourly earnings year-over-year growth in March 2022, the fastest rate since 1982.[14] However, as shown in figure 1-31, these wage gains coincided with high inflation. Between November 2021 and February 2023, headline CPI outpaced average hourly wages for

Figure 1-31. Wage Growth and CPI Inflation

Percent, year-over-year



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Sources: Bureau of Labor Statistics; CEA calculations.

Note: PNS means production and nonsupervisory workers.

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[13] Production employees in goods-producing industries and nonsupervisory employees in service-providing industries are included. These groups account for four fifths of the total employment on private nonfarm payrolls.

[14] Wage growth measures spiked in 2020 due to the volume of low wage workers losing their jobs and falling out of the calculation.

production and nonsupervisory workers. This has since reversed, with these wages outpacing inflation for 20 months through October 2024.

Other wage measures have exhibited a similar pattern.[15] The Employment Cost Index (ECI) for private-sector worker wages saw year-over-year growth of 5.7 percent in June 2022, the highest since 1982. Annual growth in average hourly earnings (AHE) for private-sector workers peaked at 5.9 percent in March 2022, and the smoothed Atlanta Federal Reserve Wage Growth Tracker peaked at 6.7 percent in June, July, and August 2022. These peaks occurred during the period of high inflation in 2022. Growth in each measure has since slowed as the labor market has normalized and, importantly, inflation has cooled. Still, through 2024:Q3, each measure grew faster than it did before the pandemic, as shown in figure 1-32.

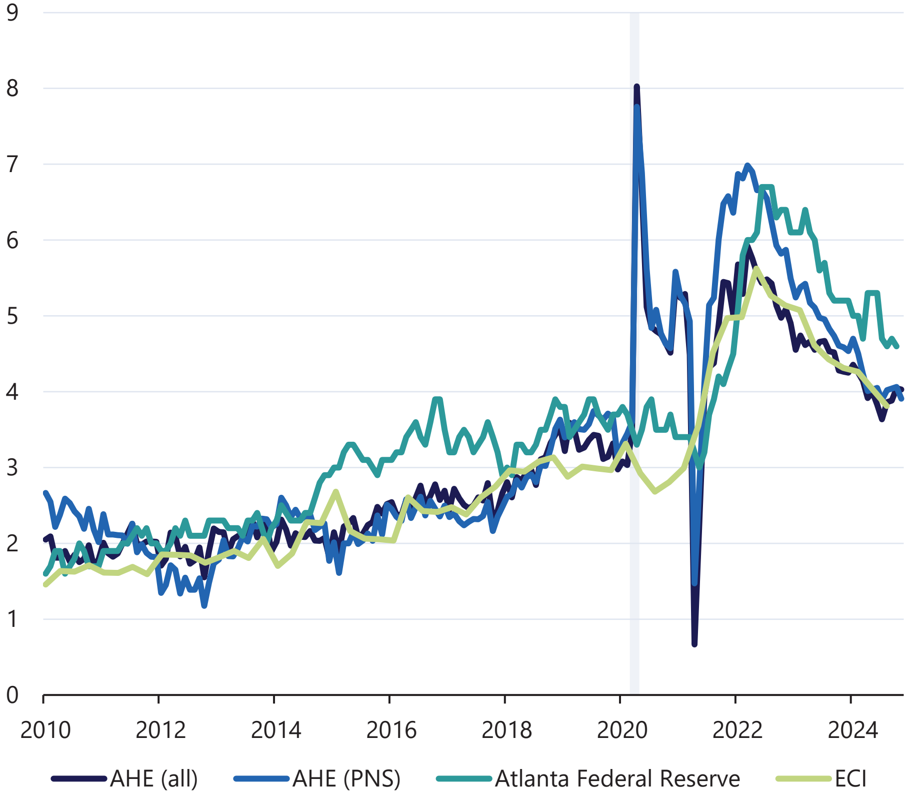
Demographically, non-white workers and those with less education saw some of the biggest wage gains in 2022 (Federal Reserve Bank of Atlanta 2024). By wage level, workers in the bottom half of the distribution experienced the fastest wage growth, with workers in the 25th and 50th percentile seeing growth reach 7.5 percent in late 2022 and early 2023, respectively. These wage gains were due to the particularly tight labor market at the lower end of the wage distribution as in-person service providers rehired workers after substantial job losses in 2020 (CEA 2024a; Autor, Dube, and McGrew 2024). While wage growth has cooled, the historic pace at the lower end of the distribution allowed for some wage compression across demographic groups (Gould and DeCourcy 2024).

Real DPI has also risen, particularly in 2023 after inflation started to descend. For this metric, it is important to exclude government transfers, as they spiked due to multiple rounds of fiscal support during the pandemic. Between January 2021 and October 2024, real DPI per capita, excluding transfers, rose around $3,800 (8.0 percent), as shown in figure 1-33.

[15] Average hourly earnings, the Employment Cost Index, and the Atlanta Federal Reserve Wage Growth Tracker all measure wages differently. Average hourly earnings is derived from the BLS establishment survey and divides the total worker payroll by the sum of total worker hours. The Employment Cost Index measures wages but is compositionally adjusted so changes in industry employment composition do not affect the data. The Atlanta Federal Reserve Wage Growth Tracker uses wage data from the Current Population Survey and represents the median percent change in the hourly wage of individuals observed 12 months apart. The smoothed measure is a three-month moving average.

Figure 1-32. Selected Nominal Wage Measures

Percent, year-over-year



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Sources: Bureau of Labor Statistics; Federal Reserve Bank of Atlanta; CEA calculations.
Note: Gray bar indicates recession. ECI means employment cost index, which is at a quarterly frequency. Atlanta Federal Reserve wage data are non-seasonally adjusted three-month moving averages; all other data are seasonally adjusted. AHE means average hourly earnings. PNS means production and nonsupervisory.
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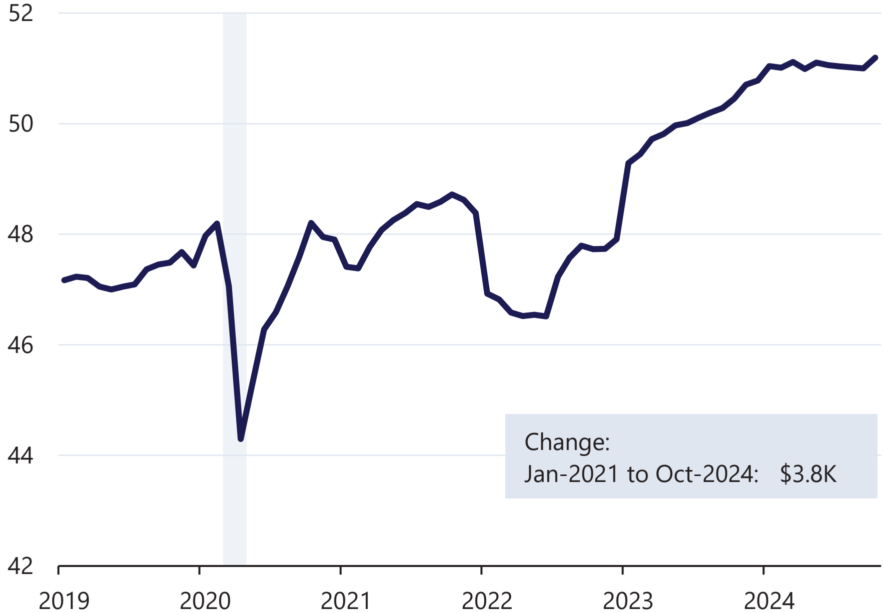
Figure 1-33. Real DPI ex. Transfers per Capita

Thousands of October 2024 dollars



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Data are deflated using PCE deflator to October 2024 dollars. DPI ex. transfers is disposable personal income excluding personal current transfer receipts. Gray bar indicates recession. Data are seasonally adjusted.

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Household Financial Situation

The Survey of Consumer Finances provides a snapshot of household balance sheets as of March 2022, the start of the FOMC's monetary tightening cycle, relative to their pre-pandemic status in 2019. The picture, as shown in table 1-2, is one of rising household net worth (i.e., assets minus liabilities) across the income distribution due to improvements on both sides of the ledger. While absolute gains were largest for the highest earners, household net worth in the poorest income quintile grew by 57 percent, and middle-income households posted sizeable gains.

On the asset side of the ledger, households at all income levels saw the value of their financial asset holdings increase, with retirement account holdings increasing for all income groups and transaction accounts increasing for all but the lowest income quintile.[16] Gains extended beyond rising values: The share of households in the lowest income quintile owning

[16] Reported holdings are median values of assets and liabilities held by each income quintile.

Table 1-2. Change in Selected Assets and Liabilities from 2019 to 2022

Net change in median value by income percentile (thousands of 2022 dollars)

	< 20	*20-39.9*	*40-59.9*	*60-79.9*	*80-89.9*	*90-100*
Net Worth	6.1	7.8	58.6	62.9	343.5	806.7
Selected Assets						
Retirement Accounts	2.4	0.3	6.5	4.7	44.7	25.4
Transaction Accounts	0	0.2	2.4	4.2	10.6	30.5
Selected Liabilities						
Credit Card Balances	0.1	-0.6	-0.3	-0.7	-0.8	-1.0
Mortgages	-2.2	2.1	8.8	5	-11.8	39.3

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Sources: Survey of Consumer Finances; CEA calculations.
Note: Assets and liabilities do not equate to net worth as only a few balance sheet items are presented.
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nonfinancial assets, including vehicles and primary residences, reached its peak since the modern survey began in 1989. Though gains in stock holdings remain concentrated at the top of the income distribution, the share of households directly owning stock posted its largest gain since the survey's inception, jumping to 21 percent of all households from 15 percent. For families owning their primary residence, the median net housing value rose 44 percent due to strong pandemic-induced housing demand and insufficient supply (Aladangady et at. 2023; Gamber et al. 2022).[17]

On the liabilities side, median credit card balances fell for all but the lowest-income households. For middle-income households, median values rose for mortgages, vehicle loans, and home equity lines of credit; while these loans contributed to an increase in debt held by middle-income households, they may represent welcome developments for families.

The data show a reduction in financial fragility over a period when household financial situations were initially expected to deteriorate. Instead, many households' financial situations were generally in a better position at the start of the monetary policy tightening cycle than on the eve of the pandemic. This broad improvement provides suggestive evidence that expansionary monetary and fiscal policy, along with excess savings accrued during the pandemic, positioned many families to weather the period of high interest rates and price increases that spurred them.

[17] The metric is defined by the Survey of Consumer Finances as the home's value minus debts secured by the home, such as mortgages or home equity lines of credit.

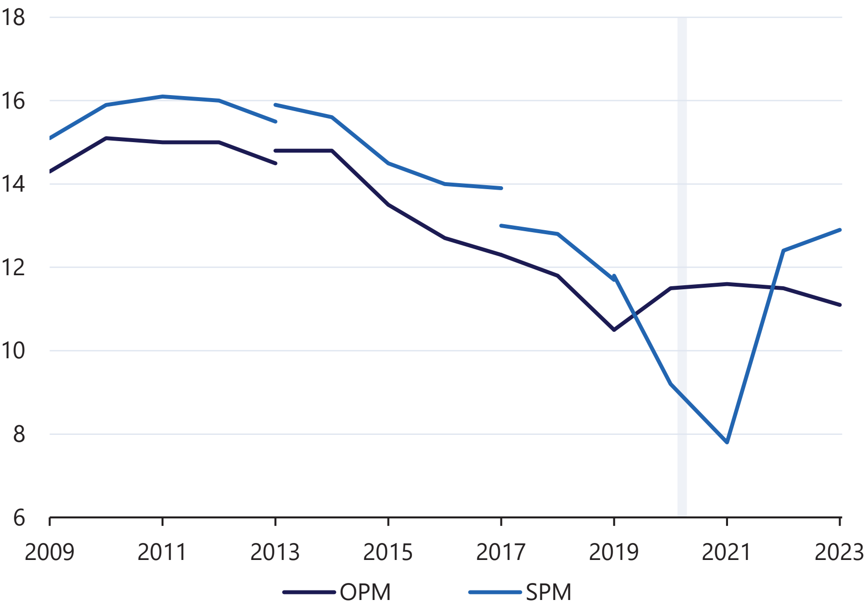
While racial disparities in median wealth narrowed between 2019 and 2022, gaps remain. The median wealth ratio between white and Black families improved, yet Black families have $16 in wealth relative to every $100 of a typical white family. The gap between Hispanic and white families also narrowed, with Hispanic families holding $22 in wealth relative to their white counterparts (Aladangady, Chang, and Krimmel 2023). Net worth increased across all education levels during the period, but in median terms, a sizeable gap remained between those with a college degree and those without (Aladangady et al. 2023).

Additional Measures of Economic Wellbeing

The Official Poverty Measure (OPM) has declined during the Administration and stood at 11.1 percent in 2023, as shown in figure 1-34. The Supplemental Poverty Measure (SPM), after hitting a record low of 7.8 percent in 2021, rose to 12.9 percent in 2023. The SPM for children also rose over the same

Figure 1-34. The Official Poverty Measure and the Supplemental Poverty Measure

Poverty rate (percent)



Council of Economic Advisers
Sources: Census Bureau; Annual Social Economic Component of Current Population Survey; CEA calculations.
Note: Population as of March of the following year. Breaks in the series reflect methodological changes. Gray bar indicates recession.
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timeframe, from a series low of 5.2 percent to 13.7 percent, a consequence[18] of the expiration of the enhanced Child Tax Credit (CTC), which the Administration has consistently worked to reinstate.

The ARP enhanced the CTC by increasing the benefit amount, especially for young children, and making it fully refundable. Refundability is an important feature as it allows low-income households to receive the full benefit regardless of earnings or tax liability levels. Eligible taxpayers received half of their estimated CTC amount as an advanced monthly payment between July and December 2021 (Treasury 2022). The enhanced version of the CTC was a liquidity buffer for families (Wheat, Deadman, and Sullivan 2022), with the poorest 20 percent of households with children receiving an average 35 percent income boost (Davis 2021). CTC spending analysis finds that the advanced payments were primarily spent on essential expenses like food, housing, and child-related goods and services (Schild et al. 2023; Hamilton et al. 2022; Perez-Lopez and Mayol-Garcia 2021). The CTC enhancement's impact was substantial, lifting nearly 3 million children out of SPM poverty and decreasing food hardship for low-income Black, Hispanic, and white families (CEA 2023d; Parolin et al. 2021).[19]

Lessons for Future Crises

The pandemic recovery led economists and policymakers into uncharted territory and generated a host of lessons, two of which are discussed below.

Benefits of a Robust Fiscal Response

Some risks recognized early in the pandemic did not come to fruition. With full information about the future, policymakers may have allocated fiscal support differently. With the benefit of hindsight, there are three lessons from the fiscal response that can inform policy in future crises, and one conclusion that policymakers should be careful to avoid.

First, timing matters. When facing a crisis such as this one that abruptly shutters economic activity, the cost of delaying action can far outweigh the resources saved by fine-tuning fiscal policies to reach only the most affected households and businesses. Proactive development of policy infrastructure—such as automatic stabilizers via the tax system, unemployment insurance (UI), SNAP, or other benefits—minimizes the delays associated with targeting support in future recessions, shifting the policy calculus.

Second, the optimal policy choice depends on whether the primary goal is demand management or social insurance. Direct household relief,

[18] A CEA analysis finds the expanded CTC's expiration after 2021 is responsible for more than half of the observed child poverty increase (CEA 2023c).

[19] Another benefit over the period was increased health insurance coverage. See chapter 4 in this volume for more on the topic.

such as the Economic Impact Payments, can be an effective form of social insurance (Dynan 2022). It was impossible to predict which households would be hardest hit in a once-in-a-century global health event; widespread support prevented hardship for many affected households. An important secondary effect was strengthened balance sheets for remaining households, with impacts on consumer spending, growth, and inflation, as discussed in this chapter. In a pure demand shortfall, effective targeting is an important tenet of fiscal stimulus (Elmendorf and Furman 2008), but widespread household support is superior when the social insurance objective takes precedence.

Third, in a crisis with large and asymmetric downside risk, policymakers should err toward a stronger fiscal response than when risks are balanced. In January 2021, the Administration recognized inaction posed the greatest risk to the macroeconomy, with a potential consequence of prolonged economic distress. Past crises delivered hard-won lessons about the long-term harm caused by sustained elevated unemployment, including erosion in workers' skills and weakened productivity (CEA 2024a; Yellen 2016). There are risks to robust fiscal action—including rising prices—but a strong fiscal response can deliver durable growth, and the risk of underreacting to a large global shock is material.

Finally, the emergence of inflation does not negate the wisdom of a strong fiscal response. This chapter presents strong evidence that postpandemic inflation was the result of weakened supply in addition to strong demand, suggesting that some inflation was an inevitable consequence of the pandemic's reshaping of supply and demand forces. The fact that most advanced economies experienced substantial cumulative inflation despite employing different fiscal responses underscores this point. Additionally, the Federal Reserve is well positioned to respond to demand-driven inflation when it arises. Inflation harms businesses and families across the income distribution (Jaravel 2024), but the prospect of future inflation must be balanced against labor market pain amid a large, negative shock. Furthermore, the imperatives to act swiftly and deliver social insurance are amplified during periods of heightened uncertainty.

> *"Unfortunately, people often only pay attention to these [unemployment insurance reform] issues at the wrong time: in the middle of a recession, or a week before people are going to lose their extended benefits—or, even worse, a week after they have lost their extended benefits, as happened more than once in recent years."*
>
> – CEA Chairman Jason Furman, July 2016

The pandemic spotlighted the need for UI system reform. Millions losing their jobs in a matter of weeks pushed state UI systems to their brink technologically and administratively (National Academy of Social Insurance 2024). By January 2021, a web of temporary insurance programs had been created to extend benefits to those not eligible for regular UI like gig workers and the self-employed (PUA[20]), extend benefit duration (PEUC[21]), and provide a level of wage replacement (FPUC[22]) (Whittaker and Isaacs 2022).

The temporary programs made a substantial difference in the lives of workers during the crisis and proved essential as macroeconomic stabilizers. As shown in figure 1-35, total UI payments made up a substantial portion of national personal income (among all Americans, not just UI recipients). In this way, the pandemic-era UI programs facilitated not only smoothed consumption for unemployed workers but also stimulated economic activity given their magnitude (Gruber 1997; Ganong et al. 2024). As figure 1-36 shows, expanding eligibility (PUA) and duration (PEUC) supported millions, but these temporary programs would require reauthorization during a future crisis.

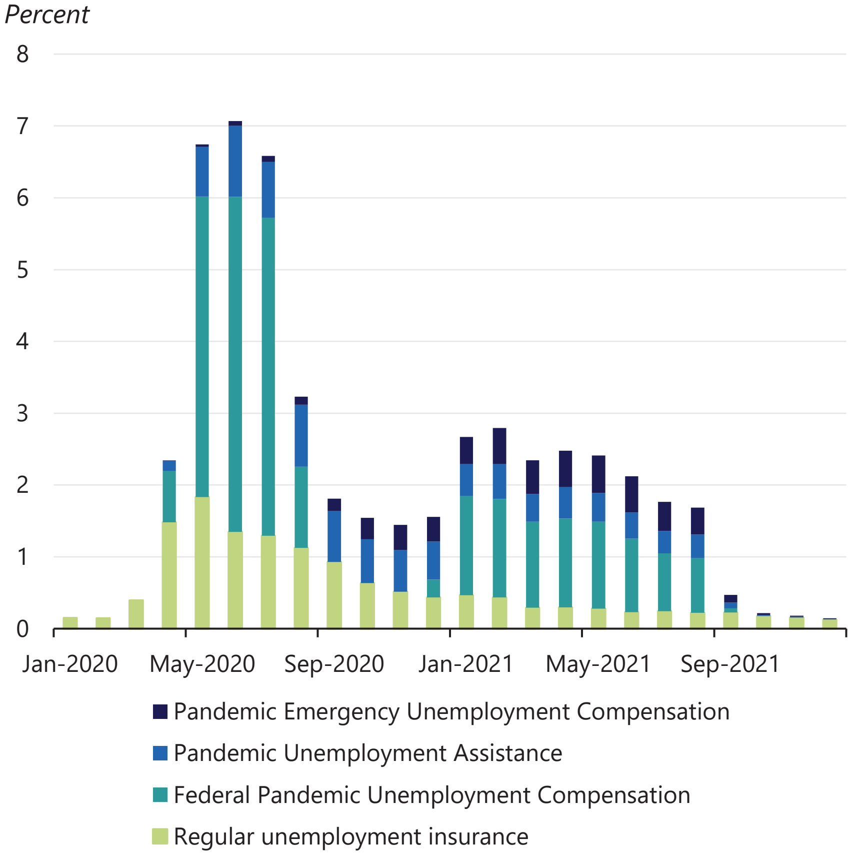
What were some of the labor market effects of more generous UI? Given job opportunities quickly rebounded, the insurance programs may

[20] For individuals not covered by regular UI but meeting criteria like being a gig worker or independent contractor, Pandemic Unemployment Assistance (PUA) was available for up to 75 weeks. The PUA benefit amount was based on state UI calculations. Individuals who had exhausted regular UI benefits, Pandemic Emergency Unemployment Compensation (PEUC), and Extended Benefits were eligible for PUA if unemployment was due to certain PUA-covered circumstances.

[21] For individuals eligible for regular UI benefits but who had exhausted the benefits, PEUC provided an extension of regular UI benefits for up to 49 weeks. If PEUC was exhausted, individuals could apply for Extended Benefits if the state's unemployment rate threshold was triggered.

[22] For regular UI, PEUC, or PUA claimants, the Federal Pandemic Unemployment Compensation (FPUC) provided a weekly supplement benefit. ARP reauthorization of FPUC allowed the supplement to be available until the week ending September 6, 2021. The initial FPUC supplement was authorized by the CARES Act at $600 per week; subsequent authorizations were $300 per week.

Figure 1-35. Total Unemployment Insurance Contributions to Personal Income



Council of Economic Advisers
Sources: Bureau of Economic Analysis; CEA calculations.
Note: Regular unemployment insurance includes state and federal programs.
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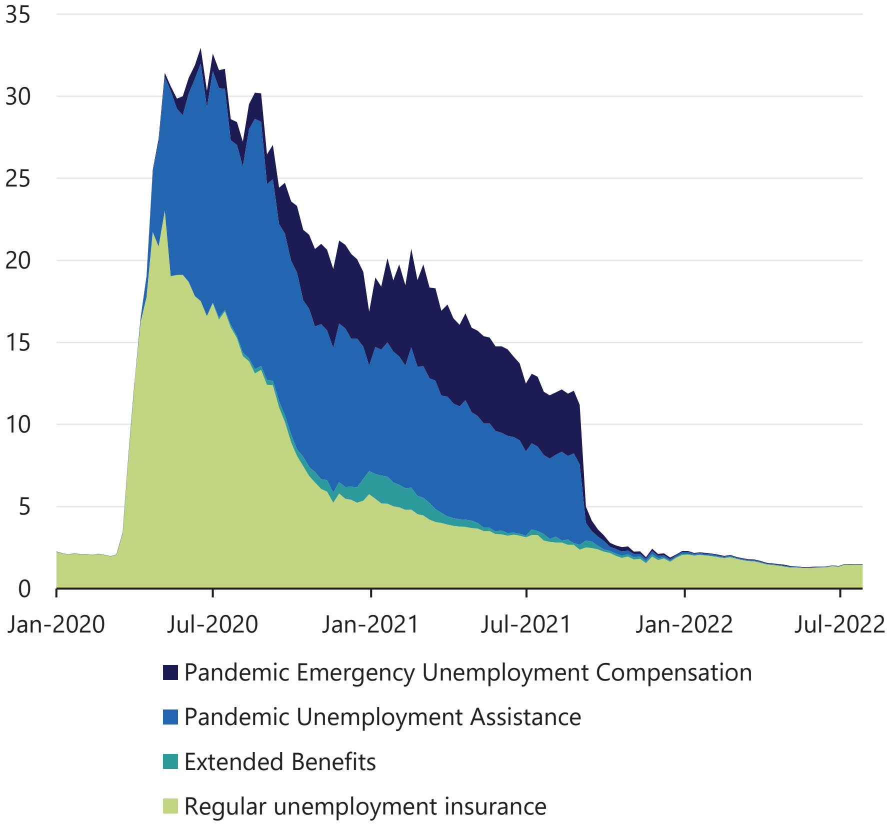
have facilitated better job matches due to increasing reservation wages, particularly at the bottom of the wage distribution (Kim, Cotti, and Orazem 2024). Additionally, there is little evidence that the more generous benefits substantially disincentivized workers during the pandemic (Ganong et al. 2022; Dube 2021; Altonji et al. 2020). In states that ended pandemic-era UI programs prior to their slated expiration, job gains were small in magnitude compared with states that maintained programs until expiration (Coombs et al. 2022).

The pandemic's economic damage arrived against the backdrop of long running calls for UI reform, and while satisfaction with pandemic UI programs was high, problems were apparent (Boushey and Eizenga 2011;

Figure 1-36. Unemployment Insurance Continuing Claims by Program

Claims, millions



Council of Economic Advisers
Sources: Department of Labor; CEA calculations.
Note: Data are not seasonally adjusted.
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West et al. 2016; von Wachter 2016; DOL 2024). Due to antiquated technology, under-resourcing, and the need to rapidly distribute benefits to millions of workers, pandemic UI programs became a target for fraudsters, including organized criminal operations. The Government Accountability Office estimates that 11–15 percent of total unemployment benefits paid between April 2020 and May 2023 were fraudulent, amounting to $100 billion–$135 billion in fraud (GAO 2023). The Department of Labor continues to work to reduce future fraud risks by various means, including modernizing states' IT infrastructure. Navarrete (2024) finds that in states with technologically antiqued UI systems, consumption recovered more slowly than in states with modern systems.[23]

To better prepare for the next economic crisis, the UI system in the United States must be broad, agile, and durable to stress, allowing it to be an effective automatic stabilizer (National Academy of Social Insurance 2024; Spadafora 2023; Ganong et al. 2022).

The Forecast for the Years Ahead

The Administration finalized the latest version of its official economic forecast on November 7, 2024. The forecast provides the Administration's projections of key economic variables for 2024 and over the next 11 years, from 2025 to 2035 (table 1-3). Because more data have become available since this forecast was finalized, the official forecast discussed in this chapter may differ from later estimates.

All economic forecasts are subject to considerable uncertainty affecting the range of potential outcomes. As this forecast was finalized, prominent sources of uncertainty included the economic effects of the transition to a new administration and geopolitical tensions and their spillover effects on global trade and finance.

Based on the partial data available when this forecast was finalized, it appeared that real GDP was on track to grow 2.4 percent during the four quarters of 2024 and the fourth-quarter unemployment rate appeared likely to be 4.1 percent. (Official estimates of these rates will be released soon after the publication of this *Report*.) During the four quarters of the first full forecast year, 2025, real GDP growth is expected to edge down to 2.1 percent, the unemployment rate falls to 3.8 percent by yearend, inflation continues to recede, and nominal interest rates gradually decrease from their elevated levels in recent years. During the next ten years (2026-2035), the Administration expects that real output will grow in the 2.0 to 2.2 percent range, the unemployment rate remains flat at 3.8 percent, the various measures of inflation remain at levels consistent with the Federal Reserve's target, and nominal interest rates on U.S. Treasury notes flatten out at 2.9 percent on the short end and 3.8 percent on the long end.

The Administration expects real GDP growth in 2025 to be slightly slower than that of 2023 and 2024, a forecast roughly aligned with the consensus of private professional forecasters. Positive but declining growth rates are expected in both consumer spending and fixed investment, the major components of demand.

The Administration's expectations for real GDP growth during the 11-year projection interval reflect the sum of several layers: the continuation

[23] Use of the COBOL programming language is deployed as a proxy for lack of UI modernization.

Table 1-3. Economic Projections, 2024–35

	Percent Change (Q4-to-Q4)			*Level (percent)*			
		Inflation Measures		*Unemployment Rate*		*Interest Rates*	
Year	*Real GDP*	*GDP Price Index*	*CPI*	*Annual*	*Q4*	*3-Month T-bills*	*10-Year T-notes*
Actual							
2022	1.3	6.5	7.1	3.6	3.6	2.0	3.0
2023	3.2	2.6	3.2	3.6	3.8	5.1	4.0
Forecast							
2024	2.4	2.4	2.6	4.0	4.1	5.1	4.2
2025	2.1	2.2	2.3	3.9	3.8	3.7	4.1
2026	2.1	2.1	2.3	3.8	3.8	3.0	4.0
2027	2.0	2.1	2.3	3.8	3.8	2.9	3.9
2028	2.0	2.1	2.3	3.8	3.8	2.9	3.8
2029	2.0	2.1	2.3	3.8	3.8	2.9	3.8
2030	2.2	2.1	2.3	3.8	3.8	2.9	3.8
2031	2.2	2.1	2.3	3.8	3.8	2.9	3.8
2032	2.2	2.1	2.3	3.8	3.8	2.9	3.8
2033	2.2	2.1	2.3	3.8	3.8	2.9	3.8
2034	2.2	2.1	2.3	3.8	3.8	2.9	3.8
2035	2.2	2.1	2.3	3.8	3.8	2.9	3.8

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Sources: Bureau of Economic Analysis; Bureau of Labor Statistics; Department of the Treasury; Office of Management and Budget; CEA calculations.

Note: The forecast is based on data available as of November 7, 2024. The interest rate on 3-month (91-day) Treasury Bills is measured on a secondary-market discount basis.

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of a basic estimate of potential GDP growth, the aging of the baby boom cohort into retirement, a boost from the Administration's growth-promoting agenda, and some lingering adverse consequences of pandemic-era disruptions to education.

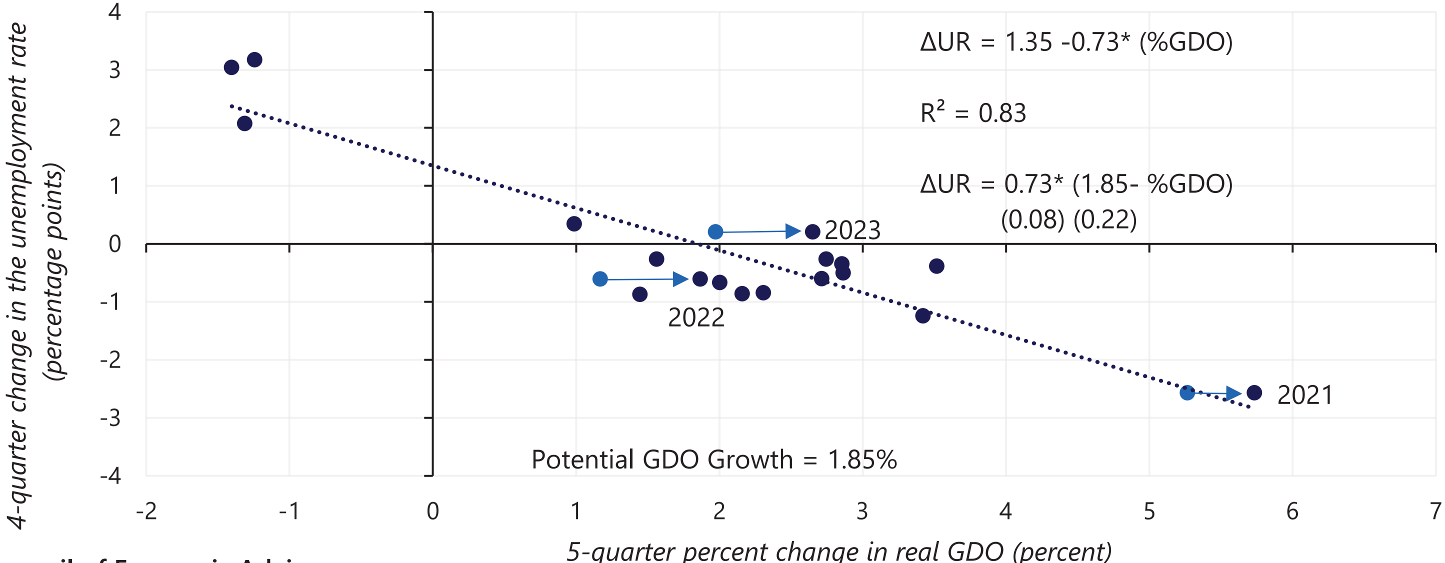
As with past administration forecasts, the growth-promoting parts of Administration's policies—on infrastructure, care, human capital, and immigration reform—are again included in this forecast. Partially offsetting the expected contributions to growth from the Administration's policies, labor force participation will likely decline substantially further during the next few years as the baby boom cohort continues to retire. In contrast, during the budget window's final five years beginning in 2031, this downward pull on the participation rate decreases. Because of the boost from the Administration's policies, together with the diminishing downward demographic pull, potential GDP growth is expected to be stronger during the last six years of the forecast interval (2030–2035) than during the first five years (2025–2029).

The CEA's methodology relies on Okun's Law to estimate potential real GDP growth during the past roughly two decades, as shown in figure 1-37, which illustrates the relationship between the change in the unemployment rate and the growth rate of real output.[24] The rate of real potential output growth is estimated as the rate of real output (the average of real GDP and GDI) growth consistent with a stable unemployment rate—represented as the location where the regression line crosses the x-axis, at 1.85 percent. The 1.85 percent estimate represents the average rate of potential output growth during the estimation interval, but it does not imply that the potential output growth rate was constant. Rather, potential output growth varied over the historical interval and likely will vary over the forecast interval in response to demographic and other factors.

The CEA's methodology results in a higher estimate of potential GDP growth than was produced by the same exercise one year ago because of the notable upward revision to real output growth from the Bureau of Economic Analysis's annual revision in September 2024. In that revision, output growth (measured as the average of real GDP and real GDI) was revised up by roughly 0.7 percentage point per year during the three years from 2021 through 2023. As shown in figure 1-37, the three datapoints for 2021, 2022, and 2023 moved rightward, causing the x-intercept (i.e., the estimate of potential real GDP growth) to move rightward, as well.

[24] Former CEA Chairman Arthur Okun proposed what came to be known as Okun's Law in 1962 (Okun 1962). When GDP grows faster than its potential rate, the unemployment rate falls, and when real output grows more slowly than its potential rate, the unemployment rate rises. In its simple first-difference specification, Okun's Law takes the form $\Delta UR = \beta(y^* - y)$, where ΔUR is the change in the unemployment rate, and y^* and y are the rates of potential real GDP growth and actual real GDP growth, respectively. β and y^* are estimated coefficients, where β should be between zero and one, and y^* is the estimated rate of potential real GDP growth.

Figure 1-37. Estimation of Potential Output Growth by Okun's Law, 2006–2023, Impact of NIPA Revisions



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Sources: Bureau of Labor Statistics; Bureau of Economic Analysis; CEA calculations.

Note: Arrows show the principle effect of the September 2024 NIPA revisions. GDO is the average of GDP and GDI. The x-axis plots five-quarter average growth of GDO through Q4 of each year, with Q4 of year *t* and Q4 of year *t-1* each receiving 1/8 weights while Q1, Q2, and Q3 receive 1/4 weights. Standard errors are in parentheses.

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The forecast jumps off from a 4.1 percent unemployment rate in October 2024, which is slightly higher than the Administration's estimate of the 3.8 percent rate consistent with stable inflation. As a result, with real output forecasted to grow 2.1 percent during the four quarters of 2025, slightly faster than the potential GDP growth rate, the unemployment rate edges down to 3.8 percent by the end of the year without an increase in inflation. In comparison, the Blue Chip consensus panel expects a slightly lower real GDP growth rate of 1.9 percent. Many other forces will be at work during 2025. In this particular forecast, a glide path of fiscal consolidation is assumed and the legacy of tight monetary policy still restrains the growth rate of investment and consumer spending. After the unemployment rate falls by the end of 2025 to 3.8 percent, the rate consistent with stable inflation, it is expected to remain there for the rest of the forecast interval, consistent with GDP growing at its potential growth rate.

After falling dramatically from 7.1 percent in 2022 to 3.2 percent in 2023 (Q4 to Q4 changes), CPI inflation appears on track to fall further to 2.6 percent during the four quarters of 2024. The Administration expects CPI inflation to fall slightly further during 2025 to 2.3 percent, a rate that is consistent with the Federal Reserve's 2.0 percent target for the PCE Price Index. CPI inflation tends to run higher than PCE inflation; over the 45 years through 2023, CPI inflation exceeded PCE inflation by 0.3 percentage point.[25] The price index for GDP—a measure of inflation for everything produced in the United States—is expected to fall from a forecasted 2.4 percent during 2024 to 2.2 percent during 2025.

In response to an increase in inflation, the FOMC raised the federal funds rate in 2022 and 2023, then let it plateau at roughly 5.3 percent for more than a year. Following evidence of a decline in inflation, the FOMC took the first step down from that plateau in September 2024 and another step in November. The three-month Treasury bill (T-bill) rate also fell around the same time. Looking ahead, as inflation settles near the FOMC's target, further declines in T-bill rates are expected by private professional forecasters, the FOMC, and the Administration, with the caveat that the FOMC's future rate cuts will be data dependent. After adjusting for 2 percent expected PCE inflation, the real rate on three-month T-bills is expected to be about 0.9 percent.

With respect to the long end of interest rate forecasts, the Administration expects the yield on 10-year Treasury notes to edge down slightly from an expected 4.2 percent average during 2024 to 3.8 percent by 2028 and then remain there for the rest of the 11-year forecast interval. In principle, the current 10-year yield should be the expected average yield on the three-month T-bill during the next 10 years, plus a term premium. From this perspective,

[25] This calculation uses the retroactive series from the BLS: R-CPI-U-RS.

the 10-year yield during the last eight years of the forecast implies a real yield of 0.9 percent, a 2.0 percent rate of PCE inflation, and a 0.9 percentage point term premium. The Blue Chip consensus forecasts a similar 10-year yield of 3.7 percent.

The Long-term Outlook for Real GDP Growth

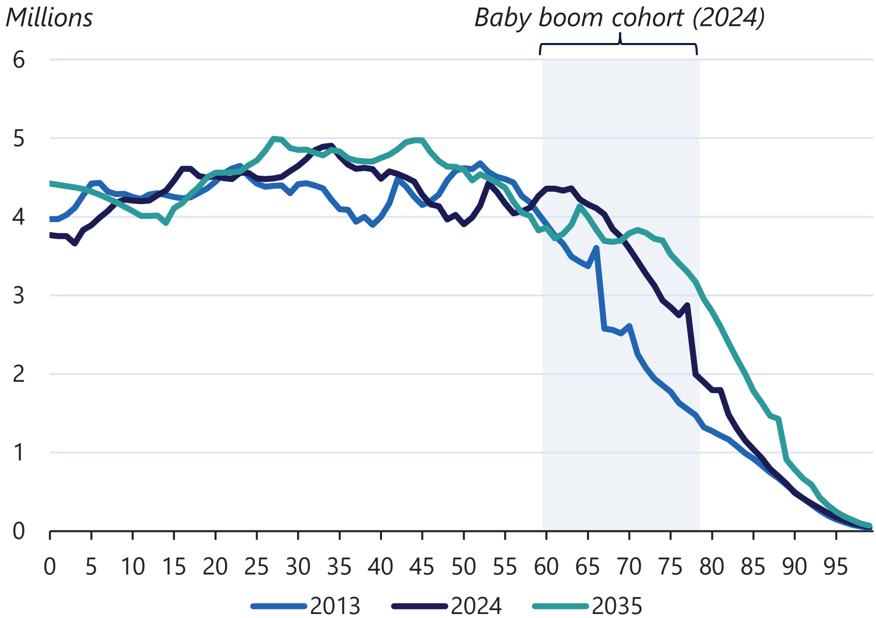
After some upward adjustments in the near term, the Administration's long-term forecast for real GDP growth is unchanged from the forecast presented one year earlier and the one presented with the mid-session review of the FY 2024 Budget. The current forecast exceeds the Blue Chip consensus forecast by an average of 0.2 percentage point a year during the 11 years between 2024 and 2035. As in previous Administration forecasts, the outlook assumes that the Administration's proposed economic policies—including a range of programs to enhance human capital formation, provide childcare, and reform immigration policy—will be enacted, modestly boosting the average annual rate of potential real GDP growth during the 11-year forecast interval.

Not all the adjustments to potential GDP growth are positive. In particular, students who endured pandemic-era restrictions may not have acquired human capital at the same pace as the pre-pandemic generations. Kane et al. (2022) estimate that the loss of human capital acquisition during the pandemic lowers the present value of lifetime earnings by 1.6 percent. That loss would not only affect those workers' earnings but also aggregate output. Incorporating human capital loss into the Administration's forecast in this iteration partially offsets upwardly revised estimates to potential real GDP growth due to the data revisions discussed earlier. The adverse consequences of the pandemic on education are discussed further in Chapter 7 of this *Report*.

Demographics—specifically, the shape of the age-population profile of the U.S. population shown in figure 1-38—continue to influence output growth. The baby boom cohort, those born between 1946 and 1964, were between 60 and 78 years of age in 2024, indicated by the shading in the figure and reflected in a bulge in the age-population profile. Over the span of the forecast interval, the cohort members will almost all retire, and the bulge in the population profile will lie completely among the retirement ages.

As the baby boom cohort retires, it will exert a downward force on the labor force participation rate and on the growth rate of potential output throughout the 11-year forecast. The effect, however, is more negative in the first five years of the forecast than during the last five years. Since 2016, retirements have subtracted about 0.4 percentage point per year from the growth rate of the participation rate and potential GDP, and a similar subtraction is likely to continue through about 2029, although to a reduced

Figure 1-38: The Evolution of the U.S. Population's Age Composition



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Sources: Social Security Administration; CEA calculations.

Note: Baby boom cohort is defined as individuals born from 1946 through 1964.

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degree in later years, when the youngest baby boom cohort members (those born in 1964) reach 65 years of age. After that, the pace of retirements will decrease because the bulk of the baby boom cohort will have been already retired. For the last five years of the forecast, projected retirements will subtract 0.2 percentage point from potential GDP growth.

Table 1-4 reports a standard supply-side decomposition of potential output growth into the sum of labor inputs—population, labor force participation rate, employment rate, and workweek—plus productivity in the nonfarm business sector and the difference in output per worker between the nonfarm business sector and the economy as a whole. The civilian, noninstitutional population age 16 years and above is expected to grow by an average annual rate of 0.6 percent from 2024 to 2035, the same pace as from 2019:Q4 to 2024:Q3 but below the average 1.0 percent annual growth

Table 1-4. Supply-side Components of Actual and Potential Real Output Growth, 1953–2035

		Growth rate (percentage points)					
		1953:Q2 to 2019:Q4	*1990:Q3 to 2001:Q1*	*2001:Q1 to 2007:Q4*	*2007:Q4 to 2019:Q4*	*2019:Q4 to 2024:Q3*	*2024:Q3 to 2034:Q4*
		(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1	Civilian noninstitutional population age 16+	1.4	1.2	1.1	1.0	0.6	0.6
2	Labor force participation rate	0.1	0.1	–0.3	–0.3	–0.2	–0.1
3	Employed share of the labor force	0.0	0.1	0.1	0.1	–0.1	0.0
4	Average weekly hours (nonfarm business)	–0.2	0.0	–0.3	–0.1	–0.3	–0.1
5	Output per hour (productivity, nonfarm business)	2.1	2.4	2.4	1.6	1.8	1.7
6	Output per worker differential: GDO vs. nonfarm*	–0.3	–0.3	–0.5	–0.4	0.5	–0.1
7	Sum: Actual real GDO**	3.0	3.5	2.4	1.8	2.3	2.1

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Sources: Bureau of Labor Statistics; Bureau of Economic Analysis; Department of the Treasury; Office of Management and Budget; CEA calculations.

*The output-per-worker differential (row 6) is the difference between output-per-worker growth in the economy as a whole (GDO divided by household employment), and output-per-worker growth in the nonfarm business sector.

**Real GDO and real nonfarm business output are measured as the average of income- and product-side measures.

Note: All contributions are in percentage points at an annual rate. The forecast jumps off from data available on November 7, 2024. Total may not add up due to rounding. 1953:Q2, 1990:Q3, 2001:Q1, 2007:Q4, and 2019:Q4 are all quarterly business-cycle peaks. GDO is the average of GDP and GDI. Population, labor force, and household employment have been adjusted for discontinuities in the population series.

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rate from 2007 to 2019.[26] Following analysis by the CBO, and more recent data from the Office of Homeland Security Statistics, the CEA suspects that these official data from the Census Bureau have missed some immigration recently, an artifact that affects the output per worker differential (table 1-4, row 6). Looking ahead, much of this expected 0.6 percent per year growth in the working-age population is likely to result from immigration.[27]

The demographic factors weighing on the labor force participation rate's continued decline are expected to be largely offset over the projection period by the Administration's human capital and childcare policy proposals, and thus the participation rate is projected to decline only 0.1 percent annually during the forecast (row 2).

The employed share of the labor force—equal to one minus the unemployment rate—is projected to remain close to its current level and therefore makes no net contribution over the forecast horizon (row 3). The workweek is projected to shorten at about the same rate it did during the period of 2007:Q4 to 2019:Q4 (row 4). In sum, labor input growth contributes about 0.4 percentage point to potential output growth over the projection, 0.3 percentage point slower than from 2007:Q4 to 2019:Q4.

Productivity growth (measured as output per hour in the nonfarm business sector) is projected to grow at an average of 1.7 percent a year over the 11-year forecast interval, about the same rate as its average growth since the business-cycle peak in 2007 (row 5). From 2019:Q4 to 2024:Q3, output-per-worker growth in the overall economy is estimated to have been boosted by 0.5 percentage point per year above output-per-worker growth in the nonfarm business sector, in contrast to the typically negative contribution of this output-per-worker differential (row 6).[28] The odd behavior is entirely accounted for by the faster growth of nonfarm employment relative to household employment, two series that usually grow at the same rate (0.7 percentage point per year during 2019–2024 compared with no differential over the long run), likely due to an underestimation of immigration by the

[26] The civilian, noninstitutional population excludes individuals who are incarcerated or living in mental health facilities or homes for seniors, or who are on active duty in the Armed Forces. Projected growth rates are sourced from demographers at the Social Security Administration. Because many components of these growth rates are erratic in the short run, table 1-4 documents historical growth rates for long intervals from business-cycle peak to business-cycle peak. The exception is column 5, the interval between the last business-cycle peak in 2019:Q4 through 2024:Q3 (the last available quarter when this forecast was finalized).

[27] The Administration's population forecast in based on the forecast from the Office of the Social Security Actuary at the Social Security Administration (2024).

[28] Due to the lack of a high-quality measure of the workweek in government, households, and agriculture, productivity for the economy as a whole is measured as output per worker rather than output per hour. The output-per-worker differential, or the difference between output per worker in the nonfarm business sector and that in the aggregate economy, is typically negative largely as a consequence of the national income accounting convention that productivity does not grow in the government or household sectors. It can also be influenced by differences in measurement.

Census Bureau.[29] The Administration assumes that this undercount of the immigration flow diminishes during the projection interval, and the productivity differential returns to a small negative contribution to real output growth.

Outlook Summary

The Administration's real GDP forecast represents the sum of three primary layers: (i) a baseline projection, developed through an Okun's Law analysis; (ii) an adjustment to incorporate the expected demographic outlook, particularly for the retirement of the baby boom cohort; and (iii) an increase in potential GDP growth to reflect the effects of the Administration's pro-growth policies net of the damage to human capital accumulation during the pandemic. Adding all three components together results in a projection of 2.2 percent real GDP growth per year during the budget window's final five years.

[29] This misestimation was first observed by the CBO (2024) in their annual demographic report.

Chapter 2

How Remote Work is Reshaping the Economy

Remote work has transformed the day-to-day experience of tens of millions of Americans. Instead of commuting to an office five days a week, many American workers now do their job from home at least some of the time.

In some cases, fully remote jobs remove the need to live near one's employer and dramatically change how workers interact with each other. In other cases, partially remote jobs provide a mixture of traditional and remote workplace experiences. This matters for wellbeing and wages, access to jobs, and where workers decide to reside. Labor and housing markets operate differently in a world where either type of remote work is common, with downstream effects for governments, downtowns, and the U.S. economy.

In spring 2020, the surge in remote work was inextricably linked to the COVID-19 pandemic. It was unclear at the time whether remote work would persist at levels much higher than those in the pre-pandemic period, and it was difficult to disentangle its labor market footprint from that of the pandemic itself. But as the pandemic subsided and remote work, also known as telework, remained, it became possible to learn more about the phenomenon and its effects.

As of late 2024, remote work appeared to be a key labor market experience of at least 20 percent of the American workforce, roughly half of whom were fully remote and half of whom were partially remote (i.e., hybrid). For context, this share is roughly double that of workers represented by unions and about the same share of the workforce with an occupational license, two groups deservedly receiving considerable research focus.

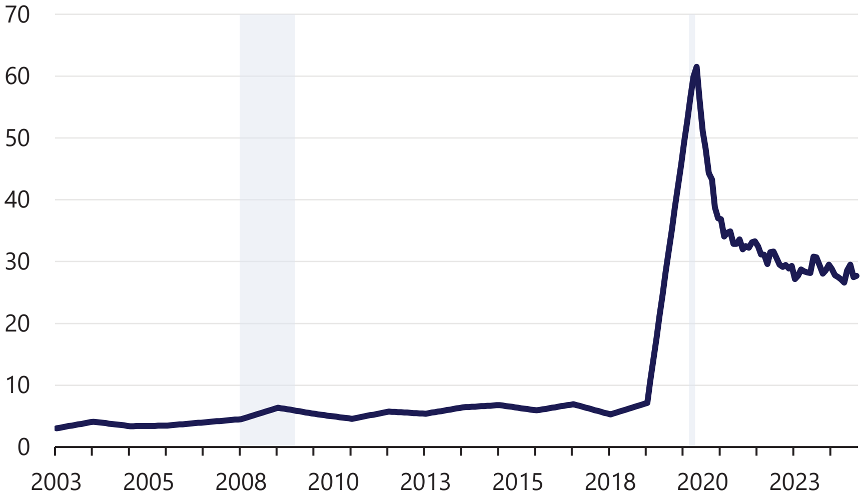
For many Americans, remote work has improved the working experience and added valuable labor market options. Employers who offer remote work can draw on expanded talent pools—including workers needing flexible work arrangements as well as workers across the country—when filling open positions. However, in many instances remote work remains technically infeasible or inordinately costly for businesses to implement. Emerging research also points to costs of remote work in the form of reduced collaboration: less-experienced workers are especially likely to miss out on valuable feedback and mentoring. Because these benefits and costs vary widely across workers and firms, experimentation by employers will generate valuable information and help achieve better outcomes.

A striking fact about remote workers is just how likely they are to possess other labor market advantages. On average, they have more education and higher incomes than non-remote workers. Remote work—like other non-wage benefits—therefore tends to be part of a larger pattern of labor market inequality. For example, Black and Hispanic workers are less likely to work remotely than Asian and white workers.

Like other large, abrupt economic changes, the shift to remote work can also be disruptive. Long-established patterns of economic activity, particularly in housing markets, stand to be altered by remote work. Exploiting the opportunities and minimizing the costs of remote work is a joint challenge for workers, businesses, and policymakers.

This chapter examines who currently works remotely. It then provides an economic framework for thinking about remote work's labor market implications. Building on recent research, the chapter provides analysis of remote work's implications for wages and job access. The analysis is especially focused on job search and matching, but also on geographic sorting—all key aspects of labor market function likely to be reshaped by remote work. The chapter concludes with a discussion of the big picture and relevant remote work issues for policymakers.

Figure 2-1. Share of Paid Workdays That Are Remote



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Sources: Barrero, Bloom, and Davis (2021a); CEA calculations.

Note: Remote work share is defined as the share of full paid days worked from home. Pre-2020 estimates are derived from the American Time Use Survey. Estimates beginning in May 2020 are from the Survey of Working Arrangements and Attitudes. Gray bars indicate recessions.

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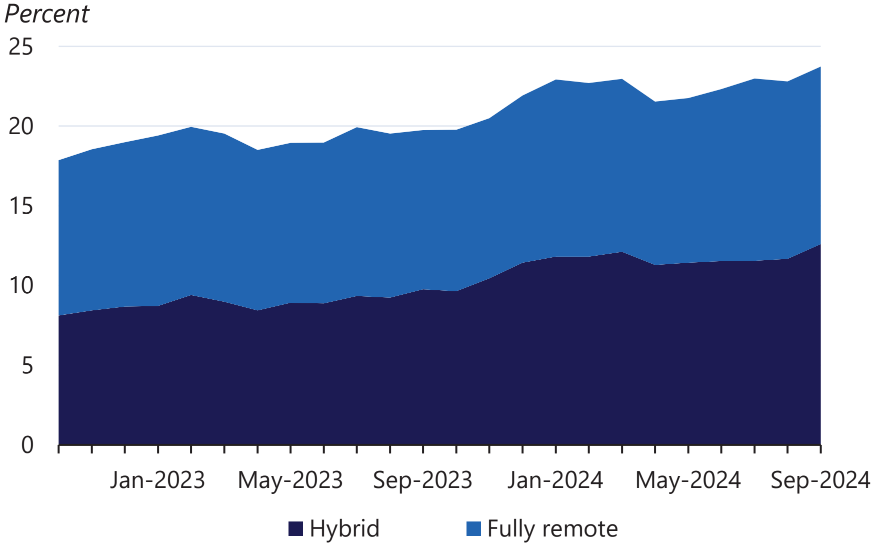
The Rise of Remote Work

Remote work is not new, but it has quickly made the leap from marginal labor market phenomenon to common practice. Figure 2-1 shows the share of paid workdays that are remote, based on the Survey of Working Arrangement and Attitudes (SWAA) for recent years and American Time Use Survey (ATUS) for earlier years (Barrero, Bloom, and Davis 2021a). The share rose dramatically from 7.2 percent in 2019 (in the ATUS) to 27.7 percent (SWAA) in September 2024. The two data sources are related but distinct, which complicates the pre- and post-pandemic comparison. Nevertheless, remote work is clearly much more common than previously.

Since October 2022, the Bureau of Labor Statistics Current Population Survey (CPS) has estimated the share of workers (by contrast to workdays) who are remote at least part of the time. Figure 2-2 shows the estimates, broken out for hybrid (remote for some but not all work hours) and fully remote workers.[1] Like the SWAA, the CPS also indicates a substantial degree of remote work in the contemporary labor market: 12.6 percent of

[1] Workers are considered fully remote only if 100 percent of total hours worked were reported as such.

Figure 2-2. Share of Workers Who Work Remotely



Council of Economic Advisers
Sources: Bureau of Labor Statistics; CEA calculations.
Note: Respondents are considered fully remote if they report 100 percent of their total hours worked were remote. Estimates are from published BLS tables.
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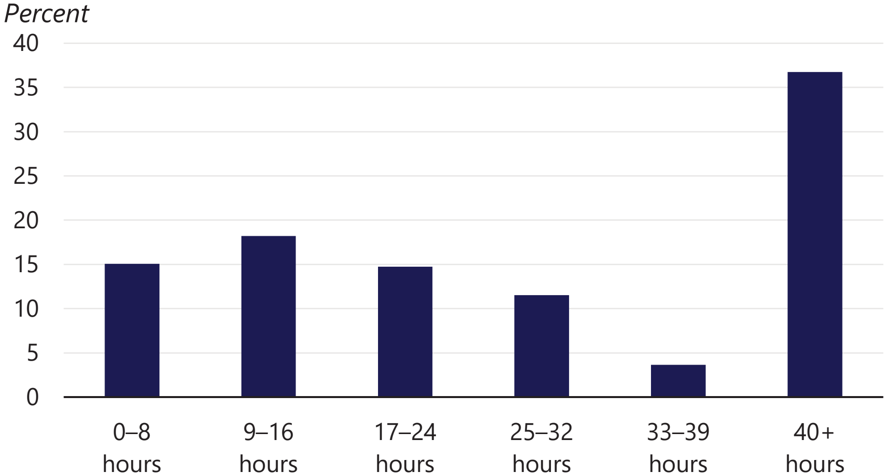
workers, or 19.8 million, were on hybrid schedules in September 2024, and 11.1 percent (17.5 million) were fully remote.[2] However, CPS estimates of the share of hours worked (16.4 percent in September 2024) are lower than in the SWAA. Like the SWAA, the ATUS shows a higher rate of remote work than the CPS. It is not clear what accounts for these differences, but they are important to keep in mind when interpreting CPS-derived estimates in Figure 2-2 and elsewhere.

Among remote workers, hours worked remotely varies considerably. Figure 2-3 shows the distribution of remote hours, inclusive of both hybrid and fully remote workers. More than one third of the group (36.8 percent) reported working 40 remote hours a week or more, and 15.1 percent reported working eight remote hours a week or fewer.

Regardless of the data source and how remote work is measured, it is clear that the phenomenon has become more common than it was five years ago. But will this shift prove durable? Immediately following pandemic closures, it was unclear whether and to what extent the rise in remote

[2] A change in the preamble of the relevant CPS survey question was made in December 2023 (Barrero et al. 2024). Before the change, the preamble read: "I now have some questions related to how the COVID-19 pandemic affected where people work." It now reads: "I now have a few questions related to where people work." The change may have affected who answers in the affirmative to the remote work question.

Figure 2-3. Distribution of Hours Worked Remotely



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Sources: Bureau of Labor Statistics; CEA calculations.

Note: Sample consists of workers who report at least some remote hours. Estimates are for October 2023 through September 2024. Estimates are from published BLS tables.

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work would be temporary. Much of the increase during 2020 and 2021 was impelled by public health concerns associated with the pandemic. And some of the increase did prove temporary, as many workers were called back to the office when the pandemic abated.

However, the share of workers reporting some amount of remote work has stabilized in recent years and even increased. From September 2023 to September 2024, the share reported in the SWAA rose from 19.8 percent to 23.7 percent. Similarly, the share of paid workdays conducted remotely held roughly steady, at just under 30 percent, during 2024. In the same survey, respondents are asked how many days their employers intend for them to work remotely each week after the pandemic. When first asked in mid-2020, just above 1 day per week was expected. That expectation rose to a peak of 1.6 in mid-2022, subsequently falling slightly to 1.5 days in September 2024 (Barrero, Bloom, and Davis 2021a).

Job openings data can also shed light on whether remote work is here to stay. While the information can be murky—given that not every hybrid or remote job advertises itself as such, and the tendency to mention remote work in job postings may change over time—examining recent trends is useful. Prior to the pandemic, only about 3 percent of U.S. job postings stated that new employees could work remotely one or more days a week.

By 2024, the share had risen to between 8 and 10 percent, depending on the data source (Hansen et al. 2023; Indeed n.d.).[3]

As time has passed since the widespread distribution of COVID-19 vaccines and relaxation of pandemic measures, it appears less likely that the increase in remote work is a purely temporary phenomenon. Earlier in the pandemic, the Bureau of Labor Statistics (BLS) asked workers if they teleworked specifically because of COVID-19. By the time that question was discontinued after September 2022, the share of all workers who teleworked because of COVID-19 had already plummeted from 35.4 percent of employees in May 2020 to 5.2 percent.

The large-scale social and economic experiment prompted by the pandemic has generated durable improvements in teleworking technology and practices, as well as new information about remote work's efficacy and desirability. As pointed out by Davis (2024), the pandemic allowed employers to learn what would happen when large shares of workers collaborated virtually across entire industries, information that could not have been discovered by a single employer experimenting in isolation.[4] Employers responded to the new technology and information by making choices—often quite varied even for firms in the same industry employing similar workers—about how to structure their workplace (Hansen et al. 2023). Employers continue to experiment with remote work, and use of the practice could rise or fall based on their unique experiences, but it appears to be here to stay for many workers.[5]

Who Works Remotely?

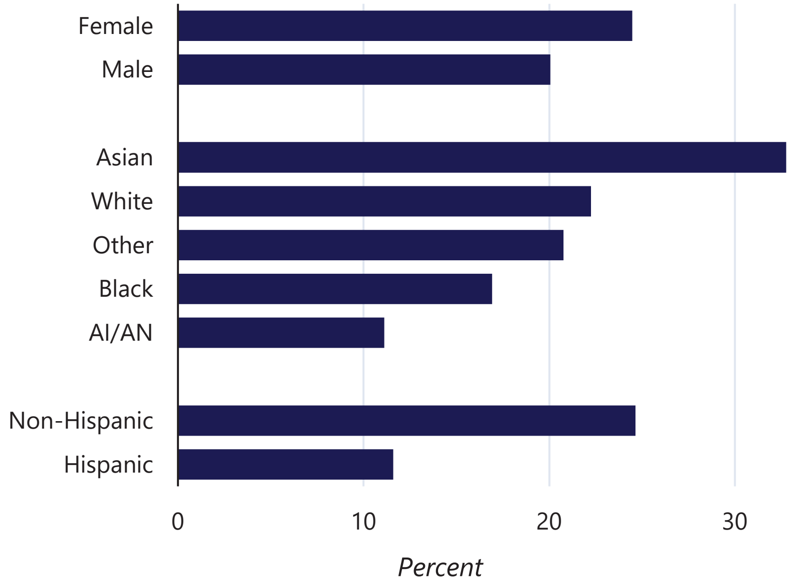
A bit more than one fifth of the workforce now works remotely at some point during their workweek. Because remote work data are integrated into the CPS—a rich worker survey used to calculate the monthly unemployment rate, among many other statistics—they present an opportunity to learn who is working remotely in the post-pandemic labor market. In the figures that follow, the CEA examines the more than one fifth of employed workers who

[3] As of late 2024, updated estimates from Hansen et al. (2023) are available at https://wfhmap.com/ and from Indeed (n.d.) at https://data.indeed.com/#/remote. One might conclude that the lower share of vacancies with remote options compared to the employed population indicates that remote jobs' share of employment will decline. However, this is not necessarily the case, even if all remote vacancies are being accurately described as such in the data. For example, if the rate at which workers leave their jobs (thereby necessitating that vacancies be posted) is lower for remote than for non-remote jobs, this would tend to lower the remote share of vacancies.

[4] From the worker perspective and consistent with the same pattern of information-gathering, Chen et al. (2023) find that elevated exposure to remote work during the initial pandemic shock was positively correlated with intensity of worker preference for remote work later.

[5] Reviewing some of the same trends and studies discussed, other researchers have come to similar conclusions about the persistence of remote work (Metcalfe, Spinelli, and LaSalvia 2024; Abel et al. 2023; Adrjan et al. 2021).

Figure 2-4. Share of Workers Who Work Remotely, by Group



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.

Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work. AI/AN refers to American Indian and Alaska Native workers.

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reported teleworking in the prior week, pooled over the period from October 2023 to September 2024.[6]

Remote work is more common among women, Asian, and white workers than it is among men, Black, Hispanic, and American Indian and Alaska Native workers. Compared to 20.1 percent of men, 24.5 percent of women report working remotely. Among racial demographics, Asian workers have the highest share of remote work (32.8 percent), followed by white (22.2 percent), Black (16.9 percent), and American Indian and Alaska Native (11.1 percent) workers. And as demonstrated in figure 2-4, Hispanic workers (11.6 percent) have a lower share of remote work than non-Hispanic workers (24.6 percent).[7] Restricting the sample to 25- to 54-year-olds, mothers (31.1 percent) and fathers (23.0 percent) of children five and under have slightly higher rates of remote work than do women and men without young children (28.4 percent and 21.4 percent, respectively).

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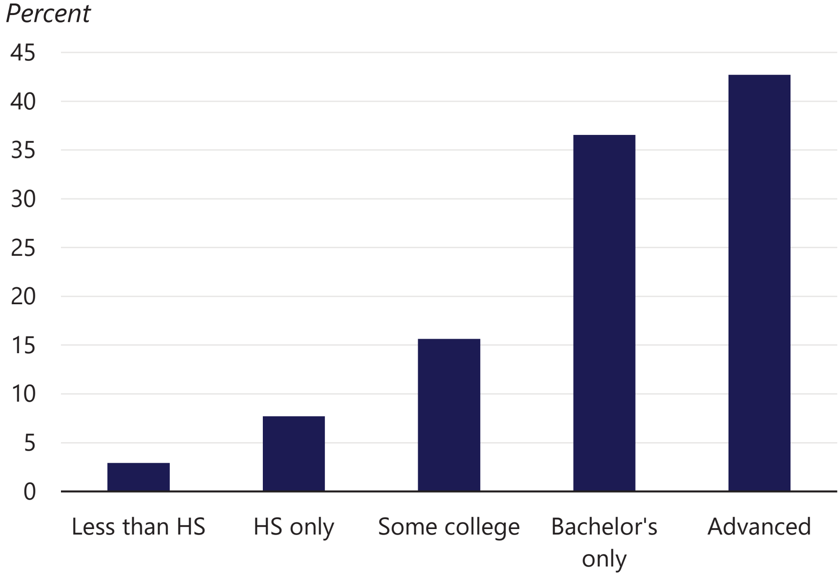
[6] Of the remote workers, the average hours of teleworking a week reported was 27. Roughly 45 percent reported teleworking more than 30 hours.

[7] Consistent with BLS practice, self-employed workers are included in our calculations here and in other CPS-derived figures.

Figure 2-5. Share of Workers Who Work Remotely, by Education



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.

Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work.

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Remote work also varies considerably by educational attainment. Figure 2-5 shows that those with at least a four-year degree are more likely to work at least partially remotely than are workers with a high school degree or less. Remote work is reported by 36.5 percent of workers with a four-year degree—and even higher, at 42.7 percent, by those with an advanced degree—as compared to only 7.7 percent by those with a high school degree only.

Part of the reason for the educational disparity is likely the relative difficulty of implementing remote collaboration in different industries. Remote work is distributed unequally by sector, with workers in industries like financial activities (53.1 percent), information (52.0 percent), and professional and business services (44.8 percent) more likely to work remotely at least sometimes than those in leisure and hospitality (8.0 percent), construction (8.8 percent), and transportation and utilities (10.6 percent), as shown in figure 2-6. Similarly, workers in occupations like management, business, and finance (43.5 percent), professional (32.1 percent), and office and administrative support (24.6 percent) are more likely to work remotely than their counterparts in transportation (1.9 percent), construction and extraction

Figure 2-6. Share of Workers Who Work Remotely, by Industry

Council of Economic Advisers

Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work.
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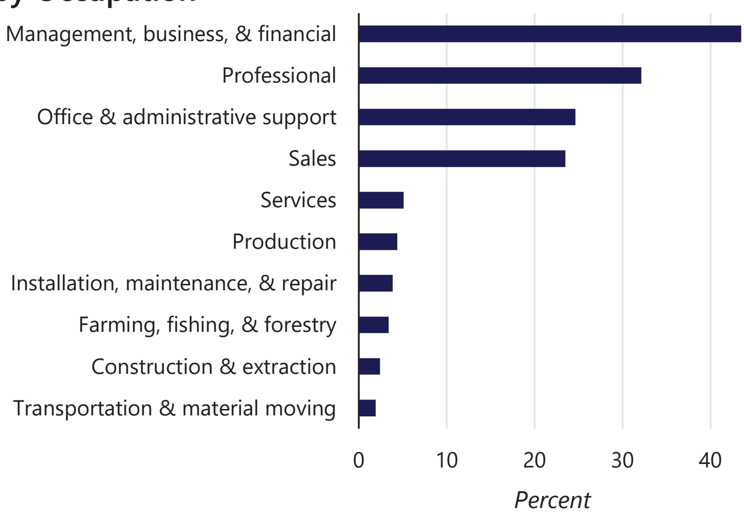
Figure 2-7. Share of Workers Who Work Remotely, by Occupation



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work.
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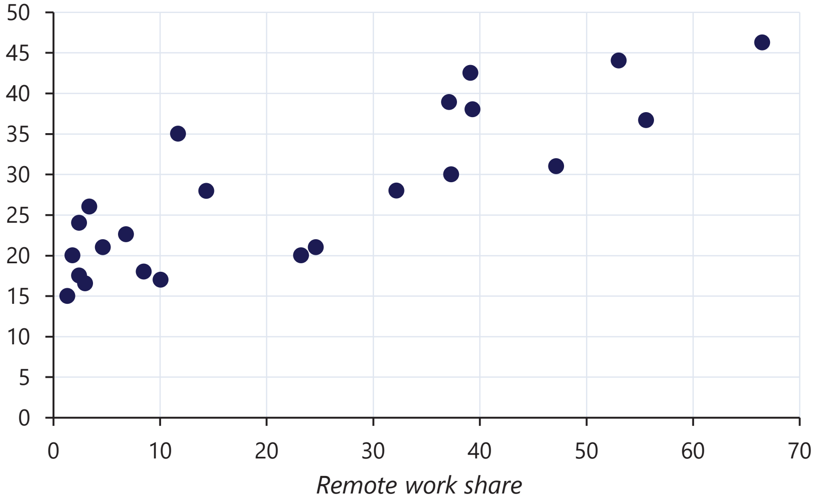
Figure 2-8. Median Hourly Wage by Occupation's Remote Work Share

Median wage (dollars per hour)



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work. Hourly wages are computed using the Economic Policy Institute definition and are not adjusted for inflation.
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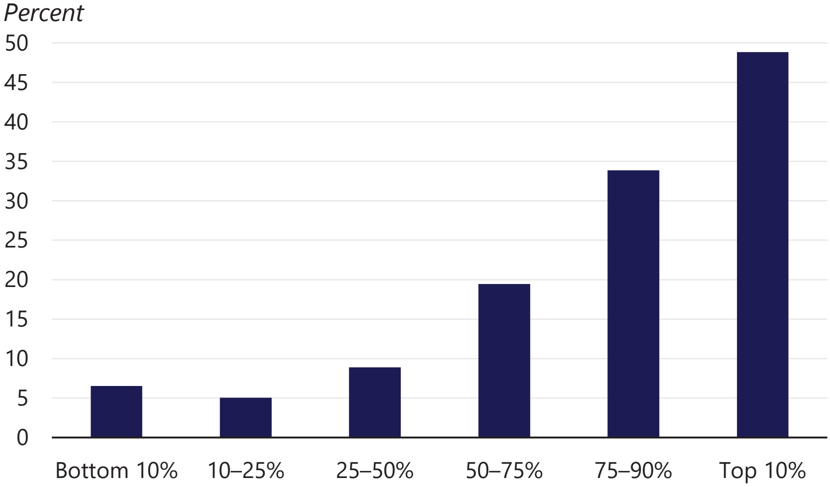
(2.4 percent), and farming, fishing, and forestry (3.4 percent), as shown in figure 2-7.

Differences in remote work share by occupation are closely related to median wages paid in that occupation. Each data point in figure 2-8 represents an occupation, with the percentage working remotely on the horizontal axis and the median hourly wage of all the occupation's workers on the vertical axis. A strong positive relationship is immediately apparent.

The remote work variation in wages across occupations is accompanied by large differences at the individual worker level. Figure 2-9 shows that the likelihood of remote work rises sharply with wages. Remote work is uncommon for low earners—at only 6.5 percent for the bottom hourly wage decile—but common among the highest earning workers, at just under half of those in the top decile.

Remote workers are not distributed uniformly across the country. Areas with the highest share of remote workers tend to be those with more highly educated workers and occupations suited to remote work. Much of the Northeast and West feature high rates of remote work, as shown in figure 2-10.

Figure 2-9. Share of Workers Who Work Remotely, by Wage



Council of Economic Advisers
Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work. Wage groups are based on hourly wages computed using the Economic Policy Institute definition.
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Considered simultaneously, standard demographic and work characteristics tend to be significant and economically meaningful predictors of remote work status.[8] Educational attainment, occupation, and industry stand out as the key determinants, jointly accounting for most of the explainable individual-level variation in remote work propensity.[9]

In the figures above, the CEA combines those who work remotely for part of the workweek (hybrid workers) and those who work remotely for all of the workweek. However, the groups are meaningfully different for some purposes. Critically, fully remote workers are relatively untethered to a particular employer's location, while hybrid workers must commute at least some of the time.

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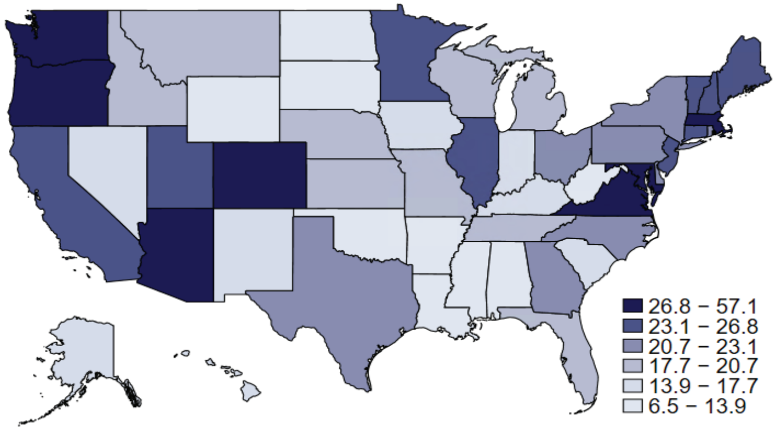
[8] The following variables are included: age, sex, race, ethnicity, educational attainment, marital status, presence of a child, state, industry, and occupation.

[9] Collectively, the same characteristics predicting remote work also predict higher wages, and the CEA finds that remote workers have an hourly wage that is 74 percent higher (without controlling for worker characteristics) than that for non-remote workers. The wage advantage is not necessarily caused by remote work but reflects the tendency of those with labor market advantages to have greater remote work access.

Figure 2-10. Share of Workers Who Work Remotely, by State

Percent



Council of Economic Advisers

Sources: Current Population Survey accessed via IPUMS; CEA calculations.

Note: Estimates are for October 2023 through September 2024 and include both hybrid and fully remote work.

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The Remote Work Framework

How should analysts think about the rise in remote work and its impact on the labor market? To begin answering that question, the CEA considers how employers structure the jobs that they create. When an employer looks to fill an open job, it sets a wage, certain non-wage benefits (e.g., health insurance), and terms of employment (e.g., required work hours and the option to work remotely). The particular combination of non-wage benefits and terms that workers encounter (and in some cases, negotiate) are determined by the interplay of (i) available technology, (ii) job design and managerial practices, (iii) a worker's preferences, and (iv) the balance of bargaining power.

First, jobs differ in the type of work performed and the available technology, including the computer equipment and software provided to employees. The technology and the physical constraints related to specific tasks affect the cost of imposing different job conditions. For example, remote work may be low cost for an office worker but infeasible for a construction worker.[10] Even in cases where remote work is feasible, it could degrade productivity if collaboration is more difficult than it would be in person.

[10] Technology is not the only kind of limitation; institutional and legal constraints also exist. For instance, state licensure rules could make it costly for a medical professional to advise out-of-state patients remotely (Maheu 2024).

Second, jobs are defined by how employees are directed to work. A technology might exist for some time before businesses figure out how to use it effectively. In the case of remote work, new management practices might be called for, as when supervising and motivating the work of employees whose effort cannot be directly monitored at a workplace. Workers themselves may learn over time how best to interact with remote colleagues.

Third, workers have their own preferences about non-wage benefits, the ways in which they conduct their work, and other conditions of employment. When employees value remote work to a greater degree, employers tend to make it more available, though possibly at a cost to wages or other non-wage benefits. Employers do not necessarily do so out of regard for their workers, but because supplying a remote work option may be less expensive than paying the wage premium required to attract workers to a non-remote job. This wage difference is what economists call a compensating differential, with workers accepting less money in exchange for some other non-wage benefit they desire.

Finally, the balance of bargaining power affects remote work options. When labor markets are strong and competition is fierce, both wages and desirable non-wage amenities (i.e., the benefits and conditions of work) are abundant (CEA 2024a). The strong post-pandemic labor market, therefore, may have been a contributor to the sustained rise in remote work (Autor, Dube, and McGrew 2024).

Search and matching

Workers and firms tend to sort themselves based on the differing value they apply to remote work. As emphasized in Davis (2024), individuals with the highest valuation of working remotely look for jobs in which they can do so, and firms with the lowest cost of doing so supply the remote work jobs.

After the sudden pandemic-era rise in remote work, re-sorting likely affected a variety of labor market outcomes (Bagga et al. 2024). For instance, a person with a non-remote job at a medical practice might have left their job to become a medical records specialist in a remote capacity, leading to increased job churn.

Remote work, however, is not only an amenity. Fully remote work—and to a lesser extent, hybrid remote work—also substantially relaxes the geographic constraints on the jobs workers can take. When work occurs in person, only a relatively small group of workers and firms, limited by proximity, can effectively search for each other and form matches. By contrast, when a job is advertised as fully remote, a broader pool of potential applicants can consider the job.

Remote work therefore offers the potential to lower the degree of mismatch across local labor markets. Focusing on geography, mismatch arises when job vacancies and workers seeking jobs are unbalanced across local labor markets (Shimer 2007). The process is inefficient: Overall hiring would be faster if workers in areas with weak demand could access vacancies from places with strong demand. By reducing geographic barriers, remote work has the potential to ameliorate the mismatch.

In addition to raising hiring rates, diminished geographic barriers can lead to improved hiring. Because workers and firms have their unique characteristics, it becomes easier to form the best possible matches when job search is less costly. Remote work could have an impact in this regard: Now that workers and employers can search outside their own local labor markets, they can achieve better matches that fit the skills and preferences of workers, as well as the needs of employers. Each of these potential effects warrants further testing with real-world data.

Geographic sorting

To the extent that remote work relaxes geographic restrictions on workers and businesses, it also affects where the individuals and firms choose to locate. A standard economic model of location choice entails that workers "pay" for high wages through increased housing costs and/or a reduction in desirable locational amenities (Rosen 1979; Roback 1982). All else being equal, productive locations featuring high wages also feature high housing prices.[11]

Remote work scrambles this equilibrium. In the extreme case, suppose all jobs suddenly included a fully remote option. It would no longer be necessary to reside in New York City, for example, to receive the high wage jobs the city offers; residents of other places could access the same wages without paying for expensive housing. The situation would put upward pressure on housing prices in less expensive places and downward pressure on New York real estate prices, until the difference in housing costs was small enough to discourage further migration.[12]

More realistically, only a minority of jobs are likely to supply a fully remote option, leaving most workers tied to their place of employment. Economic theory offers less dramatic predictions in this scenario. To some

[11] This statement assumes that amenities are similar across more- and less-productive places. But consider a world in which locations differ in two respects: productivity and appeal (i.e., amenity value). Some places (e.g., New York City) are especially productive for businesses, and others (e.g., Honolulu) are especially appealing for residence. Workers make their choice about where to live while considering wages, housing costs, and this appeal. To avoid an unrealistic situation where every worker chooses to live in the same place, wages (net of housing costs) must adjust to make workers indifferent about where they live—if net wages were everywhere identical, all workers would prefer to live in Honolulu.

[12] Brueckner, Kahn, and Lin (2023) present a formal model, building on the Rosen-Roback framework, for spatial equilibrium with remote work. In their model, as in this example, remote work is implemented for all workers.

extent, reverse migration of non-remote workers to more-expensive places (due to house prices being bid up in less-expensive places by remote workers) would partially offset remote worker migration. Hybrid work would have smaller-scale effects than fully remote work because the workers would still need to commute occasionally. Many hybrid and fully remote workers would also demand larger homes, in part because remote work requires home office space.

Economic theory therefore implies that a rise in remote work should lead workers to move farther from expensive cities whose chief economic advantage is the availability of high-wage jobs. The migration could be a few miles down the road or, in the case of fully remote workers, to some other place entirely. Conversely, workers living outside expensive places desiring jobs offered in those places could stay where they are and work remotely. The extent to which these dynamics are evident in available data is an important subject for ongoing research.

Remote Work, Welfare, and Wages

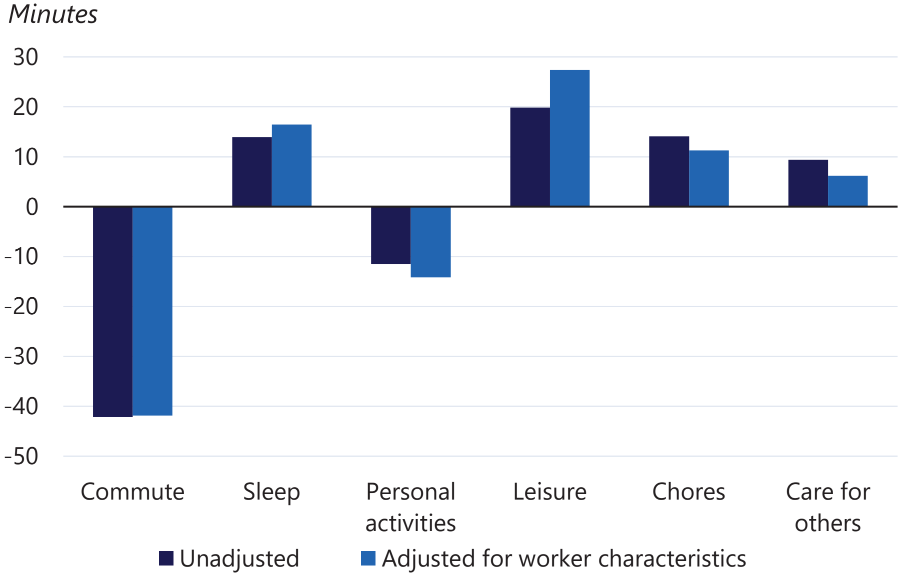
Considered as a valued amenity, how much of an improvement in worker welfare does remote work imply? And to what extent is this amenity value added to or offset by corresponding changes in productivity and wages?

The most straightforward way to answer the first question is to ask workers. Recent surveys exploring workers' willingness to pay for remote work find that they generally value it considerably. When asked how large a pay cut they would accept to work remotely for about half the week, respondents said 5 percent to 8 percent of their pay on average (Aksoy et al. 2022; Davis 2024; Mas and Pallais 2017). And 31 percent of those currently working at least partially remotely said they would actively seek other employment—or leave their job—if required to return to the office full time (Board of Governors 2024). The averages belie substantial variation across workers; early in the pandemic, nearly one fifth of workers said they would accept at least a 15 percent pay cut to work remotely two or three days a week (Barrero, Bloom, and Davis 2021a).

To understand why workers value remote work, it is helpful to explore how time allocation changes when they work remotely. Time-use data allow for comparisons between remote and non-remote workers, but the comparisons are not apples-to-apples. Remote workers tend to have elevated education levels and work the types of jobs in which virtual interaction is productive.

While it may not be possible to adjust for all such differences using available data, the CEA adjusts for several important factors in figure 2-11

Figure 2-11. Differences in Time Use of Fully Remote and Non-remote Workers



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Sources: American Time Use Survey accessed via IPUMS; CEA calculations.

Note: Sample is limited to people who work at least 5 hours. Data are from 2021 through 2023. Remote workers are defined as spending all time working at their home. Time spent working is not shown. Worker characteristics are gender, education, age, race, presence of children, and year.

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and finds that they do not substantially change the picture.[13] Using ATUS data for 2021 through 2023, the figure compares the non-work time allocation for fully remote workers to the same allocation for non-remote workers on a given day.[14] Importantly, the figure does not capture the simultaneous

[13] Displayed categories are aggregates of related activities. Commute includes all work-related travel. Personal activities include personal care (except for sleeping), education, job search and interviewing, professional and personal care services, and eating and drinking. Leisure includes socializing, relaxing, and leisure; sports, exercise, and recreation; religious and spiritual activities; and volunteer activities. Chores include household activities, consumer purchases, household services, government services and civic obligations, and telephone calls. Care for others includes care for and helping household and non-household members. Except for work and sleep, all categories include travel related to that activity.

[14] The sample is limited to workers reporting that they worked at least five hours on an identified day. Fully remote workers are defined as spending all of their work time at home, and non-remote workers are defined as those who spend at least some of their working time away from home.

use of time for different activities—e.g., caregiving and chores—but shows the distribution of time spent on primary activities.[15]

The total amount of time remote and non-remote workers spend working is similar, with a statistically insignificant difference of six minutes (not shown). Remote workers spend less time on commuting and personal care. From the hour remote workers save across the two categories, they allocate about half to leisure and half to sleep and caregiving of children or other adults.[16] In general, the differences in time allocation between remote and non-remote workers do not change considerably when adjusting for observable differences between workers.

In addition to shifting the amounts of time spent on different activities, remote work affects when individuals work and the flexibility they have. During the pandemic, some remote workers spent increased amounts of time working on weekends and outside typical weekday hours (McDermott and Hansen 2021). Mothers working from home reported working more in the evenings (Pabilonia and Vernon 2023).

How remote work affects productivity

In addition to shifting how people spend their time, remote work can change how productive they are while they are working. Current evidence does not suggest a simple positive or negative relationship between remote work and productivity that holds across the board. In some settings, evidence points toward remote work increasing productivity. Bloom et al. (2015) find that in a call center where workers were randomly assigned to work remotely, remote personnel had higher output than their in-office counterparts because they worked longer hours and answered more calls per minute. At the industry level, researchers find that total factor productivity was higher in sectors that experienced larger increases in remote work (Pabilonia and Redmond 2024), though labor productivity was not similarly associated (Fernald et al. 2024). Other research, such as that by Bloom, Han, and Liang (2024) examining hybrid remote work, finds no effect on performance.

Still others have found a negative effect of remote work on productivity, particularly through its effect on teamwork, collaboration, and learning. Gibbs, Mengel, and Siemroth (2024) find a decline in innovation related to remote work, which they explain through a decline in "watercooler" conversations that matter for collaboration. Remote work may also lead to a decrease in mentoring and other interactions, so even in the cases where

[15] Some research finds patterns in how time is shared across multiple activities: mothers report simultaneous childcare and paid work to a greater extent than do fathers (Pabilonia and Vernon 2023).

[16] By contrast, Bloom, Davis, and Barrero (2020) directly ask workers how they use time saved from reduced commuting and find that more than one third of the saved time is allocated to paid work.

remote work presents short-run gains for younger workers, long-run losses may emerge (Emanuel, Harrington, and Pallais 2023; Yang et al. 2022).

Not every association between remote work and productivity will have a causal interpretation. Researchers have suggested that some of the measured productivity difference between remote and non-remote workers could be due to selection: which workers choose to work remotely and how remote work affects an individual worker's productivity depend on how productive that worker was initially (Emanuel and Harrington 2024; Atkin, Schoar, and Shinde 2023).

The available research literature indicates that the industry, the extent of remote work (i.e., hybrid or fully remote), the seniority of the worker, and the job's context are all important determinants of effects on productivity. It is intuitive that the productivity effect should differ by how well-suited an occupation is to being performed remotely. Given that remote work may negatively impact teamwork and learning, one should expect productivity impacts to depend on how frequently workers interact with each other. Additionally, while experienced workers could be more productive working remotely, newer workers can lose out on valuable feedback (Emanuel, Harrington, and Pallais 2023).

How wages differ for remote workers

The relationship between remote work and wages depends on various factors including the relative productivity of remote work, any change in match quality, and the amenity value to workers. To identify the combined impact, researchers could in principle calculate the average wage gap between remote and non-remote workers after adjusting for all relevant differences in which workers and jobs tend to be remote. However, in practice it can be difficult or impossible to make all necessary adjustments using available data, and CEA analysis finds that remote workers continue to earn higher wages after controlling for observed characteristics. These findings are consistent with other research finding higher wages for remote workers (Pabilonia and Vernon 2024).

An alternative is to examine wage changes over time for specific workers who experience changes in their remote work status, a methodology which helps to adjust for persistent differences between remote and non-remote workers. The CEA first examined job switchers who also changed their remote work status. Movements from non-remote to hybrid jobs, or from hybrid to fully remote jobs, tended to come with larger wage increases than movements in the opposite direction. However, this pattern would also be expected if remote work were disproportionately provided in higher-quality jobs—the pattern evident in figures 2-8 and 2-9. Turning to job-stayers—for whom job quality seems less likely to change along with a shift in remote work status—the pattern is more mixed. Some remote-status transitions are consistent with the existence of a compensating differential, but some are not. The CEA regards this evidence as inconclusive and illustrative of the difficulty in identifying compensating differentials amidst the various ways that workers and jobs can differ (Lavetti 2023).

Other kinds of evidence point more clearly to lower wage growth for remote workers and therefore notable compensating differentials. In a survey of business executives, Barrero et al. (2022) ask about the connection between remote work and compensation strategies. They find that, as of spring 2022, 38 percent of businesses report having increased remote work to moderate wage growth. A similar share reported an intention to implement this strategy in the coming months. Averaging across businesses that did and did not use remote work in this way, executives believed that—through deployment of remote work—they had limited wage growth by about 1 percentage point over the prior year.[17]

Additional research is needed to better understand how remote work affects wages. Because remote work is so unequally distributed, and because the relationship between remote work and wages can differ over time and across groups of workers, this question is especially difficult to answer.

Remote Work and Job Access

In addition to affecting the welfare of workers already in the labor market, remote work has the potential to affect who participates in the labor force. During the Biden-Harris Administration, prime-age labor force participation reached a record high for women in 2024. Prime-age men's participation also recovered from the pandemic, but against a backdrop of decline for more than 70 years (CEA 2024b). Moreover, U.S. population aging has and will continue to put downward pressure on labor force participation.

If remote work removes impediments to joining the workforce, it will give some individuals new options and strengthen the U.S. economy. One group that could gain job access includes people with disabilities. For disabled workers, remote work can remove physical barriers to accessing the workplace. For example, workers with mobility restrictions might benefit from wheelchair accessibility features already incorporated into their residence.[18]

[17] Two relevant factors imply that measured wage growth could understate welfare improvements for remote workers. First, any reduction in nominal wage growth could be offset by reductions in cost of living, if remote work allows households to locate farther from expensive places. Second, the reduction in commute time implies that earnings per hour (inclusive of hours spent commuting) would rise more than earnings per hour worked.

[18] Individuals with work-limiting characteristics other than disabilities could also benefit. For example, working from home could allow neurodivergent workers to limit overstimulation or sensory overload (Doyle 2022).

Being able to work remotely also has potential benefits for those caring for children or elderly parents, which can make in-office work requirements impossible to satisfy. Additionally, individuals moving to take care of a parent or other family member could use remote work to keep their existing job or access other distant jobs. Given that caregiving responsibilities are not equally distributed across men and women, remote work could mitigate gender disparities in labor force participation.[19] Consistent with this hypothesis, increases in sector-specific remote work are associated with a diminished gap in employment between mothers and other women (Harrington and Kahn 2023).

Finally, remote work could affect labor force accessibility not only through encouraging entry, but also by delaying exit (Liu and Quinby 2024). For example, workers considering retirement or unretirement might find it appealing to work if remote jobs facilitated traveling while working or other flexible arrangements.

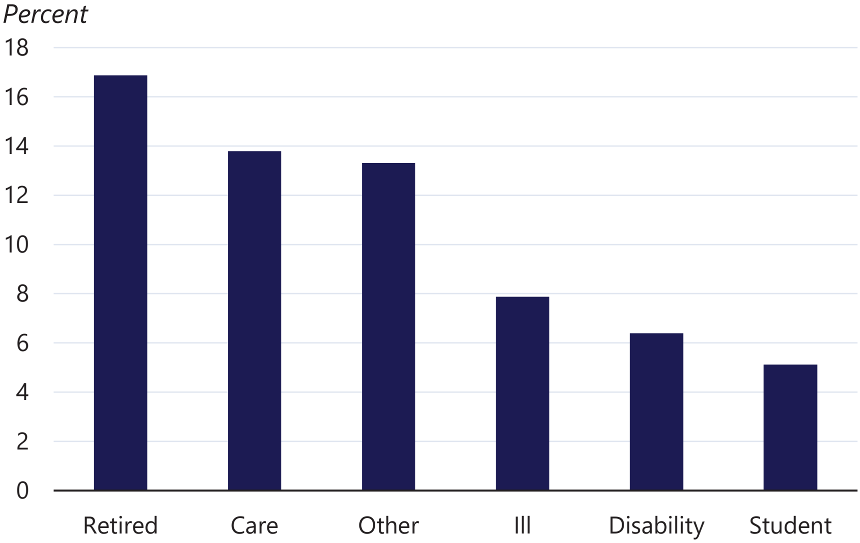
To better understand remote work's impact on labor force participation, the CEA examines non-participating workers from October 2021 through September 2023 who had obtained jobs by 12 months after first appearing in the CPS. Figure 2-12 shows the percentage of those individuals taking remote work positions, separated by their reason for initial non-participation.[20] Of workers who initially said they were out of the labor force because of a disability, 6 percent of those working one year later were doing so remotely. A comparatively large share of initially retired workers and those with caregiving responsibilities took remote jobs (17 and 14 percent, respectively).

Regardless of reason, many newly employed workers from outside the labor force are finding remote jobs, and in at least some cases, the individuals would have not been able to work without a remote option. Additionally, research supports the hypothesis that remote work raises employment for people with disabilities, despite the relatively low share of disabled workers transitioning from non-participation to remote work in the CEA analysis. Bloom, Dahl, and Rooth (2024) find that most of the recent increase in employment for those with disabilities ages 18 through 64, from 31.5 percent in 2019 to 38.3 percent in 2024, can be explained by the rise of remote work.

[19] As of January 2020, 14 percent of all 25- to 54-year-old women reported that caregiving responsibilities were their reason for not participating in the labor force. By contrast, only 1 percent of 25- to 54-year-old men reported the same.

[20] Of the population not in the labor force in January 2020, 15 percent did not participate because they were ill or had a disability, 13 percent did not participate due to house or family care, 48 percent did not participate because they were retired, 20 percent did not participate because they were in school, and 4 percent had other reasons for non-participation.

Figure 2-12. Remote Work Share of Entrants from Non-participation, by Reason



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.

Note: Estimates are for October 2021 through September 2024 and include both hybrid and fully remote work. Graph shows the share of remote work among individuals who report not being in the labor force in month *t* and employed in month *t+12*.

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Implications for Matching and Sorting

Remote work affects how workers and firms find each other. By relaxing a geographic constraint—that workers need to live close to their employer—remote work has potentially sweeping implications for matching and locational choices. The CEA therefore examines remote work's effects on the sorting of workers into jobs, mismatch and match efficiency, and match quality between workers and firms.

Re-sorting in the short run

In the wake of the COVID-19 pandemic, many but not all jobs suddenly became remote. For example, Indeed data show that communications and marketing jobs became more likely to feature remote options during the pandemic. At the same time, many job vacancies (e.g., in food preparation and nursing) featured little change in remote work status (Judes et al. 2021). Within and across fields, workers differed in their strength of preference for remote work and were often ill-matched with their current job after the shift. The temporary misallocation of workers across remote and non-remote jobs led to a surge in quitting and gave remote vacancies a strong recruitment advantage (Bagga et al. 2024). Bagga and coauthors find that this pattern was unlikely to be caused by other factors at play during the pandemic. To illustrate the dynamic, figure 2-13 recreates a similar figure.[21]

Panel A in the figure compares the average change in job-filling rate (hires per vacancy) from January 2020 to 2021 among multiple industries, with each sector's remote work share shown on the horizontal axis. Job filling was substantially easier during the pandemic for industries with many remote jobs, as indicated by the positive slope in panel A.[22]

The pattern appears to have been temporary. By the time the shift to remote work had settled and the labor market began normalizing, the job-filling rate advantage for industries with high remote shares had mostly disappeared, as shown in panel B.

Though it is difficult to determine the current stage of the job-sorting process, one interpretation of the two panels in figure 2-13 is that because a valuable amenity became widely available in some jobs but not others, the labor market endured a sustained period of above-normal churn on the way to a new equilibrium. The reshuffling was largely accomplished between 2022 and 2024.

Diminished mismatch in the long run

As this effect subsides, it may be replaced by longer-run modifications that remote work makes to the matching process. As previously discussed, one important feature of any labor market is mismatch: the extent to which job seekers and job vacancies are poorly aligned across places or sectors. Over the long run, remote work should diminish mismatch by breaking down geographic barriers that make it difficult for job seekers to compete for vacancies on a level playing field.

One way to test this hypothesis empirically is to examine how state-level job-finding rates in the post-pandemic era have evolved relative to the pre-pandemic era. If geographic mismatch has lessened, then job-finding rates should have converged across places, given that workers in areas with low job-finding rates now have access to job openings in places where plentiful opportunities exist.[23]

Figure 2-14 shows the expected pattern. On the vertical axis is the change in state job-finding rates from 2017–2019 to a recent 12-month

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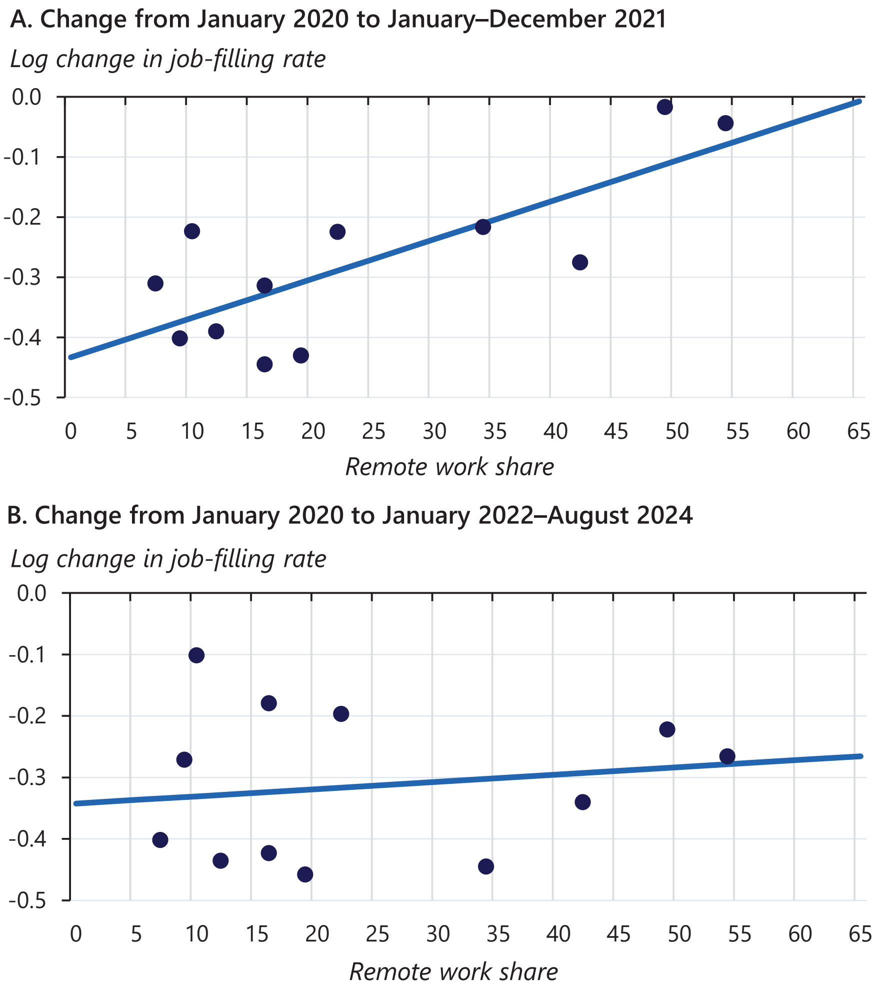
[21] The CEA uses actual remote work shares, averaged from October 2022 through August 2024, rather than a classification of industries from Dingel and Neiman (2020) by potential for remote work. However, the results are qualitatively similar when using the researchers' classification.

[22] This analysis places equal weight on all industries. The analysis is qualitatively similar when weighting industries by their January 2020 job openings share.

[23] Convergence in job-*filling* rates would not necessarily be expected because they depend on where remote vacancies are posted, which may be spatially concentrated.

Figure 2-13. Change in Job-Filling Rate, by Industry



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Sources: Bureau of Labor Statistics; Current Population Survey accessed via IPUMPS; CEA calculations.

Note: Job-filling data are from the Job Openings and Labor Turnover Survey. Job-filling rate is defined as the seasonally adjusted ratio of hires to job openings. The figure plots the log deviation of the industry-level job-filling rate from its January 2020 level, averaged over 2021 in panel A and over January 2022 through August 2024 in panel B. Industries are JOLTS-defined sectors. Remote work share is the average share of an industry's workforce that reported working remotely between October 2022 and August 2024.

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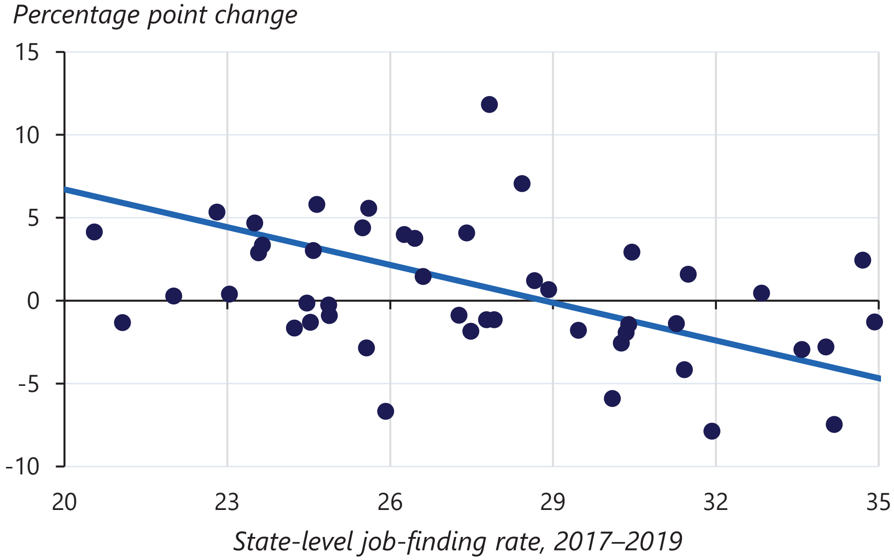
Figure 2-14. Change in Job-Finding Rate from 2017–2019 to 2023–2024, by State



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: The job-finding rate is calculated as the share of unemployed workers who are employed in the next month. Sample is civilian workers aged 16 and over. Changes are measured from the 2017–2019 average to the October 2023–September 2024 average. Each dot represents a state or D.C.
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period (October 2023 through September 2024). On the horizontal axis is the state job-finding rate in 2017–2019.[24] The negative slope indicates that job-finding rates have converged in the two time periods, suggesting that remote work has lessened geographic mismatch. In other words, places where it was hard to find jobs before the pandemic partially caught up with places where it was comparatively easy to find jobs.

However, the negative relationship between the 2017–2019 job-finding rate and its change over time could reflect mean reversion rather than an effect of remote work. To explore the possibility, the CEA conducts the same exercise for the years 2015–2017 and 2019 and finds that no significant relationship existed between the baseline job-finding rate and its subsequent change. While it is tempting to conclude that remote work is the cause of the recent convergence, the CEA views these findings as an opportunity for further research.

[24] In unreported analysis, the CEA includes controls for the 2017–2019 employment share in 13 major industries, as well as the distribution of the state working-age population using 10-year age bins. The results are similar.

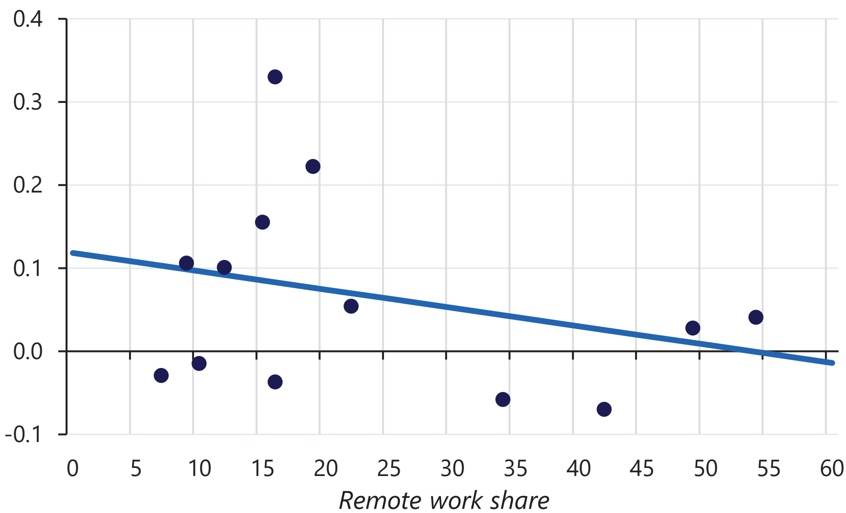
The quality of matches

Labor market search is fundamentally about getting the right employer matched with the right worker. So, how does remote work affect who is matched with which firm? The answer helps indicate how remote work affects match quality. It is a difficult question to answer, however, because two commonly used match quality metrics—wages and tenure (Belot, Liu, and Triantafyllou 2024)—are poorly suited to understanding remote work. As discussed, wages paid to remote workers may reflect a compensating differential, as well as any effects on match quality and productivity; in this context, wages are likely a poor proxy for the value of a job match. Because the rise in remote work is recent, it is difficult to determine whether specific remote job matches will prove lasting—and, by inference, have relatively high match quality—compared to non-remote jobs.

Another variable useful for understanding match quality is the quits rate. Figure 2-15 shows a negative relationship between the change in an industry's quits rate (between the pre- and post-pandemic periods) and

Figure 2-15. Change in Quits Rate, by Industry

Log change in quits rate from January 2020 to January 2022–August 2024



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Sources: Bureau of Labor Statistics; Current Population Survey accessed via IPUMS; CEA calculations.

Note: Job-filling data are from the Job Openings and Labor Turnover Survey. Quits rate is defined as the seasonally adjusted ratio of quits to employment. The figure plots the log deviation of the industry-level quits rate from its January 2020 level, averaged over January 2022–August 2024. Industries are the JOLTS-defined sectors. Remote work share is the average share of an industry's workforce that reported working remotely between October 2022 and August 2024.

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remote work share. Importantly, the relationship exists in the most recent available data, by contrast to the job-filling pattern (shown above) which appears to have been temporary. This result is consistent with higher match quality in industries that have made wider use of remote work.

As discussed, a large share of those working remotely—31 percent of respondents in the Survey of Household Economics and Decisionmaking (Board of Governors 2024)—report that they would actively search for a new job if their current employer required full-time, in-person work. While the finding speaks directly to the value many workers place on remote work, it also suggests that remote work underpins match quality for some workers.

Geographic reallocation

In the past, jobs were almost always tied to particular locations. Matching with an employer meant moving into reasonably close proximity and commuting regularly to a place of business. With remote work, this is no longer the case. To the extent that remote work makes matching more efficient, it is due to relaxed geographic constraints allowing hybrid workers to move moderately farther from their employers and fully remote workers to move anywhere.

Consider a hybrid worker newly permitted to work from home two days a week. For those with a standard workweek, the worker's weekly commute time is immediately cut by 40 percent, and the cost of locating slightly farther from work decreases accordingly. The long commute that was not acceptable five days a week is now potentially tolerable at three days a week. For a fully remote worker, the situation is more dramatically altered: The cost of locating farther from work is reduced to almost zero.

Has the change in incentives affected household movement in recent years, and how does it affect the distance or commute time between workplaces and residences?[25] Research based on U.S. credit files reveals that individuals, especially high-income workers, migrated during the pandemic from high- to low-density areas (Li and Su 2023).[26] City centers in large metropolitan areas lost residents, while suburbs and small metro areas gained residents. Largely because of variation in occupational mix across metropolitan areas, it was therefore partially possible to predict in advance which places would see the most dramatic changes (Dingel and Neiman 2020).[27]

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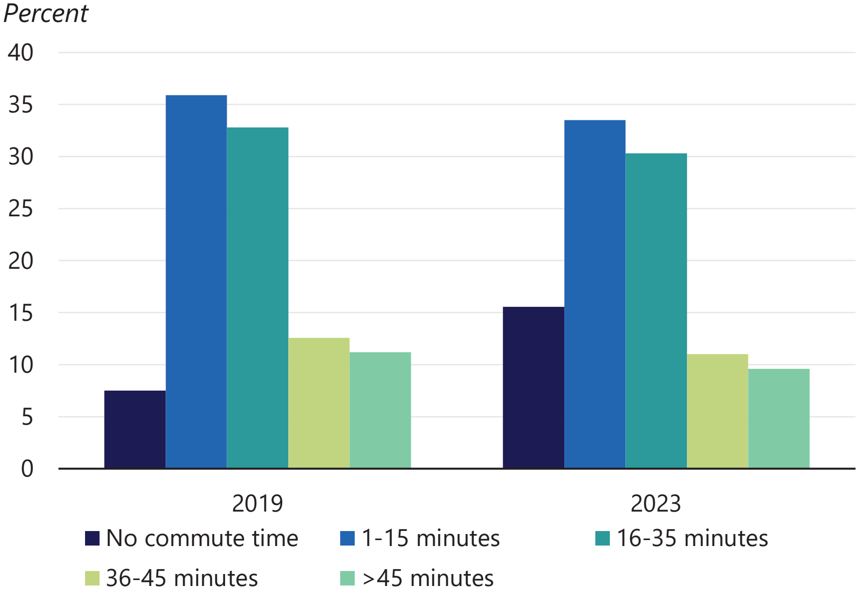
[25] Another question for further research is how remote work might differentially affect dual-earner households. In principle, remote work should make it easier for one worker to access better job opportunities without requiring a partner to accept a less-desirable job.

[26] In Swedish data, researchers found that increases in commuting distance during the pandemic disproportionately occurred among workers for whom remote work was more available (Nilsson et al. 2024).

[27] See Hansen et al. (2023) for a discussion of the limitations of an occupation-based assessment.

Figure 2-16. Commute Time Distribution, 2019 and 2023



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Sources: American Community Survey accessed via IPUMS; CEA calculations.
Note: Sample is limited to employed workers.
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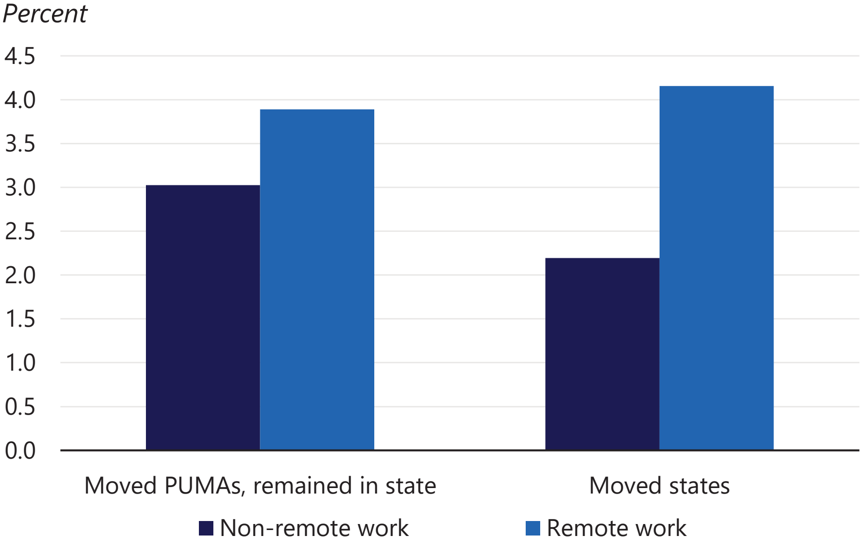
In figure 2-16, the CEA examines U.S. worker-level data on commute time. Between 2019 and 2023, the fraction of people with no commute time increased by over 8 percentage points, indicating a significant shift toward working from home.[28] The share of people with varying non-zero commute lengths all fell by roughly 1.5 to 2.5 percentage points. The finding suggests that the shift to remote work drew on workers whose previous commute times were spread across the distribution (i.e., both short- and long-duration commutes became less common after the increase in remote work).[29]

In addition to affecting residential location patterns, remote work changes demand for housing quantity. Many workers were forced to work in cramped spaces at home early in the pandemic. As remote work persisted, some families sought out larger homes that were better equipped for it or

[28] Examining a prior period (2016–2019) for context, almost no change occurs in the share of workers with zero commute time.
[29] The result does not preclude the possibility that, among some hybrid workers, commute times may have increased as they moved farther from their employers. But it does suggest that any such effect was offset by the rise in share of those who usually worked from home.

Figure 2-17. Share of Workers Who Moved, by Remote Work Status



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Sources: American Community Survey accessed via IPUMS; CEA calculations.
Note: Estimates are for moves from 2022 to 2023. Workers are considered remote if their usual method of transportation was "worked from home." A PUMA is a public-use microdata area of at least 100,000 residents. Sample is limited to employed workers.
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broke off to form new households (Mondragon and Wieland 2022; Ozimek and Carlson 2023).[30]

All of these shifts have meant changing house price patterns. Price growth has tended to be stronger in areas farther from central business districts and weaker in closer, dense areas (Li and Su 2023). Other research also finds that the discount for housing positioned away from central business districts has diminished in metropolitan areas with high remote work potential (Gupta et al. 2022; Brueckner, Kahn, and Lin 2023).

To the extent that newly remote workers tend to seek places with inexpensive housing aligned with their preferences (rather than employer availability), this could affect recent worker mobility. Figure 2-17 indicates that remote workers are somewhat more likely (3.9 percent) than non-remote workers (3.0 percent) to have moved within-state (i.e., out of their so-called public-use microdata area, a location of roughly 100,000 individuals). They are also more likely (4.2 percent) than non-remote workers (2.2 percent)

[30] However, the long-run impacts on housing prices will likely be more muted as supply has time to adjust in response to remote work-induced changes in demand (Howard, Liebersohn, and Ozimek 2023).

to have moved across state lines. The pattern by itself does not necessarily mean that remote work has caused the additional migration. Remote workers are disproportionately highly educated, which is itself associated with higher rates of interstate migration (Molloy, Smith, and Wozniak 2011).

Complementary evidence is provided by Li and Su (2023), who find that net in-migration has fallen dramatically in census tracts with the most remote jobs; remote jobs have largely stayed in the tracts, but many of the workers who hold them have left the area. Similarly, Brueckner, Kahn, and Lin (2023) use U.S. Postal Service data to demonstrate heightened population outflows from high-productivity places with high potential for remote work.

The migration responses predicted by theory and observed to some extent by researchers have implications for the distribution of economic activity, tax revenues generated by the activity, and the commercial real estate market in particular. Central business districts are likely the most affected by remote work, given that employers have historically been willing to pay high prices and taxes to locate in close proximity to other employers and key labor markets. Workers are limited in how far from central business districts they can live by the costliness of any required commuting. To the extent that remote work relaxes the limitation, it reduces demand for locating in or near central business districts. Similarly, commercial real estate has shown signs of stress in the wake of the pandemic and rise of remote work, which could have implications for both the financial markets where commercial real estate debt is traded and local public finance. Office vacancies rose to 20.1 percent in the third quarter of 2024, and forecasters project that vacancy rates could peak at 24 percent in 2026 (Moody's 2024; Metcalfe, Spinelli, and LaSalvia 2024). Gupta, Mittal, and Van Nieuwerburgh (2024) estimate that remote work could reduce commercial real estate values by more than $500 billion, though the potential to convert offices to residential buildings may mitigate some of the long-run impact.[31]

The Big Picture and Public Policy

Remote work is arguably the most consequential recent shift for U.S. working arrangements and the overall labor market. Researchers are only beginning to process the magnitude, durability, and impact of the changes. As this chapter has shown, the benefits are potentially substantial. Most workers value a remote-work option: For some, it is a source of workday flexibility and an avoided commute; for those with disabilities or caregiving responsibilities, it can make labor force participation more feasible.

[31] Van Nieuwerburgh (2022) provides a detailed analysis and assesses relevant research on this and other spatial dynamics related to remote work.

Ancillary benefits like reduced commute times—in turn leading to decreased traffic congestion and pollution—have also emerged. Stay-at-home orders during the early pandemic caused substantial declines in air pollution, with slightly larger effects in places that featured more remote work (Brodeur, Cook, and Wright 2021).[32]

In the case of fully remote work, workers and firms can find each other when geographic distance would ordinarily make a match impossible. Without having to relocate, workers and firms can adapt to changing market conditions by quickly forming new matches. To the extent that match quality improves, both worker welfare and national productivity are enhanced.

As with any fundamental labor market shift, remote work also creates potential pitfalls. For some businesses, remote work may turn out to be an unacceptable productivity drag. This could be evident immediately, or in other cases, it could become apparent only with time, as collaboration diminishes and young workers receive insufficient mentoring (Emanuel, Harrington, and Pallais 2023; Yang et al. 2022). The balance of benefits and costs will be different for every employer and worker.

Another challenge appears at scale as the accumulated decisions of individual employers and workers disrupt housing markets. Residential housing has become increasingly expensive in some areas as demand from hybrid and fully remote workers surpasses supply. Conversely, demand for commercial real estate has declined, which poses both risks and opportunities. As economic activity diminishes in central business districts, the ecosystems that support firms also diminish (Althoff et al. 2022), along with the property tax revenue upon which some cities rely heavily (Auxier and Brosy 2024). On the other hand, there are opportunities: For example, the Administration has worked to facilitate the conversion of office space to multifamily housing (CEA 2023). This strategy addresses the chronic undersupply of residential housing and can ameliorate adverse impacts on non-remote workers (Gupta, Martinez, and Van Nieuwerburgh 2023; Richard 2024).

Other potential challenges from remote work are admittedly more speculative. For example, physical workspaces develop social capital (Bandiera, Barankay, and Rasul 2008); it is unclear to what extent virtual work interactions are a replacement. Relatedly, in largely remote workplaces, organizing workers into unions could require different strategies, given the increased distance between employers and employees.

The allocation of remote work across the labor market depends on public policy details. Remote work is not technically feasible in most instances without reliable high-speed internet access (Barrero, Bloom, and

[32] In China, increased remote work during the early pandemic led to large decreases in air pollution by reducing travel (Chen and Li 2024). However, studies that focus on travel-related pollution may miss other effects like changes in home energy use.

Davis 2021b). Parts of the United States still lack such access, a condition the Administration worked to address through $90 billion in federal funding to expand access to high-speed, affordable internet across the country. While Congress failed to continue funding for the Affordable Connectivity Program, which provided qualifying households up to $30 per month off their internet bill, the Administration has helped more than 23 million households save money on connectivity (White House 2024).

Long-standing legal impediments can also shape how remote work plays out in the labor market. For example, occupational licensing rules are usually set at the state level, and in a healthcare context, providers typically must be licensed wherever their patients live. In a world of remote medical work (i.e., telehealth), this system can be a poor fit (Scheffler 2019), limiting its benefits (Zeltzer et al. 2024).[33]

Similar issues are posed by state-based employer tax and employee benefit systems (Aksoy et al. 2022). Remote workers located in a different state than their employer potentially face double taxation, and only 16 states and the District of Columbia have reciprocity agreements with others to navigate taxation of workers commuting across state lines, such as hybrid workers with an infrequent but long commute (Peterson 2024). Employers must report and pay unemployment insurance taxes in the state where a worker lives; setting up operations in each state and understanding applicable law variation is a significant burden (Miller 2020).

In the post-pandemic world, employers and workers will need to make conscious decisions about whether and how to work remotely. Some employers will continue to adjust their practices, making increasing or decreasing use of remote work depending on their circumstances and experiences. But the intensity of worker preference for remote work and its recruiting advantages are strong tailwinds. As researchers add to the understanding of remote work, policymakers can make evidence-based decisions about how to broaden its promise while minimizing its downsides.

[33] Survey data suggest that many remote workers are affected by licensing rules. In 2023–2024, remote workers were 1.7 percentage points more likely than non-remote workers to have an occupational license (CPS and CEA calculations).

★★★★★★

Chapter 3

Aligning the International Tax System with the Globalized Economy

Corporations that operate in more than one country generate a substantial share of global economic activity. As shown in figure 3-1, multinationals account for roughly one third of global gross domestic product and more than half of all international trade. Given the economic significance of multinationals, taxation of their profits has the potential to be a major source of government revenue.

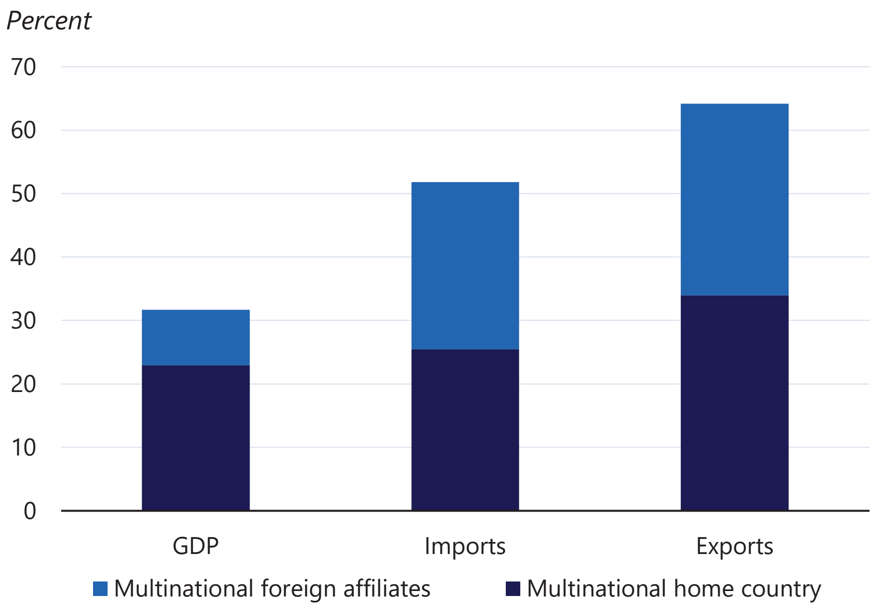
However, prior to 2021, a lack of coordination among countries in taxing multinationals led to a "race to the bottom" in corporate income tax rates from a 40.2 percent average worldwide statutory tax rate to 23.5 percent over the past four decades (Enache 2023). Many multinationals pay far less than that by shifting their profits to low-tax countries despite not engaging in meaningful economic activity in those countries. From 2017 to 2020, an estimated $2 trillion of multinational profits were taxed at effective tax rates below 15 percent (Hugger, González Cabral, and O'Reilly 2023). Clausing (2020) estimates that cross-border tax planning activity by multinationals costs the U.S. government more than $100 billion a year. This is particularly important in the current U.S. fiscal environment, where the federal government has run a budget deficit in 51 of the past 55 years, causing the debt-to-GDP ratio to reach 97 percent in Fiscal Year (FY) 2023 (OMB 2024; CBO 2024a).

At the same time, the growth of digital services business activity, such as entertainment streaming and digital advertising, has raised important questions about which countries have taxing rights over the activity (Cebreiro

Gómez et al. 2022). For example, when a Canadian business buys advertising space on a website run by a multinational headquartered in the United States and the ads are viewed by consumers in Mexico, which country or countries should have the right to tax the business activity at issue?

In response to the difficulties in addressing tax competition and digital services taxing rights on a unilateral basis, more than 130 countries, representing over 90 percent of the world economy, agreed in 2021 to modernize the principles governing the taxation of multinationals' profits (OECD 2021a). Known as the Global Tax Deal, the principles seek to preserve global corporate tax revenues and modernize the international tax system

Figure 3-1. Multinationals' Share of Global Economic Activity in 2016



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Sources: Organisation for Economic Co-operation and Development Analytical Activities of Multinational Enterprises database; CEA calculations.

Note: The navy bars, labeled as multinational home country, represent activity conducted by a multinational in its home country, while the blue bars, labeled as multinational foreign affiliates, represent activity conducted by a multinational through its foreign affiliates. 2016 is the most recent year of data available.

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by setting guidelines for where multinationals pay taxes and how much they pay (OECD 2023a). The global minimum tax component of the Global Tax Deal is already being adopted by countries around the world (Brosy 2024).

This chapter explains the challenges that gave rise to the historic agreement and how the Global Tax Deal addresses those challenges. The chapter first describes how the deal addresses tax competition and then explains how it handles digital services taxation. The chapter concludes with a discussion of why the United States would benefit from participation in the Global Tax Deal.

Globalization and a Patchwork of Corporate Tax Systems

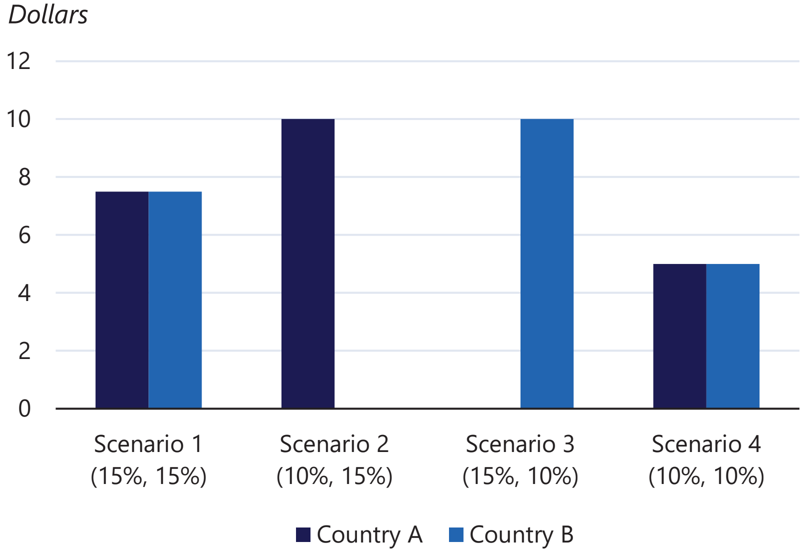
In today's globalized economy with cross-border investment and multinationals, each country must consider its own corporate tax policies in the context of other countries' corporate tax policies when designing its corporate tax system. While many factors, including infrastructure, workforce makeup, and rule of law, determine multinationals' location choices, countries with relatively low corporate tax rates are generally more attractive than others, all else being equal (Siedschlag, Zhang, and Smith 2013; Castellani et al. 2022; Basu, Mitra, and Purohit 2023). As a result, countries compete with one another to keep tax rates low enough to retain or attract multinational economic activity. Such international tax competition can put pressure on countries to lower their corporate tax rates and thus undermine their ability to raise revenue (OECD 1998).

Globalization Without Cooperation: The Prisoner's Dilemma

A simple example illustrates the fundamental dynamics of corporate tax competition across countries. Imagine Country A and Country B are simultaneously choosing between a 15 percent corporate tax rate and a 10 percent corporate tax rate. Multinationals in this scenario can freely choose where to locate economic activity that collectively generates $100 in taxable income.[1] When each country sets its tax rate independently rather than cooperating, the incentives resemble the classic "prisoner's dilemma" (Devereux 2023).[2]

[1] Cross-border tax planning can create a disconnect between where multinationals locate economic activity and where they report income, which is discussed later in the chapter.
[2] To fix ideas, this example assumes total economic activity is held constant and multinationals can only change the allocation of economic activity across countries. Changing tax rates could potentially change the total economic activity and thus total income.

Figure 3-2. Prisoner's Dilemma-Based Corporate Tax Revenue Prior to Global Tax Deal Pillar Two



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Source: CEA calculations.
Note: Figure shows the prisoner's dilemma-based corporate tax revenues collected by Countries A and B prior to the Global Tax Deal Pillar Two. The first term in parentheses is the corporate tax rate set by Country A, and the second term in parentheses is the corporate tax rate set by Country B. This example assumes that total economic activity is held constant, meaning multinationals can only change the allocation of economic activity across countries, multinationals report income where their economic activity is located, and total taxable income equals $100.
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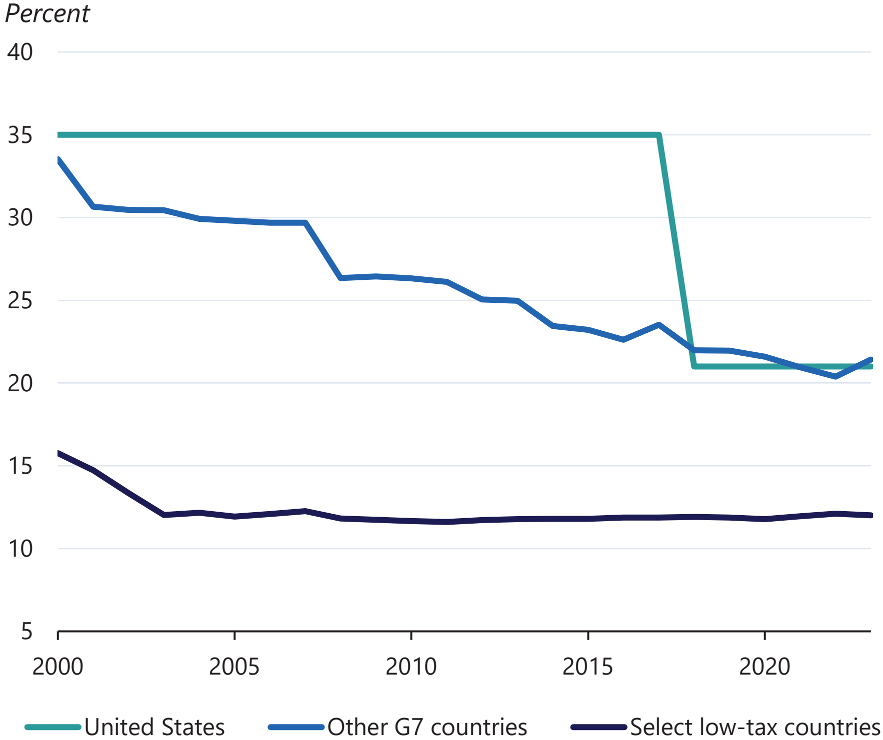
If both Country A and Country B enact a 15 percent tax rate (see scenario 1 in figure 3-2), multinationals will be indifferent about where to locate their economic activity and split the activity between the countries equally. As a result, both Countries A and B will collect $7.50 in tax revenue ($50 in taxable income per country multiplied by 15 percent). However, the 15 percent tax rate is likely not sustainable because each country knows that lowering its rate will attract increased economic activity and raise revenue collection. If Country A lowers its tax rate to 10 percent while Country B retains its 15 percent rate (see scenario 2 in figure 3-2), multinationals will locate all their economic activity in Country A. Country A will then collect

$10 in tax revenue while Country B collects $0.[3] Thus, Country B is incentivized to lower its tax rate to 10 percent, which moves the countries to scenario 4 in figure 3-2. Multinationals will be indifferent between Countries A and B if they both have a 10 percent tax rate, so both countries will collect $5 in revenue ($50 in taxable income per country multiplied by 10 percent). At

Figure 3-3. Statutory Corporate Tax Rates Across Countries



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Sources: International Monetary Fund; Organisation for Economic Co-operation and Development; Singapore Department of Statistics; U.N. Conference on Trade and Development; World Bank; CEA calculations.

Note: Select low-tax countries are Bermuda, British Virgin Islands, Cayman Islands, Ireland, Luxembourg, Montserrat, Switzerland, Singapore, and Turks and Caicos Islands. The G7 countries line does not include the United States. The corporate tax rates across G7 and low-tax countries are calculated by taking a GDP-weighted average of country-level corporate tax rates.

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[3] Scenario 3 in figure 3-2 represents the reverse outcome when Country A keeps its corporate tax rate at 15 percent and Country B lowers its corporate tax rate to 10 percent. In this scenario, multinationals will locate all of their economic activity in Country B. Country B will then collect $10 in tax revenue while Country A collects $0.

this point, Country A will not want to raise its tax rate unilaterally because doing so will drive all multinational activity to Country B, and vice versa. Thus, in equilibrium, both countries choose the lower relative tax rate and collect $5.

In this stylized example, when the countries compete to be an attractive location for multinational economic activity, they both lower their tax rates and collect less revenue. If tax competition continues, rates and revenues risk even further reduction. Both countries, however, would raise more tax revenue if they committed to cooperating (represented by scenario 1 in figure 3-2).

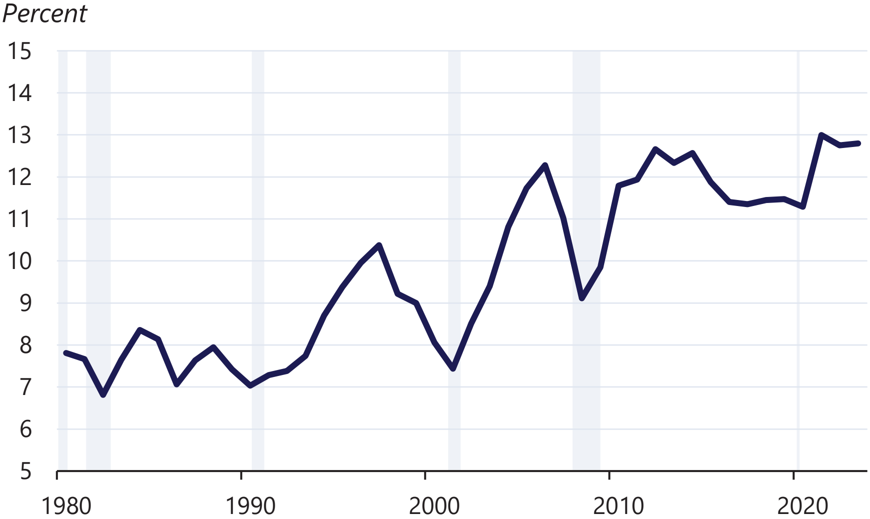
Prior to the Global Tax Deal, many countries engaged in tax competition (Duan et al. 2024). Specifically, several nations made their corporate tax systems favorable to business by reducing tax rates and providing targeted incentives to attract businesses and investment (Devereux, Lockwood, and Redoano 2008). Tax-haven countries, or low-tax countries, in particular offer low corporate tax rates to attract capital from high-tax countries (Hines 2007). Figure 3-3 shows how the U.S. statutory corporate tax rate (teal line) compares to that of other G7 countries (blue line) and select low-tax countries (navy line). The average corporate tax rate in these select low-tax countries has fallen from roughly 15 percent in 2000 to around 12 percent, where it has hovered for the last 15 years; by comparison, the other G7 countries' average corporate tax rate has steadily fallen from roughly 30 percent in the early 2000s to roughly 20 percent in 2023. In other words, tax competition has led to the race to the bottom predicted by the prisoner's dilemma, undermining government tax revenue collection.

Cross-Border Tax Planning by Multinationals

Variation in corporate tax rates across countries allows multinationals to locate economic activity in countries with relatively lower tax rates. Multinationals also reduce their worldwide tax liability through "income shifting," where they report income in low-tax countries and deductible expenses in high-tax countries in ways that are out of alignment with the economic activity that gives rise to their profits. This phenomenon is well-documented in the academic literature (Lall 1983; Grubert and Mutti 1991; Swenson 2001; Wier and Zucman 2022). Multinationals can engage in income shifting by: (i) manipulating transfer prices (e.g., prices on the sales and purchases of goods, services, and the use of intangibles between multinational affiliates) to shift income to tax-favorable countries,[4] and (ii)

[4] Transfer pricing rules require the use of an "arms-length" price, a price that would be reasonable to both parties in a transaction between unrelated parties, in transactions between affiliates within the same multinational group. However, taxpayers often fail to comply with these rules (Wier and Zucman 2022), and transfer pricing issues are the second most common uncertain tax position reported to the Internal Revenue Service (Towery 2017).

Figure 3-4. U.S. Corporate Income as a Share of U.S. GDP



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Gray bars indicate recessions. Income measure is before tax with inventory valuation and capital consumption adjustments.

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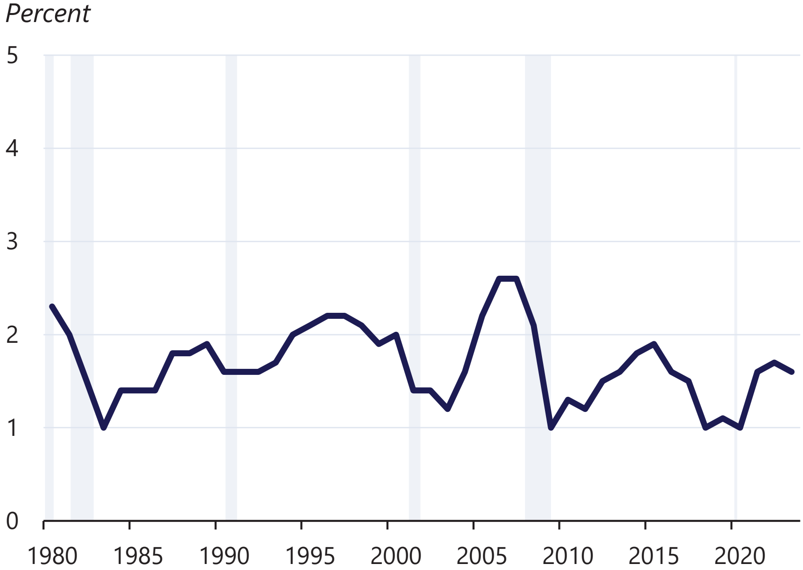
"earnings stripping" to lower taxes by strategically locating interest on debt in high-tax countries where tax deductions are more valuable (Treasury 2007). Heckemeyer and Overesch (2013) suggest that roughly three quarters of income shifting is achieved through transfer pricing manipulation and one quarter of income shifting is achieved through earnings stripping.

A more extreme way for multinationals to reduce their worldwide income tax liability is through corporate inversion. Inversions occur when multinationals change their country of domicile—or home country, usually where the parent entity is located—to take advantage of a favorable corporate tax regime (CBO 2017). Corporate inversions are not usually accompanied by major operational changes, highlighting the tax motivation for the transactions. A well-known inversion was the merger of U.S.-based Burger King and Canada-based Tim Horton's in 2014 (Capurso 2016). At the time, the U.S. corporate tax rate was 35 percent, while the corporate tax rate in Ontario, Canada was 26.5 percent (Deloitte n.d.).[5] The combined company moved its domicile to Canada, likely to secure the lower rate. The Congressional Budget Office estimates that companies inverting between

[5] Canada's federal corporate income tax rate was 15 percent, and the Ontario provincial corporate income tax rate was 11.5 percent in 2014.

Figure 3-5. U.S. Corporate Income Tax as a Share of U.S. GDP



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Sources: Congressional Budget Office; CEA calculations.
Note: Gray bars indicate recessions.
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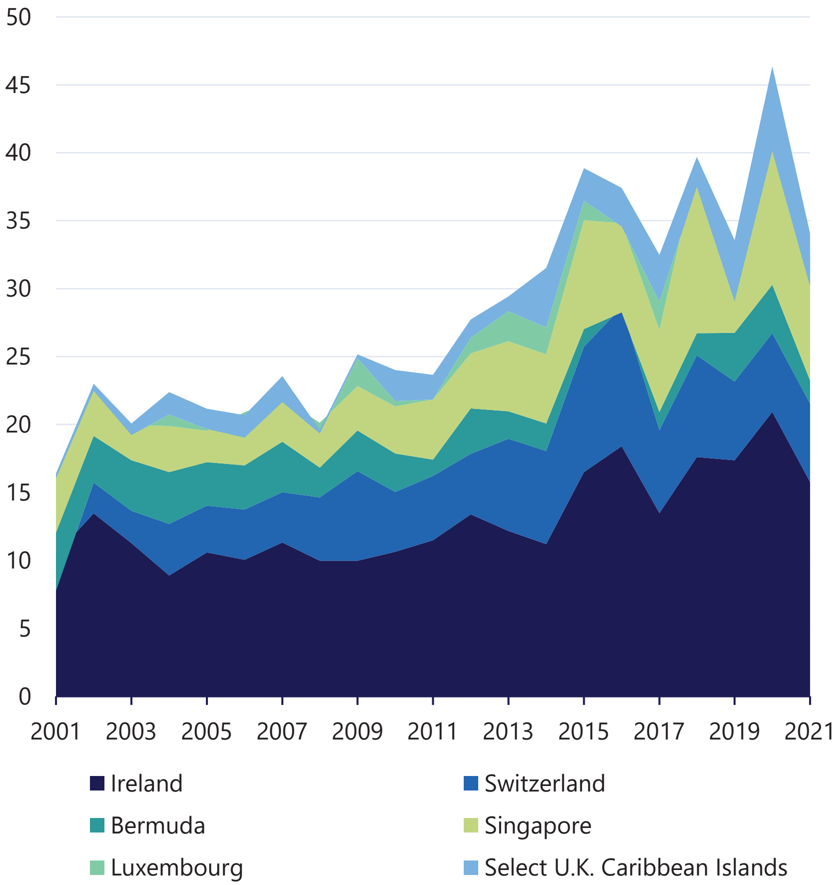
1994 and 2014 saw a $45 million reduction in their corporate tax expense after inversion on average (CBO 2017).

Strategies to exploit tax regime differences are collectively referred to as cross-border tax planning activities (Edwards, Hutchens, and Persson 2024). The effects of these activities on global corporate tax revenues are significant. As shown in figures 3-4 and 3-5, U.S. corporate income as a share of GDP has increased dramatically over the last forty years, yet corporate income taxes as a share of GDP have remained flat. Considering where foreign income is reported sheds light on the diverging trends. Among U.S. multinationals, the share of foreign income reported in the low-tax countries of Bermuda, British Virgin Islands, Cayman Islands, Ireland, Luxembourg, Montserrat, Singapore, Switzerland, and Turks and Caicos Islands more than doubled from 16 percent in 2001 to 34 percent in 2021 (figure 3-6).[6]

[6] This increase in the share of foreign income in low-tax countries occurred despite the 2017 Tax Cuts and Jobs Act reduction in the U.S. statutory corporate tax rate from 35 percent to 21 percent and reforms to the international tax system discussed later in the chapter.

Figure 3-6. Low-Tax Country Share of U.S. Multinationals' Foreign Affiliate Income



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Sources: Bureau of Economic Analysis; CEA calculations.
Note: Select U.K. Caribbean Islands are British Virgin Islands, Cayman Islands, Montserrat, and Turks and Caicos Islands. Foreign affiliate income includes majority-owned foreign affiliates only and equals pre-tax income net of income from equity investments (Blouin and Robinson 2023). When available, only equity from investments in foreign affiliates is used. Missing observations are assigned previous year's value.
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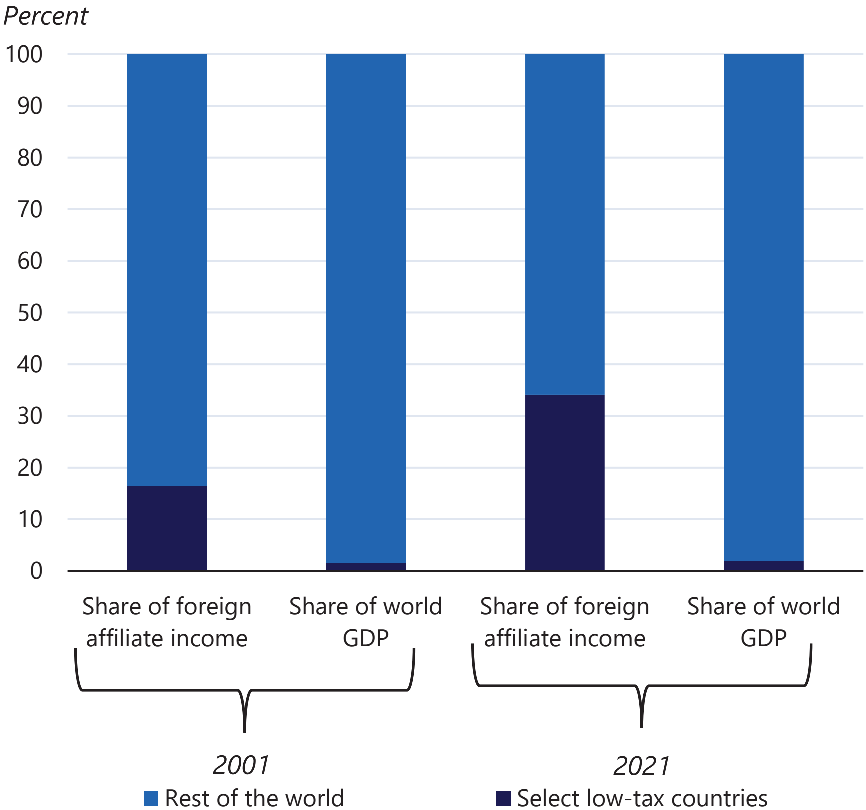
Economic Implications of Cross-Border Tax Planning

Cross-border tax planning, which includes the relocation of economic activity and income shifting, can yield production inefficiencies and social costs. In general, societal benefits can arise when multinationals allocate their resources to locations where they are most productive. For example, many non-U.S. multinationals locate activity in the United States to access a highly skilled workforce, legal protections, and innovation (Asadurian, Derrick, and McMahon 2024). When a multinational relocates economic activity to a country with comparatively low corporate tax rates but a highly productive environment, net societal benefits may remain if the productivity gains are sufficient to overcome lost corporate tax revenue.

Figure 3-7. Share of U.S. Multinationals' Foreign Affiliate Income vs. Share of World GDP



Council of Economic Advisers

Sources: Bureau of Economic Analysis; International Monetary Fund; Singapore Department of Statistics; U.N. Conference on Trade and Development; World Bank; CEA calculations.
Note: Low-tax jurisdictions include Bermuda, British Virgin Islands, Cayman Islands, Ireland, Luxembourg, Montserrat, Singapore, Switzerland, and Turks and Caicos Islands. Foreign affiliate income includes majority-owned foreign affiliates only and equals pre-tax income net of income from equity investments (Blouin and Robinson 2023). When available, only equity from investments in foreign affiliates is used. Missing observations for equity income are assigned previous year's value.
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On the other hand, if a multinational relocates economic activity to a less productive location because tax planning attracts it to low corporate tax rates, then the lost corporate tax revenue is compounded by the social cost of lower productivity.[7] Yet in other cases, multinationals shift income to less productive, low-tax locations without relocating economic activity, as discussed above, which deprives the more productive locations where such activities are actually performed of the related corporate tax revenue (Wier and Zucman 2022).

The macroeconomic implications of the scenarios above vary. Cross-border tax planning can undermine the efficient allocation of resources to the extent it causes multinationals to locate economic activity in less productive locations. For example, the analysis below examines mismatches between the allocation of reported corporate income versus actual economic activity as measured by GDP, which is often a consequence of cross-border tax planning.

The imbalance between the share of income earned in low-tax countries and the share of world economic activity occurring in low-tax countries suggests that multinationals record their income in low-tax countries for the tax benefit, not because the locations are conducive to growing their businesses. Figure 3-7 compares the share of U.S. multinational foreign affiliate income earned in select low-tax countries and the rest of the world to the relative GDP shares for the locations in 2001 and 2021.[8] In 2001, 16 percent of foreign affiliate income was reported in the select low-tax countries, which earned only 2 percent of total world GDP. In other words, the share of U.S. multinational income located in the low-tax countries was disproportionately larger than local GDP. By 2021, the gap had widened. The share of foreign affiliate income earned in the low-tax countries more than doubled to 34 percent, while the countries' GDP share remained at 2 percent. The trend suggests that cross-border tax planning likely reduces the U.S. corporate tax base without generating gains in economic output.

Unilateral Country Actions to Curb Cross-Border Tax Planning

To thwart cross-border tax planning activities and preserve corporate tax revenue, some countries have implemented policies unilaterally. For example, corporate anti-inversion rules have been used to discourage multinationals from relocating their headquarters to lower-tax countries (Yang and Aquilino 2016). Interest barrier rules limit interest deductibility amounts

[7] The scenarios described here are simplified for illustrative purposes. There would potentially be other tradeoffs and social cost/benefit issues associated with, for example, balancing corporate taxation and revenue needs with optimizing corporate investment, productivity, employment, and other factors, both from the perspective of a given country and globally.

[8] A foreign affiliate of a multinational is an entity that is partially or wholly owned by the multinational and is located in a country other than the multinational's home country (BEA 2018).

to prevent multinationals from holding excess debt in high-tax countries (Knauer and Sommer 2012). Controlled foreign corporation regimes levy income taxes on the foreign income of domestic companies to discourage shifting income to low-tax countries (Arnold 2012).

In the United States, the 2017 Tax Cuts and Jobs Act (TCJA) created three provisions that attempted to discourage cross-border tax planning, in addition to reducing the corporate tax rate from 35 percent to 21 percent (Congress 2017). First, the Global Intangible Low-Taxed Income (GILTI) provision levies a minimum tax on low-taxed foreign income associated with intangible assets (with an offsetting partial Foreign Tax Credit). Second, the Foreign-Derived Intangible Income deduction rewards companies that keep intangible assets within the United States with a reduced effective tax rate. Third, the Base Erosion and Anti-Abuse Tax applies a minimum tax to multinationals making large payments to foreign affiliates, a common strategy for shifting income outside of the country.

Importantly, because unilateral actions do not invoke global cooperation, they fail to overcome the prisoner's dilemma, which allows international tax competition to persist and enables multinationals to continue exploiting differences in tax regimes to lower their income tax liability. Indeed, the TCJA failed to stop cross-border tax planning: Clausing (2024) finds that the provisions have had indeterminate effects on cross-border tax planning, and figure 3-6 shows U.S. multinationals continue to report substantial income in low-tax countries.

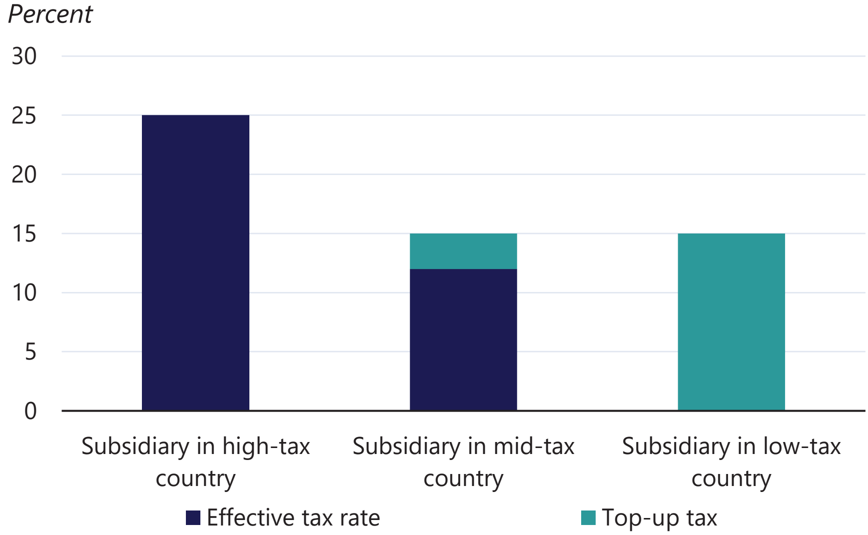
Addressing the Dilemma: Global Coordination

The Global Tax Deal outlines two pillars of reform (OECD 2021b). Pillar One, discussed in the next section of this chapter and not yet finalized, addresses where multinationals pay income taxes. Pillar Two, the Model Rules of which were published in December 2021 and are being implemented by countries around the world, addresses how much multinationals pay in income taxes (OECD 2021c).

Pillar Two aims to reduce tax competition by ensuring large multinationals pay a minimum level of tax regardless of where they operate. Multinationals with at least €750 million ($817 million in October 2024) in global revenues are subject to a global 15 percent minimum tax, effectively increasing taxes on multinationals with income in low-tax countries (OECD 2022). The minimum tax addresses the prisoner's dilemma arising from international tax competition by structuring payoffs such that any country's best option is to cooperate when setting corporate tax policies.

Pillar Two relies on three self-reinforcing mechanisms to ensure multinationals pay the 15 percent global minimum tax (OECD 2022). The mechanisms also incentivize countries to participate in Pillar Two. The first

Figure 3-8. Illustrative Example of Pillar Two Provisions for U.S. Multinationals



Council of Economic Advisers
Sources: Organisation for Economic Co-operation and Development; CEA calculations.
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mechanism is the Income Inclusion Rule, which is applied by the home country to a multinational's parent entity. Under the rule, the parent entity must calculate the effective tax rate the multinational faces in each country where it has a subsidiary.[9] For any country in which the multinational pays an effective tax rate of less than 15 percent, the home country imposes an additional tax, commonly known as a "top-up" tax, to account for the difference. The Income Inclusion Rule reduces incentives for multinationals headquartered in countries with such a rule to offshore income to low-tax countries.

For example, suppose the United States implements an Income Inclusion Rule and a U.S. multinational has three subsidiaries: the high-tax subsidiary has an effective tax rate of 25 percent, the mid-tax subsidiary has an effective tax rate of 12 percent, and the low-tax subsidiary has an effective tax rate of 0 percent. In figure 3-8, the teal area represents the difference between the effective tax rate the U.S. multinational pays in each country

[9] The effective tax rate equals the ratio of taxes paid in the country to domestic Global Anti-Base Erosion (GloBE) income in the country. GloBE income is financial reporting income adjusted to more closely align with the concept of corporate taxable income. See Hanlon and Nessa (2023) for a detailed discussion of the adjustments.

and the 15 percent global minimum tax. Under the Income Inclusion Rule, the United States collects the extra tax revenue represented by the teal area.[10]

The second mechanism is the Undertaxed Payments Rule (OECD 2020). The rule is applied to subsidiaries of multinationals headquartered in high-tax countries that do not implement an Income Inclusion Rule.[11] The Undertaxed Payments Rule incentivizes countries to participate in Pillar Two because if they fail to do so, they sacrifice revenue to other countries. Countries with the Undertaxed Payments Rule can disallow deductions for subsidiaries located within their borders if any other entities of the same multinational group pay an effective tax rate of less than 15 percent. The rule effectively allows countries who have signed on to Pillar Two to ensure that any multinationals with subsidiaries operating within their borders pay a global minimum tax of 15 percent, regardless of where the parent company is located. Notably, the Income Inclusion Rule has priority over the Undertaxed Payments Rule; that is, the latter cannot be applied to multinationals headquartered in countries that have implemented an Income Inclusion Rule (OECD 2020).

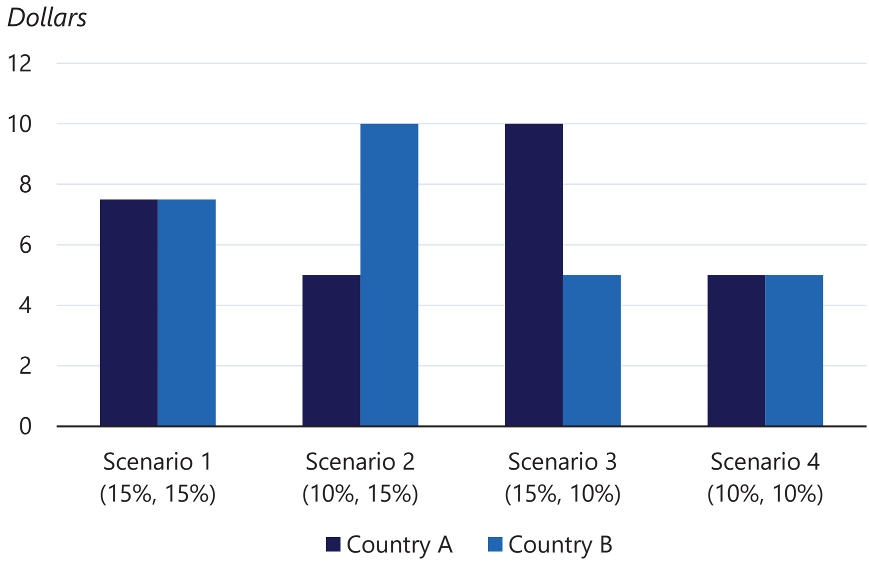
Continuing the previous example, suppose the United States does not implement an Income Inclusion Rule but the high-tax subsidiary country implements an Undertaxed Payments Rule. The Undertaxed Payments Rule allows the high-tax subsidiary country to collect the extra tax revenue represented by the teal area in figure 3-8.

The third mechanism is the Qualified Domestic Minimum Top-up Tax, which addresses situations where a country's tax rate falls below the global minimum tax rate (OECD 2023c). In this case, the country can apply its own top-up tax to ensure that large multinationals operating within its borders pay at least the global minimum tax rate. Adoption of a Qualified Domestic Minimum Top-up Tax is voluntary but self-reinforcing: If a country with a tax rate below 15 percent does not impose a Qualified Domestic Minimum Top-up Tax and a multinational subsidiary in the country pays an effective tax rate below 15 percent, other countries will be able to collect the top-up tax via the Income Inclusion Rule or Undertaxed Payments Rule. In other words, the low-tax country sacrifices tax revenue to another country and

[10] The U.S. GILTI regime in its current form does not qualify as an Income Inclusion Rule because the effective GILTI tax rate is less than 15 percent and the tax is calculated on a global basis rather than a country-by-country basis. Levying a minimum tax on a global basis enables multinationals to pay less than 15 percent tax in low-tax countries because tax rates are averaged across high- and low-tax non-U.S. countries in which they operate. Further, some design features of the GILTI regime create incentives for U.S. multinationals to shift income outside of the United States (Treasury 2024).

[11] The OECD established a transitional safe harbor where no tax will be payable under the Undertaxed Payments Rule for any undertaxed income of a multinational in its ultimate parent entity country if that country applies a corporate income tax rate of at least 20 percent (OECD 2023b). The safe harbor will defer the application of the Undertaxed Payments Rule to such income until 2026.

Figure 3-9. Prisoner's Dilemma-Based Corporate Tax Revenue Under Global Tax Deal Pillar Two



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Sources: Organisation for Economic Co-operation and Development; CEA calculations.
Note: Figure shows the prisoner's dilemma-based corporate tax revenues collected by Countries A and B under the Global Tax Deal Pillar Two. The first term in parentheses is the corporate tax rate set by Country A, and the second term in parentheses is the corporate tax rate set by Country B. This example assumes that total economic activity is held constant, meaning multinationals can only change the allocation of economic activity across countries, multinationals report income where their economic activity is located, and total taxable income equals $100.
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would be better off enacting a Qualified Domestic Minimum Top-up Tax to collect the tax revenue. Consistent with this incentive, multiple low-tax countries have announced their intention to impose a Qualified Domestic Minimum Top-up Tax, and Bermuda has increased its statutory corporate tax rate from 0 percent to 15 percent (Sullivan 2023; PwC 2024a).

Building on the ongoing example, if the mid-tax subsidiary country and the low-tax subsidiary country do not want to forgo revenue, they can collect the tax revenue represented by their respective teal areas by enacting a Qualified Domestic Minimum Top-up Tax.

Thus, the proposition that Pillar Two lays out to countries is quite simple: As long as at least one country involved implements one of the Pillar Two provisions, the tax revenue up to a 15 percent effective tax rate (represented by the teal area in figure 3-8) is available for collection. Countries can either adopt one or more of the Pillar Two provisions and collect their share or allow other countries to collect the additional tax revenue.

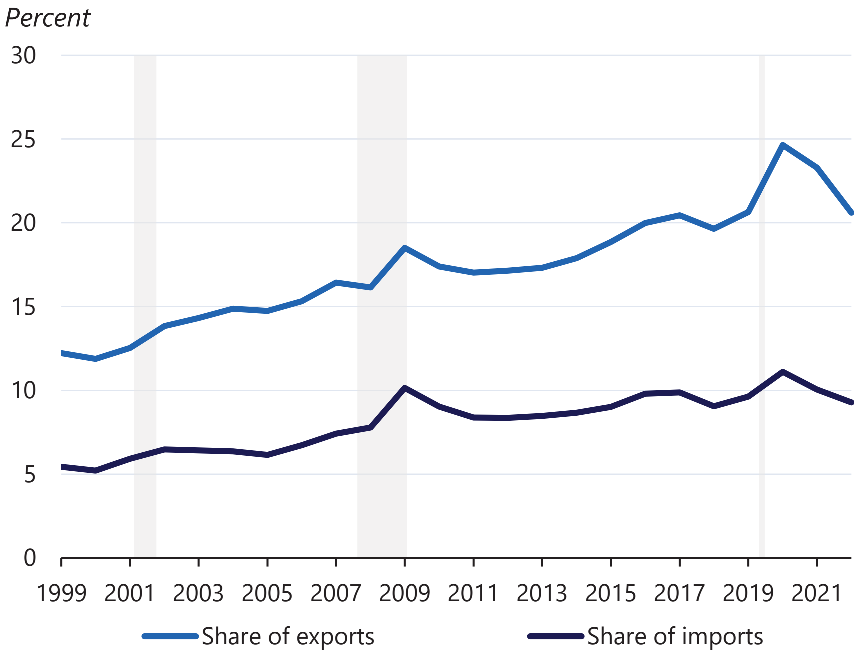
Revisiting the two-country prisoner's dilemma example, Pillar Two restructures the payoffs such that each country's best option is to cooperate. Figure 3-9 shows the adjusted payoffs. As before, if both countries have a corporate tax rate of 15 percent, as described in scenario 1, multinationals choosing whether to locate economic activity in Country A or Country B will be indifferent between them, so both countries will collect $7.50 in tax revenue ($50 in taxable income per country multiplied by 15 percent).

The innovation of Pillar Two is that the three mechanisms collectively make multinationals indifferent between Countries A and B, even if one of them chooses to lower their tax rate, because multinationals will pay 15 percent tax regardless. Pillar Two therefore removes countries' incentives to lower their corporate tax rates. Consider scenario 2 of figure 3-9. If Country A reduces its tax rate to 10 percent and therefore does not participate in Pillar Two, it will collect only $5 in tax revenues on the $50 of income within its borders. This is because the Pillar Two provisions enable Country B to collect extra taxes so that multinationals still pay an effective rate of 15 percent on Country A income. Country A collects 10 percent on the $50 earned within its borders, while Country B collects 15 percent on the $50 earned within its borders plus 5 percent on the $50 earned in Country A. Country A only collects $5, while Country B collects $10. Neither country has an incentive to defect from the agreement represented by scenario 1 of figure 3-9 and should therefore cooperate. This is in contrast with the pre-Pillar Two payoff structure, where both countries could earn higher payoffs by lowering their corporate tax rate relative to the other country.

Overall, Pillar Two overcomes the prisoner's dilemma by eliminating a country's incentive to reduce its corporate tax rate below 15 percent.[12] In doing so, it protects future global corporate tax revenues by curbing tax competition. This is particularly important given the fiscal challenges facing countries around the world (Dabla-Norris, Di Gregorio, and Cao 2024). However, its ultimate success depends on countries enacting legislation to incorporate Pillar Two into their national laws. The Organisation for Economic Co-operation and Development published the Model Rules in December 2021 (OECD 2021c). As of September 2024, 31 countries, including most EU members, Canada, Japan, Liechtenstein, Malaysia, New Zealand, Norway, South Korea, Switzerland, Turkey, the United Kingdom, and Vietnam, have enacted legislation to incorporate Pillar Two (PwC 2024b). Another 34 countries have proposed legislation or announced plans for implementation. The United States has not yet passed legislation to enact

[12] The Pillar Two 15 percent tax rate represents a floor, so countries may choose to have a higher global tax rate. For example, in the United States, the President's FY 2025 Budget proposes a 21 percent GILTI tax rate (Treasury 2024).

Figure 3-10. Digital Services as a Share of U.S. Trade



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Sources: Bureau of Economic Analysis; Census Bureau; CEA calculations.
Note: Gray bars indicate recessions. Digital services are defined as services potentially enabled by information and communication technology.
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Pillar Two, though the FY 2025 President's Budget proposes one path to implementation (White House 2024).

Digitalization and Rethinking Taxing Rights

In addition to cross-border tax planning activities, the rise of the digital services business model creates unique taxation issues. Many traditional tax systems focus on production location to determine taxing rights, meaning multinationals have historically paid income tax where they produce goods or services, rather than where their customers are located (Nersesyan 2021). However, digital services can be produced across multiple countries or on the internet.

Consider the following hypothetical scenario of a U.S. multinational operating a search engine available to users worldwide. When a business in Canada buys advertising space on the U.S. multinational's search engine and the advertisements are viewed by Canadian consumers, which country has

Table 3-1. Digital Services Tax Implementation Timeline

2019	*2020*	*2021*	*2022*	*2023*	*2024*
France	Argentina	Kenya	Nepal	Uganda	Canada
	Austria	Spain	Tanzania		Colombia
	Italy				Sierra Leone
	Poland				
	Tunisia				
	Turkey				
	United Kingdom				

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Sources: KPMG; CEA calculations.
Note: Table lists countries that have enacted a digital services tax. Countries are listed under the year that their digital services tax went into effect. Canada's digital services tax, which went into effect on June 28, 2024, retroactively applied to revenues earned as of January 1, 2022.
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the right to tax the advertising profits? Under a traditional tax system, the United States has taxing rights because the multinational physically operates in the United States and does not have a physical presence in Canada.

To provide perspective on the magnitude of cross-border digital services activity, figure 3-10 shows that the share of U.S. trade involving digital services has increased from 14 percent to 21 percent of exports and from 6 percent to roughly 9 percent of imports over the past two decades. The growth in digital services has exacerbated the tension between traditional tax systems and the global nature of multinationals.

In response to the rise of digital services activity, some countries have unilaterally attempted to levy taxes on revenue multinationals generate from customers within their borders (KPMG 2024). Often referred to as digital services taxes, they are grounded in part on the claim that users create value for digital services companies, and these companies therefore do not pay enough tax in the countries where those users are located (Stotzky and Fano 2023). Generally, countries impose the taxes on large multinationals based on total revenue associated with specific digital services (e.g., advertising, online marketplaces, cloud services, social networks, and online dating).

To illustrate the prevalence of digital services taxes, table 3-1 provides a timeline of implementation around the world. In addition to the 16 countries listed in the figure, other countries have announced intentions to implement a digital services tax.

A country-by-country approach to taxing digital services is problematic for at least three reasons. First, unilateral digital services taxes may pose potential barriers to international trade to the extent they disproportionately burden or restrict the economic activities of the implementing country’s trading partners. One approach that could be considered discriminatory is when a country sets a revenue threshold on its digital services tax such that foreign multinationals are disproportionately impacted by the tax and domestic multinationals are disproportionately excluded from it. Foreign multinationals subject to discriminatory digital services taxes may then be forced to compete on unfair terms. The discrimination concern is especially pronounced for U.S. multinationals because they represent a plurality of the largest global digital companies (Forbes 2024).

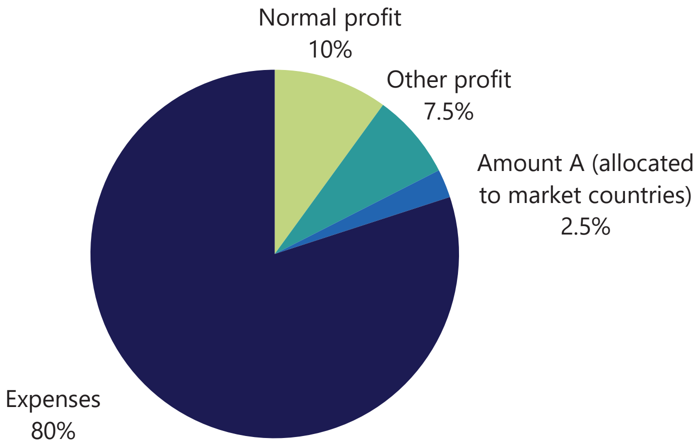
Second, as discussed in Hines (2023), countries acting unilaterally have incentives to impose excessively high tax rates on digital multinationals because the costs of higher taxes (i.e., reduced economic activity) are borne by all countries in which the digital multinationals have users. For example, imagine a European country levies a tax on the digital services revenue of a U.S. multinational providing a search engine. Because the tax reduces the multinational's after-tax profits, the multinational could respond by reducing economic output, such as reducing the quality of its search engine. The reduced search quality would be borne by all of the multinational's worldwide consumers, not just those in the European country. Thus, because the European country collects all the tax revenue generated by its consumer activity but bears only a portion of reduced worldwide economic activity, the European country is incentivized to impose inefficiently high tax rates on digital services activity. Indeed, all countries where the U.S. multinational has users have the same incentive to impose significant taxes. This ultimately can result in a reduction of economic activity, which erodes the global tax base.[13] These incentives underscore the need for a cooperative approach to taxing digital services activity.

Third, when digital services are taxed unilaterally, countries do not coordinate to ensure that the same revenues are not subject to multiple layers of taxation. In other words, without a coordinated method of apportioning the revenues, the multinational can end up paying multiple layers of tax on the same advertising revenues. Further, because digital services taxes are levied on revenues rather than profit (revenues minus expenses), the multinational could face digital services taxes, and potentially multiple layers of digital services taxes, even if it is not profitable. For example, a multinational that earns revenues of $1 million and incurs expenses of $1.5 million reports net losses of $500,000. If a digital services tax is levied on the multinational's revenues rather than its profit, the multinational might not have the wherewithal to pay the tax because its expenses exceed its revenues.

Given the concerns with a unilateral approach to cross-border digital services taxation, Pillar One of the Global Tax Deal would replace the

[13] It is also important to consider the economic incidence of digital services taxes. To the extent that customer demand is inelastic, passing digital services taxes on to customers through increased prices could reduce the impact of digital services taxes on multinationals' economic activity.

Figure 3-11. Illustrative Example of Pillar One Amount A for Multinational Earning a 20% Profit



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Sources: Organisation for Economic Co-operation and Development; CEA calculations.
Note: Figure illustrates the computation of Amount A for a multinational with global revenues above 20 billion euros that earns profit equal to 20 percent of revenues.
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existing patchwork of digital services taxes with a unified framework for levying taxes based in part on the location of a multinational's customers (OECD 2023d). Specifically, Pillar One reallocates a portion of a multinational's taxable profit, referred to as Amount A, to its "market countries," defined as countries where its customers are located regardless of where its physical operations are located or where value is actually created (OECD 2023d). For example, Canada would be a market country for a U.S. multinational operating a search engine and earning revenue from Canadian businesses advertising to Canadian consumers via the search engine, even if the multinational has no physical presence in Canada.

Amount A is a portion of a multinational's residual profit, calculated as 25 percent of profit exceeding 10 percent of revenues (OECD 2023e). For example, say a large U.S. multinational operating a search engine earns profit equal to 20 percent of its revenues (see figure 3-11). Pillar One deems the first 10 percent as routine and the associated taxing rights would therefore not be reallocated from the multinational's home country to market countries. Twenty five percent of the remaining 10 percent (i.e., 2.5 percent) represents the multinational's Amount A income. The right to tax the Amount A income would be reallocated to market countries in proportion to the multinational's sales distribution across the market countries.

Levying taxes on profit rather than revenues ensures that multinationals with low or negative profits do not face taxes that they do not have the wherewithal to pay. In cases where multiple countries have claims to a multinational's residual profit, the profit is allocated across countries according to a formula based on final sales in each country. Tax credit and deduction rules help ensure that digital services profits are not taxed multiple times (OECD 2023f).

Pillar One alters the authority of market countries to tax the profits of certain multinationals based on the multinational's sales to customers within their borders, regardless of the physical location of the multinational's assets (OECD 2023e). The Amount A rules apply only to multinationals with global revenues above €20 billion ($21.8 billion in October 2024) and profitability above 10 percent of revenues (OECD n.d.). Devereux and Simmler (2021) report that 78 of the world's largest 500 companies would likely be affected by Pillar One, with roughly 64 percent of Amount A income associated with multinationals headquartered in the United States.

Although Pillar One Amount A applies to large multinationals across different industries, its coordinated approach to taxing digital services addresses the global rise in digitalization.[14] Negotiations are ongoing to finalize the Pillar One guidelines. As noted, a growing number of countries have implemented or plan to implement digital services taxes. Pillar One would replace the existing patchwork of digital services taxes, effectively prohibit new digital services taxes, and resolve substantial uncertainty regarding their fate around the globe.

Why the United States Would Benefit from Adopting the Global Tax Deal

In October 2021, U.S. negotiators agreed with over 130 other countries to develop a version of Pillars One and Two of the Global Tax Deal that includes certain pre-agreed key elements, maintaining that U.S. participation would level the playing field for U.S. businesses and protect U.S. workers

[14] Another element of Pillar One (commonly known as "Amount B" or the "simplified and streamlined approach") aims to simplify transfer pricing rules for certain routine wholesale distribution activities of multinationals (OECD 2024). As noted previously, multinationals sometimes manipulate transfer prices on transactions between affiliates to shift income between countries. This leads to a corresponding shift of the tax base between countries. Wholesale distribution transactions are extremely common within multinational groups and are relatively easy to price. However, despite their frequent nature and the ease of pricing them, these transactions are notorious for generating costly disputes, not only between taxpayers and tax administrations, but also between tax administrations (Sutton 2024). The Amount B provision of Pillar One is intended to improve tax certainty, reduce tax compliance and tax administration costs, and improve efficiencies in the tax system by providing simplified and streamlined transfer pricing rules for routine wholesale distribution activities.

(Yellen 2022). Although the Pillar One guidance is not yet finalized, the President's FY 2025 Budget proposes multiple measures designed to bring the United States into compliance with Pillar Two (Treasury 2024). The measures include modifying the GILTI rules to be applied on a country-by-country basis, raising the minimum tax rate on GILTI to 21 percent, and adopting an Undertaxed Payments Rule.

Ultimately, legislative action would be required to bring the United States into compliance with the Global Tax Deal. The United States has strong reasons to enact such legislation, including potential revenue generation and more efficient allocation of economic resources.

Potential Revenue Generation

The global race to the bottom and the rise of cross-border tax planning have contributed to growing budget deficits. The Congressional Budget Office projects that the U.S. national deficit will rise to a peak of 7.1 percent of GDP in 2033 as the aging population increases Social Security and Medicare spending and revenues do not keep pace (CBO 2024b). High deficits could present challenges, including limiting the government's ability to finance coordinated federal responses to negative macroeconomic shocks, crowding out private investment, and raising government borrowing costs (Boskin 2020). Although analysts do not agree on a tipping point at which debt levels become economically harmful (Caner, Grennes, and Koehler-Geib 2010; Yang and Su 2018; Gokhale and Smetters 2023), recent and projected trends underscore the need for revenue-raising tax reform, including from multinationals, that can ensure the United States is on a sustainable fiscal path.

Given that many U.S. multinationals are already operating in countries that have enacted Pillar Two legislation, the United States will lose out on revenue if it does not adopt the deal. As long as any single country where a multinational operates has enacted an Undertaxed Payments Rule, the multinational must pay the 15 percent minimum tax in all countries in which it operates. Other countries may therefore capture tax revenue that would otherwise flow to the United States. If the United States adopts the Global Tax Deal, it will collect the top-up tax on U.S. multinationals' foreign income. If the United States does not adopt the deal, other countries will collect the top-up tax on U.S. multinationals' foreign income via their Undertaxed Payments Rule. Indeed, the Income Inclusion Rule, Undertaxed Payments Rule, and Qualified Domestic Minimum Top-up Tax are designed to incentivize countries to adopt the Global Tax Deal because they will miss out on potential tax revenue, and even surrender the revenue to other countries, by failing to adopt.

Scoring the prospective revenue from U.S. adoption of Pillar Two is challenging, given the many variants of how countries can adopt and how multinationals can change their income shifting behavior. However, the CEA's view is that U.S. adoption of Pillar Two is highly likely to generate new revenues by stabilizing the international tax system and ending the race to the bottom, thus allowing the United States to more sustainably and fairly tax multinationals' income.

More Equitable and Efficient Economic Resource Allocation

As discussed earlier, international tax competition resulted in a significant reduction in average corporate tax rates over the past two decades. To the extent U.S. multinationals relocate economic activity to less productive locations because they are attracted to low corporate tax rates, lost corporate tax revenue is compounded by the social cost of lower productivity. Further, U.S. multinationals shifting income to less productive, low-tax locations without moving economic activity out of the United States deprives the United States of the related corporate tax revenue. The Global Tax Deal alleviates this distortionary behavior.

Domestic businesses cannot engage in cross-border tax planning activity, making it harder for them to compete with multinationals as they must earn greater pre-tax profits to make the same after-tax profits as multinationals. The Global Tax Deal levels the playing field for domestic U.S. businesses by disincentivizing cross-border tax planning. In doing so, the deal also encourages businesses to allocate capital based on workforce talent and market factors instead of tax minimization strategies.

The revenue thresholds for digital services taxes generally result in the taxes being applied to large multinationals, which are disproportionately based in the United States. A 2019 report by the Office of the U.S. Trade Representative indicates that eight of the nine firms potentially subject to France's proposed Digital Services Tax on advertising revenue at the time were based in the United States and more than 75 percent of digital advertising in France was accounted for by U.S.-based Alphabet (formerly Google) and Meta (formerly Facebook) (USTR 2019). Pillar One's worldwide efficacy therefore depends on U.S. approval. Without Pillar One, digital services taxes will continue to proliferate, leading to excessively high digital services tax rates and double taxation that will disproportionately harm U.S. multinationals.

Adopting the Global Tax Deal will also enable multinationals to reallocate resources used for tax planning and tax compliance to more productive uses. Multinationals often hire employees or outside advisers specifically dedicated to optimizing their income shifting strategies. U.S. adoption of the Global Tax Deal would bring congruence and stability to the international tax system, which will reduce tax uncertainty for U.S. multinationals and make the monetary investments in tax-motivated income shifting less profitable.

Conclusion

Despite significant macroeconomic shocks and geopolitical tensions over the past decade, the global economy remains deeply interconnected. Given the integrated world economy, the rise of digital services, and the distortionary incentives that result from tax competition, a multilateral tax system aligned with the nature of today's multinationals would benefit the United States and the world. International tax coordination will evolve as countries learn whether the provisions are functioning as intended. But given that multinationals based in the United States represent a substantial portion of global GDP, the country's participation in any international tax agreement is crucial for the system's effectiveness and efficiency.

Many provisions of the 2017 Tax Cuts and Jobs Act are set to expire at the end of 2025, giving U.S. lawmakers an opportune moment to consider the Global Tax Deal (CRS 2024). The impending sunsets, combined with the need for more revenue to address growing budget deficits, have generated much discussion about the future of the U.S. tax system, including multinational taxation. From the perspective of efficiency, fairness, productivity, and fiscal sustainability, the United States would benefit from adopting the Global Tax Deal provisions and working cooperatively with other countries to bring the international tax system into alignment with the globalized economy.

Chapter 4

Expanding and Strengthening U.S. Health Insurance Coverage

Health insurance provides valuable financial protection against costly medical expenses and allows people to access essential healthcare. It can improve quality and length of life, and for some groups like children, the benefits can be particularly long lasting, leading them to grow into healthier and more economically secure adults with healthier children of their own.

This chapter explores the many recent policies undertaken by the U.S. government to help individuals and families access affordable and high-quality health insurance coverage. What is the rationale for many of these interventions and expenditures, and why has the Biden-Harris Administration taken extensive action to ensure more Americans than ever before can access health insurance?

Economists have long understood that private health insurance markets can malfunction on their own and, as a result, leave many people without affordable coverage options (Mankiw 2017). Health insurance works by pooling risk among a group of people and collecting an upfront fee (i.e., premium) to cover the expected costs of their healthcare. For insurance to work properly, not everyone in the pool can become ill and require expensive care at the same time. Because health costs can be predicted to some extent by both the individuals and entities bearing the risk, insurance pools must include people with differing levels of risk (CRS 2023a). For this reason, every high-income country in the world other than the United States either provides or mandates universal health insurance coverage to encourage broad risk pooling (Schneider et al. 2021).

The United States has taken an approach centered around employer-based insurance coverage, with approximately 54 percent of people receiving individual- or family-level coverage through an employer at any point during the year (Keisler-Starkey and Bunch 2024). By providing coverage to employees and their family members, employer-based coverage pools risk (Claxton, Rae, and Winger 2024). For certain people without access to employer-based insurance, such as entrepreneurs and other workers without an offer of coverage, retirees, and those unable to work or with low income, federal programs provide coverage. The United States provides public insurance coverage to retirees, individuals with disabilities, and low-income families through Medicare or Medicaid. Everyone else is able to purchase private health insurance coverage through a marketplace regulated by the government to provide quality insurance options.

Without government intervention, the private market would likely underprovide essential health insurance coverage to many Americans—an outcome the Biden-Harris Administration has worked to avoid. Prior to federal reform under the 2010 Affordable Care Act (ACA), it was difficult for many people without access to employer-based coverage to acquire health insurance (Collins et al. 2017). The ACA addressed the problem by creating a regulated Marketplace for private health insurance coverage, providing government subsidies for Americans to purchase coverage, and expanding Medicaid eligibility to low-income adults in the 40 states and D.C. that have adopted Medicaid expansions (KFF 2024a). As a measure of the ACA's success, the uninsurance rate declined from 14.5 percent in 2013, the year prior to these changes, to 8.6 percent in 2016 (Census 2013; Census 2016). However, the uninsurance rate slowly ticked up over the next four years, and the COVID-19 pandemic made it clear that uninsurance and underinsurance (i.e., when people have gaps in coverage or coverage that does not provide adequate financial protection) remained barriers to people accessing the healthcare they need (Bornstein et al. 2020).

Table 4-1. Notable Biden-Harris Administration Health Insurance Policies

Expanding Access to Marketplace Coverage
• Increased generosity of Premium Tax Credits to help purchase Marketplace coverage • Created a special open enrollment period in 2021 in response to the pandemic • Extended the annual open enrollment period to 10 weeks • Substantially increased funding for advertising and enrollment assistance • Established a year-round special enrollment period for those with incomes less than 150 percent of the federal poverty level • Fixed the family glitch to extend financial assistance to eligible family members •.Protected consumers from junk health plans with short-term duration limits and coverage disclaimers
Protecting and Extending Medicaid Coverage
• Raised federal matching funds to encourage states to adopt ACA Medicaid expansions • Provided states with the option to extend postpartum Medicaid coverage from 60 days to 12 months • Required states to provide 12 months of continuous eligibility for children in Medicaid and CHIP • Minimized declines in coverage following the end of pandemic-era continuous Medicaid coverage
Strengthening Prescription Drug Coverage and Reducing Costs Under Medicare
• Limited out-of-pocket insulin spending under Medicare Parts B and D to $35 per month/prescription • Expanded the Low-Income Subsidy Program under Medicare Part D • Capped out-of-pocket prescription drug spending under Part D beginning in 2024 • Gave Medicare the authority to negotiate prices of certain high-price drugs

The Biden-Harris Administration made it a priority to build on and strengthen the success of the ACA to achieve its aim of extending quality health coverage to all Americans. Table 4-1 provides a list of the Administration's notable policies. As a result of the efforts, uninsurance rates reached all-time lows during the last four years. Specifically, the Administration took major steps to build on the three main sources of health insurance for people without access to affordable employer-based coverage: the Marketplace, Medicaid, and Medicare. The Administration expanded access to financial assistance for individuals and families to purchase Marketplace coverage, leading to unprecedented levels of enrollment. The Administration also put policies in place, including some intended to reduce insurance loss during the end of pandemic-era program expansions, to both expand and protect Medicaid coverage for low-income individuals. Finally, the Administration enhanced the Medicare program by taking steps to improve prescription drug affordability and provide relief to elderly Americans and those with disabilities.

This chapter begins with a brief overview of recent changes in insurance coverage in the United States and evidence on the benefits of health insurance. The remaining sections review the major developments in health insurance policy over the last four years as they relate to the Marketplace, Medicaid, and Medicare programs.

The Role of Health Insurance

The United States reached record high rates of insurance coverage over the last four years. The share of people with insurance coverage increased from 91.4 percent in 2021 to 92.1 percent in 2023, which is the most recent year of data available (see figure 4-1). The growth in coverage under the Biden-Harris Administration reverses a decline observed between 2017 and 2019 and builds onto the coverage increase between 2013 and 2016 associated with the ACA.

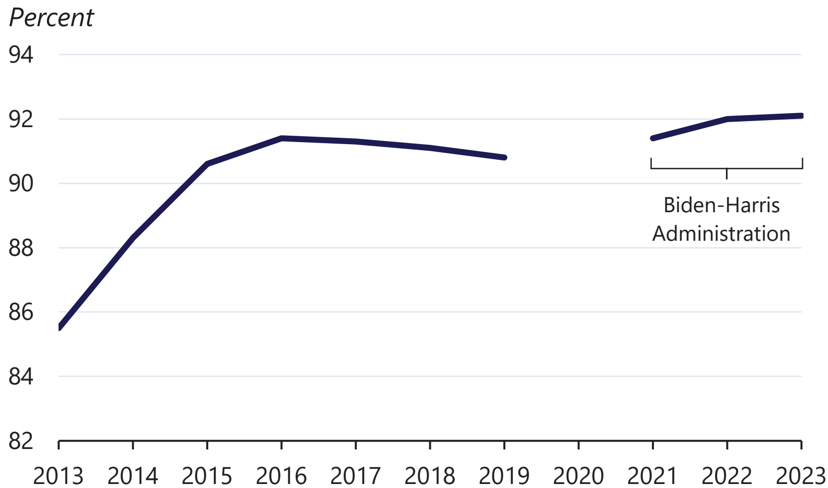
Insurance Coverage and Financial Protection

The primary purpose of health insurance is to protect against unexpected healthcare expenses. Not only is healthcare costly, but there is uncertainty around when an individual might become sick or injured and require care. Health insurance reduces risk exposure by allowing people to pay a premium to cover the healthcare expenses associated with any negative health event.

Health insurance coverage has been shown to reduce out-of-pocket medical expenditures. For example, the introduction of Medicare in 1965 led to a 40 percent decline in out-of-pocket spending for those in the top quartile of healthcare expenditures (Finkelstein and McKnight 2008). In a 2008 randomized lottery for expanded Medicaid coverage in Oregon, low-income adults gaining coverage saw substantial decreases in out-of-pocket spending, including the near elimination of catastrophic expenditures (Baicker et al. 2013).

Protection against medical expenditure risk affects people's overall financial security. An analysis of the Oregon lottery found that Medicaid

Figure 4-1. U.S. Insurance Coverage Rate, 2013–2023



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Source: American Community Survey Tables for Health Insurance Coverage.
Note: Respondents are considered to have insurance coverage if they have a current source of coverage other than the Indian Health Service. The ACS did not release 2020 health insurance coverage estimates due to the pandemic's impact on data collection.
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coverage reduced the likelihood of borrowing money or skipping bills to pay for medical care by 58 percent (Baicker et al. 2013), with a 25 percent reduction in unpaid medical bills being sent to a collection agency (Finkelstein et al. 2012).

Quasi-experimental studies of Medicaid and insurance expansions in other states have similar findings, indicating that expanded coverage reduces medical debt and leads to better financial outcomes, including higher credit scores and better terms of credit, fewer payday loans, and a reduction in personal bankruptcies (e.g., Gross and Notowidigdo 2011; Mazumder and Miller 2016; Allen et al. 2017; Hu et al. 2018; Caswell and Waidmann 2019; Brevoort, Grodzicki, and Hackmann 2020; Miller et al. 2021). Research indicates the transition to Medicare coverage at age 65 leads to similar financial protection (Barcellos and Jacobson 2015; Caswell and Goddeeris 2020; Goldsmith-Pinkham, Pinkovskiy, and Wallace 2023).

Growing evidence suggests that expanded access to health insurance can prevent low-income families from having to go without other necessities to pay for essential medical care. Studies of the ACA Medicaid expansions beginning in 2014, which have been shown to reduce out-of-pocket medical spending among low-income adults (Abramowitz 2020), find lowered rates of food insecurity (Moellman 2020) and housing eviction (Allen et al. 2019), indicating the expansions made households better able to meet their basic needs. Additionally, families gaining eligibility for financial assistance to purchase Marketplace coverage under the ACA saw a 25 percent decline in their rate of home payment delinquency (Gallagher, Gopalan, and Grinstein-Weiss 2019).

Insurance Coverage and Health

In addition to offering financial protection, health insurance has the potential to improve health if it increases access to effective medical care. The effect is often observed among low-income populations who may be unable to otherwise afford healthcare and who also have worse health outcomes than higher income groups.

Following the ACA Medicaid expansions, low-income adults reported improved ability to access medical care across a range of measures (Guth, Garfield, and Rudowitz 2020). Not only did utilization increase for many types of healthcare (Guth, Garfield, and Rudowitz 2020), but research indicates that the use of services known to be particularly beneficial for health, including screenings and treatment for cancers (Eguia et al. 2018; Sabik et al. 2018) and prescription drugs for chronic conditions like diabetes and heart disease (Ghosh, Simon, and Sommers 2019), also increased. The results are generally consistent with research on the Oregon Medicaid lottery that found the program increased the use of many types of care, including preventive services, in addition to diagnosis of and medication use for diabetes (Finkelstein et al. 2012; Baicker et al. 2013; Finkelstein et al. 2016).

While changes in health can be difficult to measure with available data, evidence indicates that access to health insurance does impact health for certain groups. One of the Oregon lottery analyses found significant improvements in self-reported health measures among those gaining Medicaid coverage (Finkelstein et al. 2012), a similar finding to that of many ACA insurance expansion studies (Soni, Wherry, and Simon 2020). While studies of the Oregon lottery did not detect overall changes in physical health measures (Baicker et al. 2013), a recent re-analysis found that people with little prior healthcare use who gained Medicaid experienced an improvement in blood pressure (Inoue et al. 2024). Studies examining the impact of historic Medicaid expansions have documented large reductions in infant and child mortality (Currie and Gruber 1996a; Currie and Gruber 1996b; Goodman-Bacon 2018), findings echoed in recent research showing substantial declines in adult mortality as a result of the ACA Medicaid expansions or other state insurance expansions (Sommers, Baicker, and Epstein 2012; Sommers, Long, and Baicker 2014; Borgschulte and Vogler 2020; Miller, Johnson, and Wherry 2021; Wyse and Meyer 2023). A novel experimental study of a federal outreach program increasing insurance coverage primarily through the ACA Marketplace found that the intervention reduced mortality among middle-aged adults (Goldin, Lurie, and McCubbin 2021). Finally, there is evidence that Medicare coverage reduces mortality among elderly patients hospitalized with serious illnesses (Card, Dobkin, and Maestas 2009).

Growing evidence also suggests that, in addition to having short-term effects on health outcomes, access to health insurance has the potential to improve long-term health trajectories. Using quasi-experimental research designs exploiting variation in childhood exposure to Medicaid across cohorts or geographic areas to identify long-term effects, researchers have found evidence of improved self-reported health at later ages (Currie, Decker, and Lin 2008), reduced chronic diseases and related hospitalizations (Boudreaux, Golberstein, and McAlpine 2016; Thompson 2017; Wherry et al. 2018; Miller and Wherry 2019), reductions in disability (Goodman-Bacon 2021), and reduced mortality later in life (Wherry and Meyer 2016; Sohn 2017; Brown, Kowalski, and Lurie 2020; Goodman-Bacon 2021).

Health insurance coverage can also impact the health of future generations of Americans. Evidence indicates that not only do children who gain Medicaid coverage grow into healthier adults, but they also have healthier children of their own (East et al. 2023).

Insurance Coverage, Labor Supply, and Beyond

Despite concerns that expanding subsidized options for non-employer-based health insurance could negatively affect labor supply, evidence of the effect is minimal. One review concludes that ACA insurance expansions did not have major impacts on employment, hours worked, or wages (Gruber and Sommers 2019). The findings are consistent with evidence from the Oregon lottery, where researchers found Medicaid had no effect on employment status or earnings (Baicker et al. 2014). Other evidence indicates that increased access to non-employer-based insurance under the ACA has led to an increase in self-employment among certain groups (Bailey 2017; Bailey and Dave 2018; Blume-Kohout 2023).

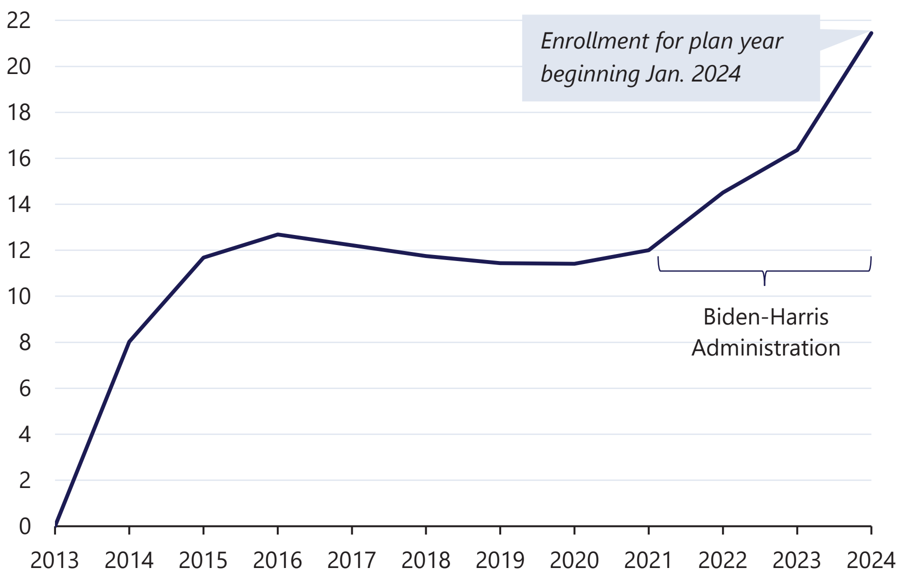
Over the long term, access to health insurance can have significant positive effects on labor market outcomes and economic wellbeing. Specifically, a growing body of evidence shows that childhood exposure to Medicaid can affect individuals' long-term trajectories and increase educational attainment and adult earnings, decrease use of public assistance programs, and reduce the likelihood of incarceration (Cohodes et al. 2016; Miller and Wherry 2019; Brown, Kowalski, and Lurie 2020; Goodman-Bacon 2021; Arenberg, Neller, and Stripling 2024). Further, providing Medicaid to children has been shown to repay its initial cost in the form of additional tax revenue and reduced government transfers once the children become adults (Hendren and Sprung-Keyser 2020; Goodman-Bacon 2021).

Expanding Access to Marketplace Coverage

The ACA Marketplace has seen record-breaking enrollment during the Biden-Harris Administration (CEA 2024). As seen in figure 4-2, 21.4 million people signed up for Marketplace coverage during open enrollment for the 2024 plan year, nearly double the number of enrollments for 2020. Created in 2014, the ACA Marketplace has allowed nearly 50 million people to gain health insurance coverage over the last decade, meaning nearly one out of every seven people living in the United States has benefited from Marketplace coverage (Treasury 2024a). In addition, the Marketplace is a source of coverage for self-employed workers and small business owners; in 2022, these groups represented 28 percent of Marketplace enrollees (Treasury 2024b). The surge in Marketplace enrollment under this Administration reflects policy efforts to increase the affordability of Marketplace coverage and remove barriers to enrollment by intensifying outreach and simplifying ways to sign up for coverage. During the four years prior, enrollment had stagnated.

Figure 4-2. Marketplace Enrollment at the End of Open Enrollment

Number of individuals who selected a marketplace plan (millions)



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Sources: Centers for Medicare & Medicaid Services; Department of Health and Human Services.
Note: Data for each year denote plan selections during the open enrollment period for that plan year.
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The ACA Marketplace has been successful in providing health insurance options for people without access to other affordable coverage. In the program's first year, 8.0 million people enrolled in private coverage through the Marketplace during the annual open enrollment period. The number jumped to 11.7 million in 2015 and grew further to 12.7 million in 2016 (see figure 4-2). The majority of people who enrolled in the Marketplace received financial assistance in these years: In 2016, 83 percent of enrollees qualified for premium tax credits to help with the purchase of Marketplace coverage (ASPE 2016). Research shows that previously uninsured adults who gained access to subsidized Marketplace coverage experienced a decrease in barriers to medical care and increased their use of outpatient services and prescription drugs (Goldman et al. 2018). The premium subsidies, along with additional cost-sharing reductions provided by the ACA, were associated with a 17 percent reduction in out-of-pocket spending and 30 percent reduced likelihood of catastrophic health expenditures for low-income individuals (Liu et al. 2021).

Following the initial Marketplace enrollment growth, fewer people enrolled between 2017 and 2020, possibly related to efforts under the Trump Administration to undermine the ACA. In 2018, one in three non-elderly people who were uninsured were eligible for free or subsidized coverage in the ACA Marketplace (Cox and McDermott 2020), suggesting that many people may be unaware of the option or unable to access it. Enrollment through the ACA Marketplace is typically limited to an annual open enrollment period, with the exception of certain qualifying life events. Designed to prevent people from signing up only when they need expensive healthcare, open enrollment periods can limit coverage opportunities for other individuals, particularly if they are not well advertised or understood. Changes during the Trump Administration to shorten the annual open enrollment period from 12 to 6 weeks and cut funding for marketing and enrollment assistance likely exacerbated barriers (Lueck 2021; Pollitz and Amin 2021). In addition, the individual mandate component of the ACA was removed in 2019, likely having an effect on Marketplace enrollment (Fiedler 2020).

Finally, Marketplace insurance affordability remained an issue for families despite government subsidies to help purchase coverage. Prior to the Biden-Harris Administration, families with incomes below 400 percent of the federal poverty level (FPL) still faced expected premium contributions of between 2 percent and 10 percent of their income on a sliding scale, while families above 400 percent FPL had no cap on the percent of their income they may need to spend on premiums, a significant burden for people in their 50s and 60s (Banthin et al. 2024; Banthin, Skopec, and Simpson 2024).

Expansion in Premium Tax Credits

The Biden-Harris Administration implemented several important policies to expand access to ACA Marketplace coverage and address affordability issues, leading to unprecedented growth in Marketplace enrollment. One major initiative expanded federal financial assistance to purchase Marketplace insurance. Initially, individuals with incomes between 100 percent and 400 percent FPL and no other source of affordable coverage were eligible for premium tax credits toward the purchase of Marketplace coverage. The American Rescue Plan Act of 2021 (ARPA) increased the credit amount for those who already qualified for assistance. It also expanded eligibility to people with incomes above 400 percent FPL for the first time, implementing a cap on expected maximum premium contributions of 8.5 percent of income for these households (Congress 2021). The changes lowered premiums net of the premium tax credit (i.e., net premiums) for most individuals and families, helping more people to enroll in coverage (Ortaliza et al. 2024). While originally slated for two years of availability, the expanded premium tax credits were extended through 2025 under the Inflation Reduction Act of 2022 (IRA) (Congress 2022a).

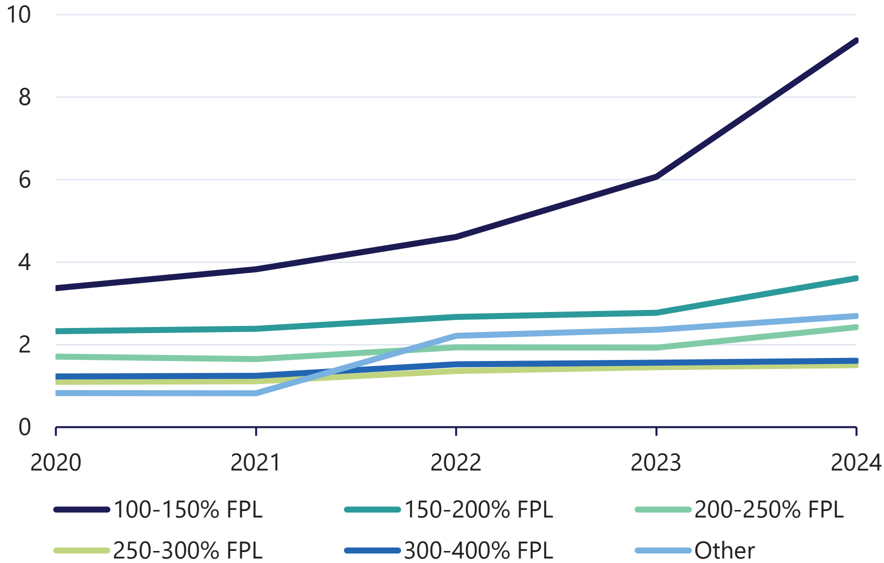
The expanded premium tax credits reduced net premiums for millions of Americans, saving them an average of over $800 annually (CMS 2023a). Individuals and families with incomes just above the Medicaid eligibility threshold (i.e., between 138 percent and 150 percent FPL), or residing in states not implementing the ACA Medicaid expansions and having incomes between 100 percent and 138 percent FPL, saw their maximum required premium contribution decrease to 0 percent of income under the expanded premium tax credits, down from roughly 2 percent to 4 percent of income (Banthin et al. 2024). As shown in figure 4-3, Marketplace enrollment nearly doubled for households with incomes between 100 percent and 150 percent FPL between 2020 and 2023. A noticeable, though less pronounced, increase is evident for the “other” group, which includes enrollees with household incomes above 400 percent FPL.

Figure 4-3 also shows a large bump in enrollment in 2024 for the 100–150 percent FPL group, as well as smaller increases for the 150–200 percent and 200–250 percent FPL groups. The increase likely reflects, in part, the end of pandemic-era Medicaid coverage in 2023 and actions to assist those no longer eligible for Medicaid to transition to Marketplace coverage.

As shown in figure 4-4, expanded access to the Marketplace has particularly benefited people residing in the 10 states that have opted not to implement ACA Medicaid expansions. Marketplace enrollment in non-expansion states increased by 152 percent between 2020 and 2024, reaching a total enrollment of 11.3 million in the 10 states without ACA Medicaid expansions as of 2024. In contrast, Marketplace enrollment grew

Figure 4-3. Marketplace Enrollment by Household Income as a Percent of the Federal Poverty Level (FPL)

Millions of enrollees



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Sources: Centers for Medicare & Medicaid Services; CEA calculations.

Note: Data for each year denote plan selections during the open enrollment period for that year. Idaho, Nevada, and Vermont are excluded due to inconsistent availability of enrollee income information. "Other" category includes enrollees with household income less than 100 percent FPL and greater than 400 percent FPL, and those with no reported income because they did not request financial assistance.

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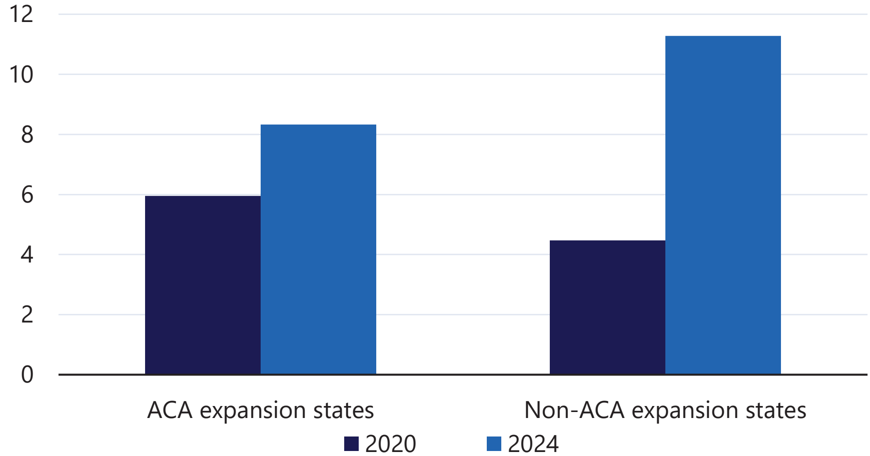
by 40 percent in expansion states over the same period, and total enrollment reached 8.3 million in 2024 across the 35 states, along with D.C., with ACA Medicaid expansions in place during the period.[1] The growth in Marketplace enrollment in non-expansion states likely reflects the relatively few alternative coverage sources available to low-income families in the states and, therefore, heightened need for coverage. However, subsidized Marketplace coverage is unavailable to individuals with incomes less than 100 percent FPL in the non-expansion states, creating a coverage gap.

In addition to increasing Marketplace enrollment, the expanded premium tax credits also made plans with relatively low cost-sharing (i.e., deductibles, copays, and coinsurance) more affordable. The Marketplace offers plans in different categories (Bronze, Silver, Gold, and Platinum)

[1] The five states adopting ACA Medicaid expansions after January 1, 2020 are excluded from this analysis.

Figure 4-4. Marketplace Enrollment by State ACA Medicaid Expansion Status

Millions of enrollees



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Sources: Centers for Medicare & Medicaid Services; CEA calculations.

Note: Data for each year denote plan selections during the open enrollment period for that year. States that adopted ACA Medicaid expansions after January 1, 2020 are excluded (Missouri, Nebraska, North Carolina, Oklahoma, and South Dakota).

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based on the plan versus enrollee share of the costs for covered services. As with most health insurance, Marketplace premiums tend to increase with the level of coverage of the plans (i.e., lower cost-sharing). While premium subsidies are calculated based on the cost of Silver plans, some consumers choose to use the increased subsidies to purchase plans with better levels of coverage. In addition, for people with incomes less than 250 percent FPL qualifying for additional cost-sharing reductions on Silver plans, the expanded premium tax credits decreased the cost of the plans, yielding either zero or low premiums (Congress 2021). Due in part to the change, the number of Marketplace enrollees receiving cost-sharing reductions increased from 5.3 million in early 2020 to 10.4 million by February 2024 (CMS 2020; CMS 2024a).

The Biden-Harris Administration has called on Congress to make the expanded premium tax credits, authorized by current law through 2025, a permanent policy change (White House 2024a). The Congressional Budget Office and Joint Committee on Taxation estimate that, on average each year, 3.4 million additional people will have health insurance from 2025 to 2034 if the premium tax credit expansion is made permanent (CBO 2024).

Beyond Tax Credits: Federal Actions Expanding Marketplace Enrollment

Additional federal actions have contributed to the historic Marketplace enrollment growth in recent years. To address the ongoing COVID-19 pandemic and allow people to access the expanded financial assistance made available in early 2021, a special open enrollment period was created from February 15 to August 15 in 2021, during which more than 2.8 million people signed up for ACA Marketplace coverage (Branham et al. 2022). In addition, the Biden-Harris Administration in 2021 reversed policy changes implemented under the Trump Administration, including extending the annual open enrollment period to 10 weeks and increasing funding for advertising and enrollment assistance (Treasury and HHS 2021; HHS 2022a).

Other changes expanded enrollment opportunities for low-income individuals and simplified the transition to Marketplace coverage during the end of pandemic-related Medicaid coverage. Starting in 2022, the administration created a special enrollment period for people with incomes under 150 percent FPL, allowing them to enroll in Marketplace coverage year round (HHS 2022b).[2] Originally specified to coincide only with the expanded premium tax credits, the special enrollment period was made permanent in 2024, meaning it will remain available even if the expanded subsidies expire in 2025 (Treasury and HHS 2024). To reduce the potential negative effects of the end of Medicaid's pandemic-related continuous coverage provision in 2023, the Biden-Harris Administration created a temporary special enrollment period for individuals and their families who lost Medicaid or Children's Health Insurance Program (CHIP) coverage (CMS 2024b). While the loss of Medicaid or CHIP coverage is a qualifying life event already allowing for Marketplace enrollment, the standard rules require that enrollment occur within 60 days of the loss. The special enrollment period relaxes the time constraint. The Administration also engaged in outreach efforts to help people make transitions from Medicaid to ACA Marketplace coverage (CMS 2023b).

Further, the Biden-Harris Administration revised a prior interpretation of family eligibility rules for premium tax credits, which often prevented the families of low-wage employees from receiving assistance. Previously, the so-called family glitch did not allow families to qualify for premium tax credits if the employed members had access to affordable individual coverage through their employer, even if the available family coverage option was unaffordable (Keith 2022). Beginning in 2023, the Administration revised the eligibility rules to fix the glitch (HHS 2022c).

[2] The change went into effect in 2022 for low-income individuals in states with Marketplaces on HealthCare.gov and was made optional for states operating Marketplaces on their own platforms.

Effective in November 2024, the Biden-Harris Administration extended eligibility for Marketplace plans to Deferred Action for Childhood Arrival (DACA) recipients, as well as eligibility for financial assistance if they meet the other qualifying criteria. The Centers for Medicare & Medicaid Services (CMS) estimate that this change could lead to 100,000 previously uninsured DACA recipients newly enrolling in health coverage (CMS 2024c).[3]

Finally, the Biden-Harris Administration took deliberate steps to further strengthen the Marketplace by protecting consumers from so-called junk health plans, which emerged following a rollback of federal regulations under the Trump Administration. Short-term, limited-duration insurance plans (STLDI), commonly known as junk plans, were designed to fill temporary gaps in coverage, but a 2018 regulation extended their duration from 90 days to almost a year, renewable for up to three years. Junk plans could use consumers' medical histories to raise their premiums or deny them coverage (Pollitz et al. 2018). The plans did not need to adhere to ACA plans' minimum coverage requirements and threatened to attract individuals with low health risks away from the Marketplace, thereby potentially impacting the Marketplace risk pool and leading to elevated premiums (Young 2020). In addition, a number of high-profile instances highlighted how consumers were misled into thinking they were purchasing comprehensive coverage, then were surprised by thousands of dollars in medical bills (Gantz 2019; Levey 2019; Avila 2019). In response, the Biden-Harris Administration limited STLDI plans to four months, capping the length of plans advertised as "short-term," and required plans to disclose their coverage limitations (White House 2024b). These changes went into effect for plans sold on or after September 1, 2024.

The changes during the Biden-Harris Administration have both expanded and strengthened the ACA Marketplace. The Administration's policies have not only increased enrollment, but they have also likely improved the risk pool by attracting young people, who tend to have lower health risks, on average, than older adults, to enroll in Marketplace coverage.[4] In addition, the growth in Marketplace enrollment is expected to bring stability to the private insurance market for individuals and families and encourage competition among insurers (Banthin et al. 2024). If made permanent, the changes could help keep premiums low, attract increasing numbers of enrollees, and contribute to the long-term success of the Marketplace.

[3] This estimate includes new enrollment in a Basic Health Program, which DACA recipients were also allowed to enroll in starting in November 2024. Two states currently operate Basic Health Programs, which cover individuals with incomes between 133–200 percent FPL (CMS 2024d).

[4] The share of people under age 45 signing up for coverage under Marketplace open enrollment increased from 50.6 percent to 55.3 percent from 2020 to 2024, according to CEA calculations based on CMS Marketplace Open Enrollment Period public use files.

Protecting and Extending Medicaid Coverage

Despite the ACA's aim of improving access to affordable health insurance, coverage gaps still exist in states that did not expand Medicaid as intended under the law. While Medicaid is the nation's public health insurance program for low-income individuals, eligibility rules prior to the ACA were restrictive and generally excluded childless adults and many low-income parents (MACPAC 2021a). Since 2010, 40 states and D.C. expanded Medicaid to non-elderly adults with incomes up to 138 percent FPL; four states have expanded Medicaid since President Biden took office (KFF 2024a). In non-expansion states, most childless adults and low-income parents with incomes below 138 percent FPL remain ineligible for Medicaid.[5] Because of the way ACA changes were implemented, individuals in non-expansion states with incomes below 100 percent FPL do not qualify for subsidized Marketplace coverage (CRS 2021). This creates a gap in affordable coverage options. People in this coverage gap are primarily located in southern states and disproportionately Black and Hispanic (Drake et al. 2024).

Even for eligible individuals, Medicaid enrollment can be unstable. Research indicates that approximately 20 percent of people with Medicaid or Marketplace coverage are at risk of losing insurance coverage at some point over a two-year period, as compared to just 8.5 percent of those with employer-based coverage (Einav and Finkelstein 2023). In addition, about 8 percent of Medicaid and CHIP beneficiaries disenroll and re-enroll in the program within a year (MACPAC 2021b). While some of this churn results from changes in eligibility (e.g., short-term income fluctuations), it also likely reflects administrative or informational barriers related to state eligibility redeterminations. Not only does churn create administrative costs (Sugar et al. 2021), but disruptions in coverage may prevent people from receiving necessary healthcare and lead to prolonged uninsurance (Einav and Finkelstein 2023). While states were barred from disenrolling most people from Medicaid in exchange for enhanced federal funding during the COVID-19 public health emergency (PHE), the provision expired in March 2023, requiring states to redetermine eligibility for Medicaid recipients (CMS 2023c).

The Biden-Harris Administration therefore implemented a number of policies to strengthen Medicaid by facilitating expansions in eligibility, promoting continuity of coverage at the end of the COVID-19 PHE, offering 12-month continuous eligibility to certain vulnerable population groups like children and postpartum individuals, and reducing administrative barriers to enrollment.

[5] The median Medicaid income eligibility threshold for non-disabled parents in the non-expansion states for a family of three is 34 percent FPL (or $8,779) as of May 2024, while non-disabled adults without children only qualify for Medicaid in one of 10 states (KFF 2024b; Wisconsin DHS 2024).

Expanding Medicaid Coverage

To close the Medicaid coverage gap, the ARPA offered additional federal matching funds to states that had yet to expand Medicaid eligibility. Specifically, it provided a two-year, 5 percentage point increase in federal contribution to non-expansion Medicaid costs for any states newly expanding their Medicaid program (CRS 2021). Missouri, North Carolina, Oklahoma, and South Dakota received the ARPA increase for Medicaid expansion. As a result, an estimated 1.1 million adults became newly eligible for Medicaid coverage.[6] Numerous studies show that previous ACA Medicaid expansions were linked to significant coverage gains, narrowed racial gaps in healthcare access, increased use of healthcare among low-income individuals, and improved health outcomes (Guth, Garfield, and Rudowitz 2020).

The ARPA also provided the option for states to extend postpartum Medicaid coverage, an important step toward reducing the United States' high rate of preventable maternal mortality, which disproportionately affects Black, American Indian, and Alaska Native women (Hill et al. 2024). One in three pregnancy-related deaths occurs between one week and one year postpartum (Petersen et al. 2019). Before 2021, most individuals eligible for Medicaid because of pregnancy received only 60 days of postpartum coverage. Eligibility after 60 days often depended on state eligibility rules for parents, which were less generous than eligibility rules for pregnant people, particularly in non-ACA expansion states (Ranji et al. 2022).[7] Prior to the policy change, more than 20 percent of individuals with pregnancy coverage through Medicaid, which covers 41 percent of all births (KFF 2024d), became uninsured between two and six months postpartum (Johnston et al. 2021). Two thirds of the people who lost Medicaid coverage during the early postpartum period remained uninsured nine to 10 months after giving birth (Eliason et al. 2023).

The new Medicaid postpartum extensions aim to promote insurance coverage during the year following childbirth and ensure consistent access to the care needed to improve maternal health. The ARPA temporarily allowed states to extend coverage to 12 months postpartum, and the option was made permanent by the Consolidated Appropriations Act, 2023 (Congress 2022b). To date, 46 states, D.C., and the U.S. Virgin Islands have adopted Medicaid postpartum coverage extensions, with two more states planning to implement extensions (KFF 2024e). It is estimated that, if all states implement the extensions, approximately 720,000 people annually

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[6] The number of newly eligible adults was calculated by summing individual estimates for each state (Legal Services of Eastern Missouri 2021; Raphael and Rudowitz 2023; KFF n.d.; Kids Count South Dakota 2024).

[7] The median state eligibility threshold for pregnancy Medicaid coverage is 201 percent FPL. The median state eligibility threshold for parents is 138 percent FPL, while the median for non-expansion states is 34 percent FPL (KFF 2024c).

will gain access to Medicaid for a full year after giving birth (Gordon et al. 2021). The postpartum extensions were especially important for preventing disenrollment of eligible individuals as the COVID-19 continuous coverage provision ended in March 2023.

Evidence from the ACA Medicaid expansions in 2014, which led to increased postpartum insurance coverage in expansion states (Bellerose, Collin, and Daw 2022), indicates that insurance coverage during the postpartum period impacts postpartum healthcare use. Research finds increased use of postpartum outpatient care following state Medicaid expansion (Steenland et al. 2021), as well as increased postpartum use of effective birth control methods (Myerson, Crawford, and Wherry 2020; Eliason, Spishak-Thomas, and Steenland 2022) and fewer hospitalizations during the first 60 days after delivery (Steenland and Wherry 2023). Impacts on maternal health are difficult to measure, perhaps accounting for the literature's mixed findings, with no change observed in maternal morbidity (Chatterji et al. 2023) but evidence of a decline in maternal mortality (Eliason 2020).

An additional Biden-Harris Administration Medicaid policy targeted children. To strengthen Medicaid coverage for young people, the Consolidated Appropriations Act, 2023 mandated that states provide 12 months of continuous eligibility for children under the age of 19 enrolled in Medicaid and CHIP starting on January 1, 2024 (CMS 2024e).[8] States typically renew coverage for children once a year, but the policy prevents states from disenrolling children if they experience an otherwise-disqualifying change in circumstances before the renewal period (e.g., a fluctuation in household income, which is more common among low-income households; see Gennetian et al. 2019). Prior to the policy change, about half of states exercised the available option of providing 12-month continuous eligibility for children (Brooks and Whitener 2023). Rates of disenrollment before annual renewals and churn were lower for children in the states exercising the option than in others (MACPAC 2021b; Williams et al. 2022). While continuous coverage policies are understudied, research indicates they are associated with increased insurance coverage, decreased coverage gaps attributed to application problems, and a lower probability of being in fair or poor health (Brantley and Ku 2021). The Biden-Harris Administration has also approved several state requests to provide continuous eligibility for children in Medicaid and CHIP until age six (Georgetown CCF 2024).

Protecting Medicaid Coverage

The Biden-Harris Administration implemented multiple short-term policies to protect Americans' Medicaid coverage at the end of the COVID-19 PHE.

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[8] CHIP provides health coverage through both Medicaid and separate state CHIP programs to children in families with incomes too high to otherwise qualify for Medicaid.

In 2023, enrollment in Medicaid and CHIP hit an all-time high of more than 94 million (KFF 2023), due largely to the continuous coverage Medicaid requirement (Dague and Ukert 2024). To receive an increase in Medicaid funding through the federal pandemic response under the Families First Coronavirus Response Act, states were required to maintain enrollment of nearly all Medicaid enrollees starting in March 2020 until after the end of the PHE (Congress 2020). States typically redetermine eligibility for Medicaid on an annual basis and disenroll anyone who is no longer eligible for coverage or who fails to submit paperwork. The continuous enrollment provision meant that anyone enrolled in Medicaid at the start of or during the COVID-19 PHE would maintain coverage without going through the renewal process or reporting a change in circumstances that would otherwise disqualify them for Medicaid coverage. The continuous coverage requirement was delinked from the PHE and ended on March 31, 2023, under the Consolidated Appropriations Act, 2023, which started the eligibility redetermination process, or so-called unwinding.

Given the tremendous growth in Medicaid enrollment between 2020 and 2023, states faced a complex process of resuming eligibility redeterminations. Not only did states face challenges related to the large volume of redeterminations, but they also encountered issues related to sufficient staffing and the capability of existing eligibility systems (GAO 2024). Further, disenrollment was expected to include people potentially still eligible for Medicaid but losing coverage for procedural reasons, such as if a state was unable to reach the enrollee for the necessary information to determine eligibility or if the individual did not complete the needed paperwork. The occurrences were expected to be more prevalent during the unwinding period, given the time elapsed since the last eligibility renewal for many enrollees.[9] Not only would erroneous disenrollment, which required restoring enrollment for eligible individuals, result in additional administrative costs, but the periods without coverage would likely hinder and delay access to necessary medical care (Sugar et al. 2021).

The Biden-Harris Administration aimed to facilitate the redetermination process for states while preventing coverage loss among eligible beneficiaries. First, states were given 12 to 14 months to restore normal eligibility and enrollment, but were granted flexibility regarding when to begin the process and how to prioritize enrollee population groups (CMS 2023d; CMS 2023e). Second, CMS granted temporary waivers allowing flexibility for how state redeterminations could be processed (CMS 2023f). Some of the most common waiver types allowed states to use prior income or asset information to determine current enrollee eligibility. In addition, common waivers allowed states to use data from other reliable sources, such as the

[9] Some states continued to conduct eligibility redeterminations during the PHE but did not disenroll individuals, while other states discontinued redeterminations (GAO 2024).

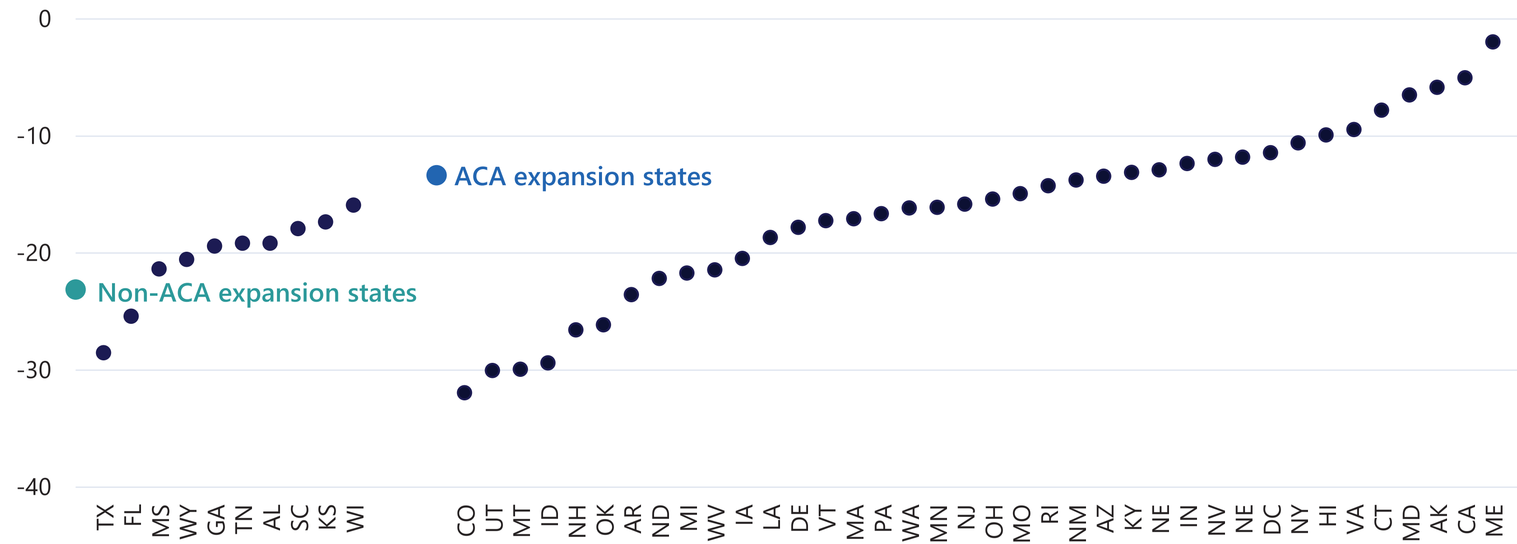
U.S. Postal Service and managed care plans, to obtain updated enrollee contact information without requiring verification by the enrollee (GAO 2024). Other waivers allowed states to use financial information from means-tested benefits programs like the Supplemental Nutrition Assistance Program and Temporary Assistance for Needy Families to renew eligibility, provide for assistance in renewal form completion and submission, or facilitate re-enrollment for eligible individuals disenrolled for procedural reasons (CMS 2023g). Finally, CMS gave states additional time to complete unwinding-related eligibility determinations to ensure that eligible individuals did not lose coverage in states unable to complete the process during the initial timeframe (CMS 2024f).

As of June 2024, monthly total Medicaid and CHIP enrollment had declined to 80 million (CMS 2024g), with nearly all states having completed the redetermination process (KFF 2024f). At the conclusion of the Medicaid unwinding, enrollment is expected to surpass pre-pandemic levels due to additional state Medicaid expansions since 2020, as well as enrollment gains during the pandemic among eligible people who signed up for and will retain coverage (Hale et al. 2024).

Nearly all states have experienced a decline in Medicaid enrollment since unwinding began. The only exception is North Carolina, which adopted a permanent Medicaid expansion during the time period (NCDHHS 2024). However, the magnitude of disenrollment shows noticeable variation depending on state policy choices; CMS notes that state uptake of the available flexibilities and adoption of Medicaid expansions had a significant impact on successful eligibility renewals (CMS 2023h). For example, figure 4-5 shows the percent change in Medicaid enrollment from March 2023 (the month prior to the start of unwinding) to June 2024 by state ACA Medicaid expansion status, excluding any states that expanded during this period. States without ACA Medicaid expansions saw the largest average decrease in total enrollment over the period, at 23.1 percent, compared to 13.4 percent in ACA expansion states. The difference is likely explained, at least in part, by variation in state eligibility rules. As described, some individuals who lost Medicaid coverage were able to transition to Marketplace coverage.

The attention to the redetermination process prompted some states to improve their approach to determining eligibility. During the unwinding, CMS and states worked in partnership to identify and resolve areas where states were not meeting federal eligibility redetermination requirements (GAO 2024). Many states took advantage of the temporary flexibilities approved by CMS, and a final rule issued in April 2024 made some of the flexibilities permanent, including allowing states to use available, reliable resources to update enrollee contact information (CMS 2024h). The agency is further reviewing other temporary flexibilities to determine which could be implemented on a long-standing basis (Brooks 2024), part of an ongoing

Figure 4-5. Change in Medicaid and CHIP Enrollment, March 2023 to June 2024



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Sources: Center for Medicare & Medicaid Services; CEA calculations.

Note: Enrollment is a count of the number of individuals enrolled in Medicaid/CHIP as of the last day of each month within the selected time frame. States with Medicaid expansions during this period are excluded (North Carolina, Oregon, and South Dakota). Green and light blue dots represent averages in ACA Medicaid expansion and non-Medicaid expansion states.

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effort to simplify eligibility requirements and streamline application processes for Medicaid and CHIP under the Biden-Harris Administration (CMS 2024i).

Strengthening Prescription Drug Coverage and Reducing Costs Under Medicare

Until the introduction of Medicare Part D in 2006, the Medicare program did not provide prescription drug coverage (Oliver, Lee, and Lipton 2004). The original Medicare program is made up of two parts: Part A and Part B, which cover hospital and outpatient care, respectively. Medicare Part C (i.e., Medicare Advantage) was enacted in 1997 as an alternative choice offering both Part A and B types of care through private insurance companies (CMS 2024j). Part D provides prescription drug benefits either through enrollment in a separate plan or as part of Medicare Advantage. Participation in Medicare Part D has grown over time; as of May 2024, more than 80 percent of the 67.5 million program enrollees held Part D coverage (CMS 2024k).

While Part D led to a substantial reduction in out-of-pocket spending for prescription drugs (Engelhardt and Gruber 2011), the benefit's design left many people vulnerable to high expenses. In particular, Medicare Part D had a coverage gap, or "donut hole," where Medicare paid 0 percent of costs for some people with a certain amount of drug expenditures (CMS n.d.). In addition, Part D enrollees had no out-of-pocket spending cap (Cubanski, Neuman, and Freed 2023). The coverage gap and lack of a spending cap are notable given the high price of prescription drugs in the United States compared to other countries; across all drugs, U.S. prices are nearly three times higher than those of other countries, and for brand name drugs, prices are more than four times higher (Mulcahy, Schwam, and Lovejoy 2024). These two features left beneficiaries taking expensive prescription drugs, or with many prescriptions, responsible for high out-of-pocket drug costs. Despite reforms under the ACA and Bipartisan Budget Act of 2018 to phase out the coverage gap, the number of Part D beneficiaries responsible for high out-of-pocket spending would likely grow over time due to rapidly rising drug costs (Trish, Xu, and Joyce 2018). For enrollees whose 2022 prescription drug spending reached the catastrophic coverage phase (the highest spending phase in Part D) and who did not qualify for subsidized coverage, average annual out-of-pocket spending was $3,093, more than 10 percent of the typical income for an enrollee. Average out-of-pocket spending was far higher for some serious health conditions (Sayed et al. 2024).

Increasing Financial Protection Against Prescription Drug Costs

The IRA, passed in August 2022, made several major changes to Medicare to reduce prescription drug expenses for beneficiaries and the Federal Government. First, the IRA limits out-of-pocket spending on insulin under Medicare Part B (effective July 2023) and Part D (effective January 2023) by removing any deductible for covered insulin products and capping co-payments at $35 per month per insulin prescription (Congress 2022a). In 2019, prior to the changes made by the IRA, estimates indicate the average Medicare beneficiary paid $63 per insulin prescription fill, with nearly 40 percent of beneficiaries paying more than $35 and roughly one quarter paying over $70 per fill (Sayed et al. 2023). Estimates suggest that the new insulin cap could, on average, save affected Medicare beneficiaries about $500 per year.

The IRA also expanded eligibility for subsidized prescription drug coverage under Medicare Part D. Prior to 2024, the Low-Income Subsidy (LIS) program provided two tiers of prescription drug coverage to individuals and families with little income and few assets. For individuals with incomes up to 135 percent FPL,[10] the program provided a full subsidy, covering Part D deductibles and premiums for certain plans and requiring minimal co-pays up to an out-of-pocket limit, followed by no cost sharing. For individuals with incomes between 135 percent and 150 percent FPL,[11] the LIS program provided a partial subsidy with less financial assistance than the full subsidy (CRS 2023b). In 2024, the IRA expanded the LIS program's full subsidy coverage of Medicare Part D prescription drugs to all individuals meeting the eligibility criteria for the partial subsidy.

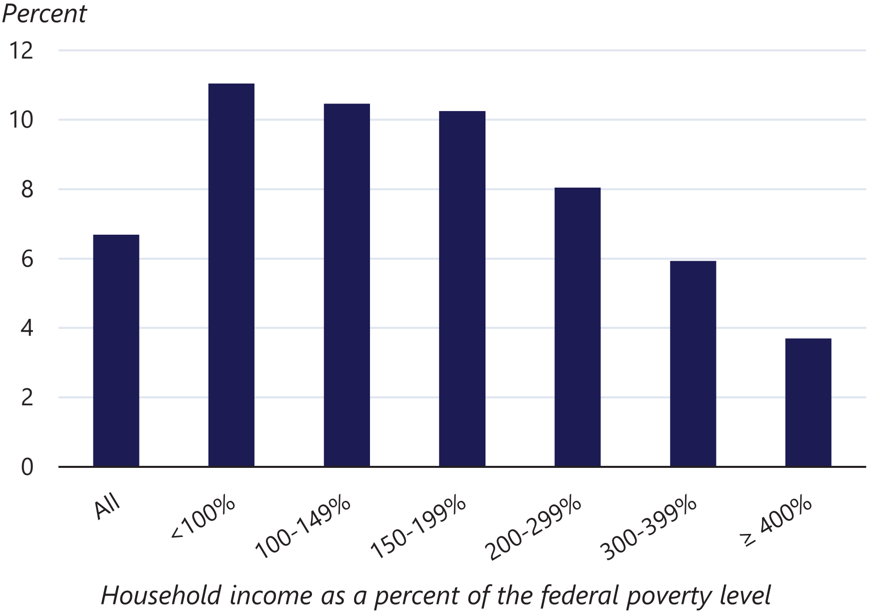
Expanding the LIS program is expected to benefit approximately 460,000 people who now receive the full rather than partial subsidy, and could encourage about 3 million more people who are eligible for Part D to enroll (Feyman et al. 2024). Of note, LIS enrollees are not charged the typical Part D penalty for late program enrollment, a mechanism designed to limit adverse selection, removing any cost-related barriers to new Part D enrollment (CMS 2024l).

The LIS program expansion could help increase accessibility to drugs that were previously unaffordable for some elderly Americans, as well as remove cost-related barriers to medication adherence. As seen in figure 4-6, elderly people with incomes qualifying for the LIS program have higher rates of skipping medication due to cost than elderly adults with incomes at 200 percent FPL and greater. Research shows that medication adherence is

[10] In 2023, the program was available to individuals with incomes of less than 135 percent FPL and fewer than $9,090 in assets; for married couples, the asset threshold was $16,630. In addition, certain groups of Medicare beneficiaries automatically qualified for full LIS coverage.

[11] In 2023, the group included individuals with incomes between 135 percent and 150 percent FPL and fewer than $15,160 in assets; for married couples, the asset threshold was $30,240.

Figure 4-6. Share of People Age 65 and Older Skipping Medication Due to Cost, by Household Income



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Sources: Health and Retirement Survey; CEA calculations.
Note: Data include waves 2008 through 2018.
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related to out-of-pocket costs for prescription drugs, and mortality increases when people take fewer drugs as a result (Chandra, Flack, and Obermeyer 2024).

Finally, the IRA took important steps to introduce limits on out-of-pocket prescription drug spending for all Medicare Part D enrollees. Even after reforms to close the coverage gap, the standard benefit design exposed beneficiaries without LIS (approximately 72 percent of Medicare Part D beneficiaries) to unlimited prescription drug expenses (Sayed et al. 2024). The cost-sharing structure made beneficiaries responsible for 5 percent of all drug expenses surpassing a specified catastrophic coverage threshold (Cubanski and Neuman 2023). Nearly 1.5 million beneficiaries without LIS spent above the threshold in 2022 and paid an average of $3,093 in out-of-pocket drug costs (Sayed et al. 2024). According to one analysis, Part D enrollees requiring the most expensive drugs faced annual out-of-pocket spending ranging from about $11,000 to nearly $15,000 per year (Cubanski and Neuman 2023).

Under the IRA, the 5 percent coinsurance requirement for drug expenditures greater than the catastrophic coverage limit was removed in 2024. Starting in 2025, Part D enrollees' out-of-pocket drug costs will be capped at $2,000, with the amount updated each year using the rate of growth in per-capita Part D drug costs (CMS 2024m; CMS 2024n). The IRA also shifts more of the expenses for prescription drugs from Medicare onto drug manufacturers and Part D prescription drug plans. Finally, a premium stabilization mechanism in the IRA, which began in 2024 and continues through 2029, limits average premium increases for individuals enrolled in Part D (CMS 2024o). The Department of Health and Human Services estimates that the 2025 change, along with the other changes discussed, will lead to a roughly $7.4 billion reduction in annual out-of-pocket spending among enrollees with out-of-pocket savings, about 36 percent of Medicare Part D beneficiaries, amounting to almost 19 million individuals. This translates into an expected reduction in annual out-of-pocket spending of about $400 for these individuals (Sayed et al. 2024).

Negotiating Drug Prices to Bring Down Costs

The IRA also allows the Medicare program to negotiate certain pharmaceutical prices. Prior to the Act's passage, Medicare and the Federal Government were forbidden from negotiating directly with drug companies to lower costs (CRS 2022). The Federal Government was, therefore, unable to use its market power to buy and provide drugs at lower prices. According to CMS, Medicare is projected to account for an estimated 35 percent of all prescription drug expenditures in 2024, indicating the program represents a large share of the market (CMS 2024p).

Beginning in 2024, the IRA requires the Department of Health and Human Services to negotiate with drug companies for certain high-cost drugs. Under the IRA, drugs with high Medicare spending shares that meet certain criteria are eligible for price negotiation.[12] Initially, 10 drugs from Medicare Part D were subject to negotiation, but the number will increase each year and begin to include drugs from Medicare Part B, with a total of 60 drugs being price negotiable by 2029 (CBO 2023).

In August 2024, the Biden-Harris Administration announced the first set of prices, which will become effective in 2026, for all 10 drugs selected for the first round of negotiation (CMS 2024q). CMS estimates that if the negotiated prices had been in place in 2023, Medicare net prescription drug spending on the products would have been lowered by 22 percent (CMS 2024r). Moreover, the reduced prices are likely to help Medicare beneficiaries who previously paid cost-sharing on the drugs' list prices; in 2022,

[12] For more information on the criteria for drugs to be eligible for price negotiation, see CMS (2024s).

nearly 15 percent of all Medicare Part D beneficiaries used at least one of the drugs negotiated (ASPE 2023). In total, in 2026, CMS estimates beneficiaries will save $1.5 billion in reduced cost-sharing because of the negotiated prices (CMS 2024r).

The ability of the Federal Government to negotiate Medicare Part D drug prices is expected to improve the federal fiscal outlook. When the negotiated prices go into effect in 2026, it is estimated to save Medicare Part D about $6 billion (CMS 2024r). Between 2022 and 2031, the Congressional Budget Office estimates that the negotiated drug price provisions of the IRA will reduce the federal deficit by about $95 billion. Combined with a requirement that drug companies pay Medicare if the prices for certain drugs rise faster than inflation, the Medicare-related provisions of the IRA are expected to reduce the deficit by about $160 billion between 2022 and 2031 (CBO 2022).

The Next Steps in Strengthening Health Insurance and Lowering Costs

The Biden-Harris Administration has made major strides towards accomplishing its goal of expanding access to affordable health insurance and healthcare for all Americans. The nation's rate of health insurance coverage is at a record high, many Americans have seen significant savings on premiums, and Medicare beneficiaries will see reduced prescription drug costs for years to come due to policies implemented over the last four years. In addition to the policies discussed here, the Biden-Harris Administration has taken other important steps to strengthen private health insurance for Americans, including introducing new protections from surprise out-of-network medical bills and working to expand access to free, over-the-counter birth control. The Administration has also made it a priority to protect American families from the burden of medical debt with new policies that include its removal from consumer credit reports.

Future efforts to further expand and strengthen health insurance in the United States should build on the Administration's progress in closing the Medicaid coverage gap and expanding access to ACA Marketplace coverage by making the expanded premium tax credits permanent, simplifying enrollment in the programs, and easing transitions between different sources of insurance coverage. To further address rising healthcare costs in the United States, future government actions can build on the important first step of Medicare drug price negotiation started under the Biden-Harris Administration, as well as other efforts by the Administration to promote competition across healthcare markets. Expanding the Medicare drug price negotiation program, as proposed in the President's Fiscal Year 2025

Budget, and efforts to reduce prices more broadly will be critical to controlling the nation's healthcare spending.

Chapter 5

Achieving a Net Zero Carbon Dioxide Emissions Economy in the United States

Climate change poses a significant threat to human well-being in the United States and around the world (CEA 2023; Jay et al. 2023). To ensure that continued economic progress can coincide with a safe and stable climate, the Biden-Harris Administration has set a target of achieving net zero greenhouse gas (GHG) emissions in the United States by 2050 (White House 2021a) and signed into law the most significant pieces of climate legislation in American history.

This chapter reviews the economics of achieving net zero emissions of carbon dioxide (CO_2), one of the main GHGs driving climate change.[1] In the United States, CO_2 represents 80 percent of total GHG emissions (EPA 2024a). Emissions of GHGs, including CO_2, are a classic negative externality. When a firm or individual emits CO_2 into the atmosphere, the costs are borne by everyone, leaving few economic incentives for abatement actions to reduce emissions.[2]

A fundamental role of government is to address externalities through policies that alter incentives, and current Biden-Harris Administration efforts are helping to fundamentally change the country's carbon emissions trajectory. This chapter will highlight the progress already made and discuss how to build on it to push all the way to net zero.

[1] Due to space constraints, this chapter does not discuss GHGs other than CO_2. The economics of reducing non-CO_2 emissions can differ significantly from those reviewed here. The Long-Term Strategy of the United States (White House 2021b) discusses paths to achieve net zero, including strategies related to other GHGs.

[2] Activities that generate CO_2, such as the burning of fossil fuels, often result in additional negative externalities via the release of hazardous air pollutants like sulfur dioxide, nitrogen oxides, and volatile organic compounds that affect humans and natural ecosystems.

Cost-effective policies incentivize the lowest-cost abatement actions, a concept known in environmental economics as the equimarginal principle.[3] Policies that prioritize the lowest-hanging fruit will lead to different levels of decarbonization in different economic sectors, because each sector faces unique decarbonization costs and challenges. In addition, the most cost-effective way to reduce CO_2 emissions need not lead to zero CO_2 emissions from every sector, because it can be more cost effective to achieve *net* zero by allowing emissions from some sectors and engaging in separate activities that remove CO_2 from the atmosphere to offset those emissions.

This chapter considers four distinct components of moving to net zero CO_2 emissions. It begins by discussing how to achieve zero CO_2 emissions in U.S. electricity production, broadly considered both technologically possible and inexpensive relative to abatement options in other sectors (Davis et al. 2023). The chapter then discusses the potential for reducing emissions by powering more economic activity with clean electricity instead of fossil fuels, a process known as electrification. Next, it discusses how to decarbonize economic activities that may be harder to electrify, including using cleaner fuels and improving energy efficiency. The chapter concludes by discussing the use of negative emissions technologies (NETs) to capture and store emitted carbon that would be comparatively more costly to eliminate.

Achieving net zero will involve a collection of policies for two reasons. First, there are many ways to address the central negative externality from CO_2 emissions. Economists most commonly advocate for economy-wide carbon taxes or cap-and-trade systems, which are designed to address the negative externality in all sectors simultaneously and incentivize each sector to respond in the lowest-cost way (EPA 2024b). An alternate approach is to

[3] Formally, the equimarginal principle says that, to achieve a given amount of abatement, the marginal cost of abatement should be equal across all sectors and firms. Otherwise, it is more cost effective to reallocate effort toward abatement activities with lower costs. Properly measured, the cost of abatement should reflect all costs and benefits, even those unrelated to CO_2 abatement, and include both short- and long-term costs.

address emissions with a series of sector-specific policies, as in the historic legislation passed during the Biden-Harris Administration.

Second, the negative externality from emissions is not the only market failure relevant to achieving net zero. Another critical market failure is that, due to positive externalities from knowledge spillovers, firms do not have private incentives to conduct sufficient research and development (R&D) into the new technologies needed to make progress in achieving carbon pollution-free electricity, expanding electrification, decarbonizing unelectrified activities, and deploying NETs. These knowledge spillovers also occur when firms initiate and scale up production, implying the need for government to support demonstration and deployment of new technologies. In other cases, such as developing a network of electric vehicle (EV) charging stations or building long-distance electricity transmission infrastructure, the government can help solve coordination problems that prevent the private market from making sufficient investments in deploying new technologies.

Understanding the Past, Looking to the Future

The Biden-Harris Administration has set targets of achieving a carbon pollution-free power sector by 2035 and a net zero GHG emissions economy by 2050 (White House 2023). The United States has also set a target of reducing its net GHG emissions by 50–52 percent below 2005 levels in 2030 as its Nationally Determined Contribution to the Paris Agreement, an international treaty intended to limit the increase in global average temperature to less than 1.5–2 degrees Celsius from the pre-industrial level (UNFCCC 2021a). This Nationally Determined Contribution reflects a focus on limiting cumulative emissions along the path to net zero.

Three historic pieces of legislation advance these goals: the CHIPS and Science Act, the Bipartisan Infrastructure Law (BIL), and the Inflation Reduction Act (IRA). These laws have funded hundreds of programs to decarbonize the American economy, including the selected major initiatives listed in table 5-1. Among many others, the programs include investment and production tax credits for clean energy and NETs, new tax incentives that make switching to clean energy technologies like EVs and heat pumps more affordable, and research, development, and deployment funding for new and emerging technologies (DOE 2023a; IRS 2024; Ambrose, Jacobs,

Table 5-1. Selected Biden-Harris Administration Climate Commitments and Major Policies

Climate Commitments
• On day one of taking office, the Administration rejoined the international Paris Climate Accords, which intends to limit global temperature increases to below 1.5–2°C above pre-industrial levels. The Administration set a target of reducing greenhouse gas (GHG) emissions by 50–52 percent by 2030 from 2005 levels and achieving a net zero GHG emissions U.S. economy by 2050.
Expanded Role of Federal Climate Leadership
• The Administration established the first White House Office of Domestic Climate Policy and elevated the role of Special Presidential Envoy for Climate to prioritize domestic and international decarbonization efforts and engagements. • Historic federal actions and nationwide climate strategies across sectors include the U.S. National Blueprint for Transportation Decarbonization, the Administration's efforts to achieve 100 percent clean electricity by 2035, the U.S. Industrial Decarbonization Roadmap, the U.S. Buildings Decarbonization Blueprint, the Administration's climate-smart agriculture efforts and Nature-Based Solutions Roadmap, the U.S. Methane Emissions Reduction Action Plan, the National Climate Resilience Framework, and more.
Clean Energy Tax Credits
• Under the IRA, production tax credits can be claimed for renewable and clean electricity, zero-emissions nuclear power, advanced manufacturing, clean fuel, and hydrogen. • Additionally, consumers can claim tax credits for energy efficiency home improvements such as heat pump purchases as well as qualifying electric vehicle (EV) purchases and electric and alternative fueling infrastructure under the IRA. • Investment tax credits can also be claimed for investment in a variety of clean energy projects. As of October 2024, announced private investment in clean energy manufacturing and infrastructure, clean power, and EVs and batteries under the Administration has totaled over $400 billion.
Clean Energy Demonstrations and Deployment
• Through IRA, BIL, and CHIPS, over $100 billion has been invested directly in accelerating the deployment of clean energy, clean buildings, and clean manufacturing as well as making communities more resilient to climate change and providing clean water across the United States. • The Department of Energy has taken steps to speed up the commercialization of emerging energy technologies through a $25 billion fund for clean energy demonstrations and increased project financing by the Loan Programs Office.
Buy Clean Initiative
• The Administration prioritized the procurement of American-made, lower-carbon construction materials in federally funded projects.
Grid Enhancement and Expansion
• The Administration has taken a number of steps to improve the reliability of the grid through measures that speed up the buildout of new transmission and increase the efficiency of existing infrastructure. This includes administering over $10 billion to modernize the grid through the Grid Resilience and Innovation Partnerships Program and improving the process for environmental reviews under the National Environmental Policy Act.
Greenhouse Gas Standards and Reduction Efforts
• Under the Administration, the Environmental Protection Agency (EPA) has finalized rules and standards to reduce GHG emissions from fossil fuel-fired power plants and vehicles. Additionally, the EPA implemented a first-of-its-kind fee for methane emissions.

and Tham 2022). The Administration has also taken significant regulatory action to reduce emissions from fossil fuel-fired power plants (EPA 2024c).

Although emissions reduction is the primary focus of this chapter, the Biden-Harris Administration's clean energy industrial policies also aim to deliver additional economic and community benefits. Since 2021, nearly 900 new or expanded clean energy manufacturing facilities have been announced, many since the passage of the BIL and IRA (DOE 2024a). Further, as a result of the IRA, more private clean energy funding is now going to economically disadvantaged communities (Van Nostrand and Ashenfarb 2023).

Historical Energy-related CO_2 Emissions Trends

U.S. CO_2 emissions from energy use peaked in 2007, then began to fall slowly (EIA 2024a). However, the trend in aggregate emissions masks important differences by sector—electric power, transportation, industrial (including agriculture), residential and commercial buildings—each of which face distinct economic challenges to decarbonization.

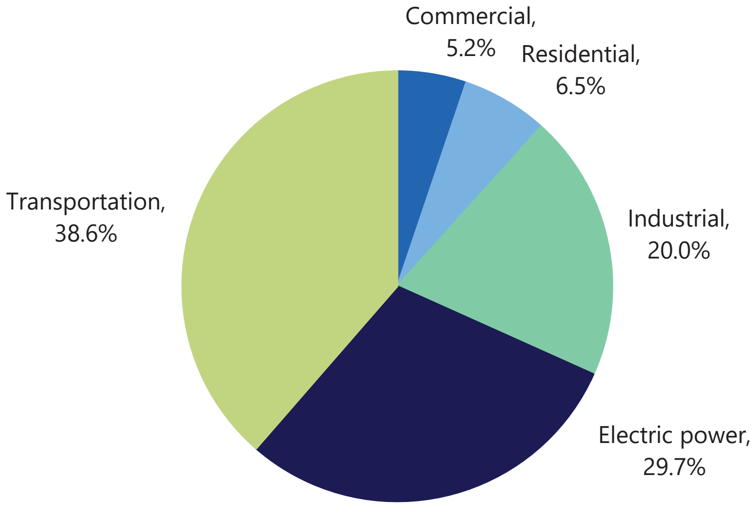
Figure 5-1a presents energy-related CO_2 emissions by sector. In 2023, transportation accounted for 39 percent of energy-related emissions, followed by the electric power sector at 30 percent and the industrial sector at 20 percent. Finally, the residential and commercial sectors together made up 12 percent of total energy-related emissions. When emissions from the electric power sector are distributed to the other sectors according to their electricity use, transportation contributed 39 percent, industrial contributed 28 percent, and residential and commercial buildings together contributed 33 percent of CO_2 emissions (EIA 2024b).

Figure 5-1b shows a notable decrease in emissions from the electric power sector, in part because the United States has produced more electricity from carbon-free sources, including wind and solar, since 2010 and in part because of a switch from coal to natural gas fossil fuel use (EIA 2024a). Emissions per kilowatt-hour of electricity generated have fallen by roughly one third since 1990 (see figure 5-2).

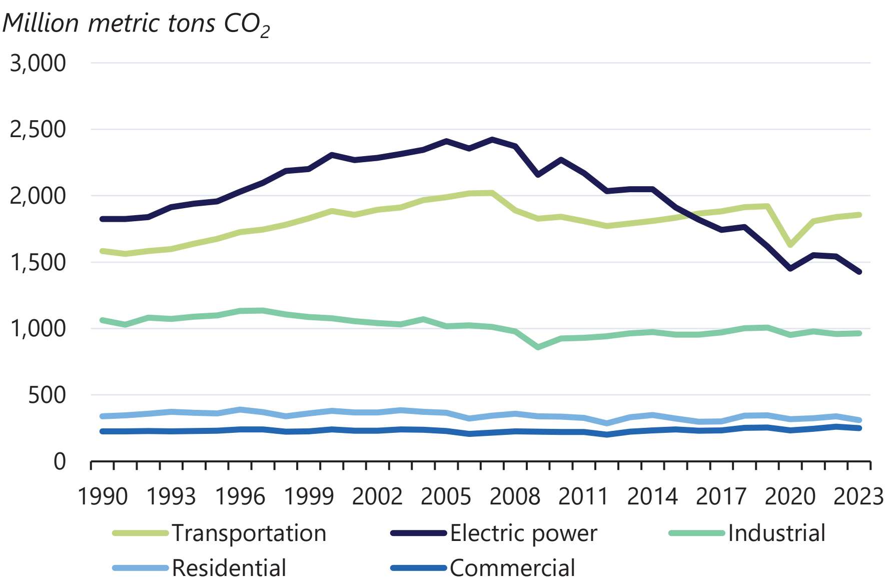
Figure 5-3 shows the extent of electrification by sector from 1949–2023. Electrification increased rapidly in both residential and commercial buildings from the 1950s to the 2000s, then slowed. In contrast, electrification has increased only slightly in the industrial sector. The flat transportation trend shown in figure 5-3 underestimates electrification because the data do not include at-home EV charging, which is measured as residential energy use. Still, it is difficult to electrify certain forms of transportation, such as heavy trucking, aviation, and international maritime shipping (Jaramillo et al. 2023). On average, electrification has increased gradually throughout the economy, from less than 5 percent of end-use energy in 1949 to nearly 20 percent in 2023.

Figure 5-1. Energy-related CO_2 Emissions

A. Share of 2023 Emissions



B. Emissions by Sector, 1990–2023



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Sources: Energy Information Administration; CEA calculations.

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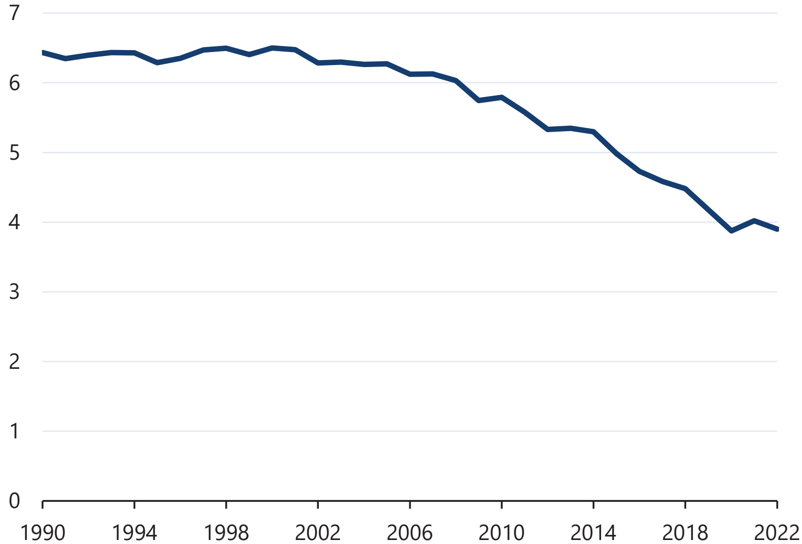
Figure 5-2. CO_2 Emissions per Kilowatt-hour, 1990–2022

Ten-thousandths of a metric ton of CO_2 emissions per kilowatt-hour



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Sources: Energy Information Administration; CEA calculations.

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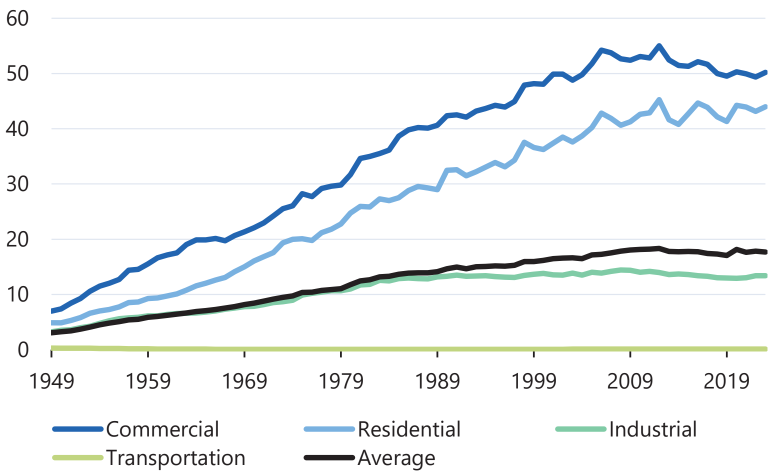
Figure 5-3. Electrification by Sector, 1949–2023

Percent of end-use energy coming from electricity



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Sources: Energy Information Administration; CEA calculations.

Note: Values are calculated as electricity sales to ultimate customers in the end-use sector (Btu) divided by end-use energy consumed by the end-use sector (Btu). Home electric vehicle charging is not included in the transportation values.

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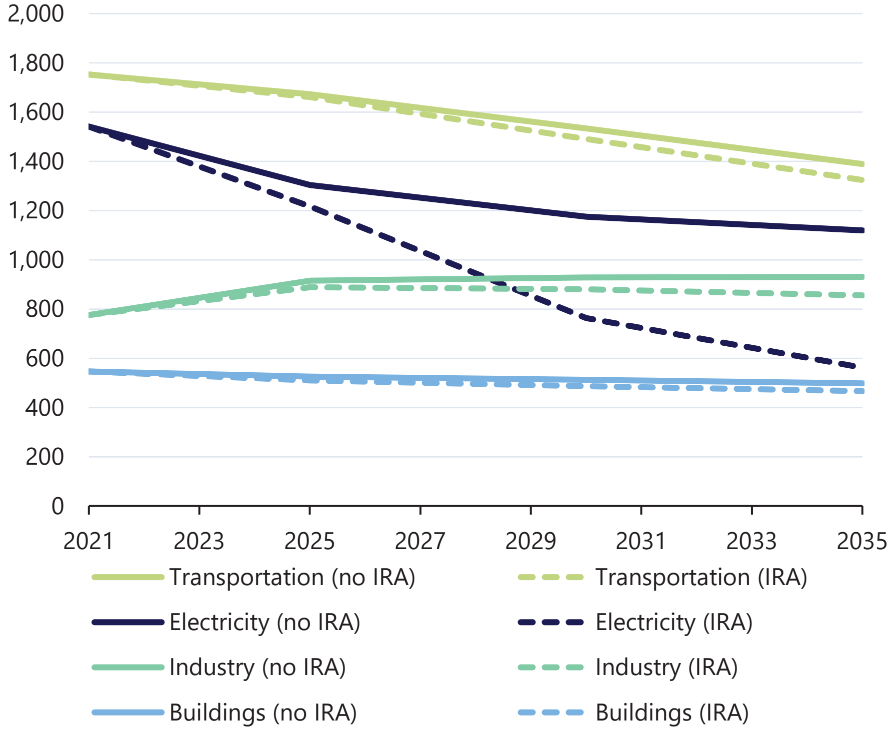
Future Impacts of Recent Mitigation Policy

Recent policy advances will drive ongoing progress toward net zero. Figure 5-4 compares projections of future emissions with IRA policies (shown as dashed lines) and without (shown as solid lines) for 2021–2035. The projections come from a recent study conducted by the EPA (2023) and represent averages across several different models that include a partial list of policies enacted during the Administration.[4]

Figure 5-4. CO_2 Emissions by Sector, with and without the IRA

Million metric tons CO_2



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Sources: Environmental Protection Agency (EPA); CEA calculations.

Note: Projections are based on averages of all models included in the EPA's IRA report. IRA refers to the Inflation Reduction Act. Projections begin after 2021.

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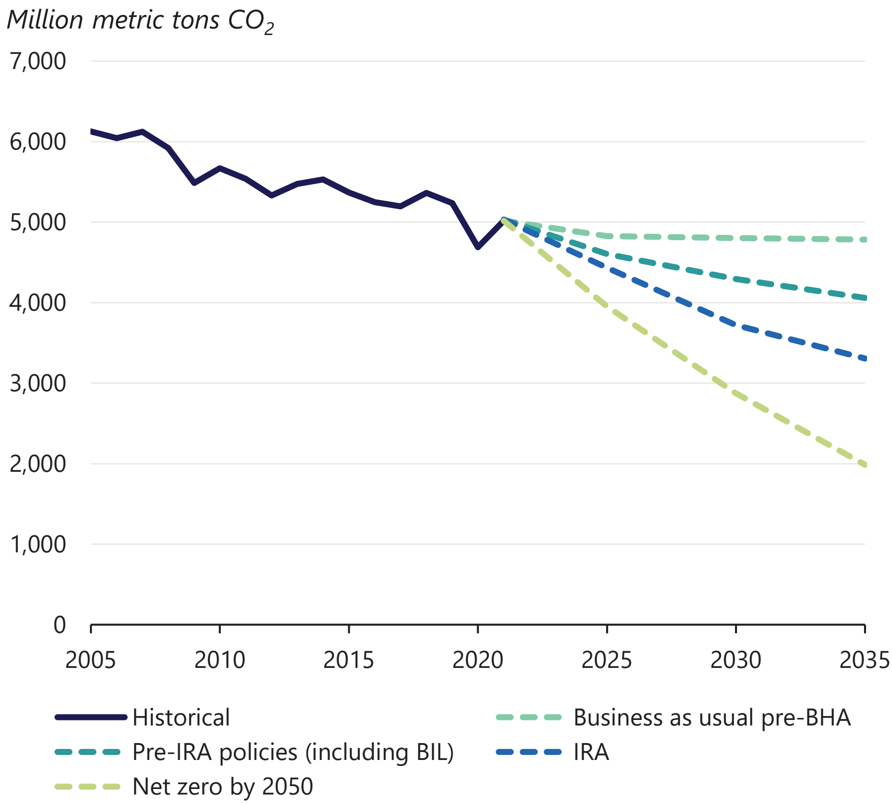
[4] The 14 models covered in the EPA analysis vary significantly by which IRA provisions they incorporate. No model covers all provisions, but all models include some. Some models, like GCAM-CGS and REGEN-EPRI, offer optimistic, moderate, and pessimistic scenarios of emissions reductions. For these models, the EPA analysis includes the moderate scenarios. The models do not account for the EPA's 2024 GHG standards for fossil fuel-fired power plants (EPA 2024d), which may further decrease emissions. The values represent the mean of the models.

The projections show a near two-thirds reduction in emissions from the electric power sector by 2035, reflecting IRA subsidies for solar and wind production, as well as tax credits for carbon capture and storage in the power sector. In other sectors, the impact on CO_2 emissions from activities other than electricity use is smaller.

Paths to a Net Zero Economy

Figure 5-5 shows projected paths of future emissions in several scenarios, including the following: (i) a scenario without Biden-Harris Administration

Figure 5-5. CO_2 Emissions Under Different Scenarios



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Sources: Environmental Protection Agency (EPA); United States' 7th National Communication to the United Nations Framework Convention on Climate Change; CEA calculations.
Note: EPA projections for policy scenarios are based on an average of the 11 out of 14 models in EPA (2023) that include BIL in their 2022 policy scenario. EPA (2023) uses models collected by Bistline et al. (2023). Net zero line is based on a logarithmic extrapolation of 2021 data to 2050. IRA refers to the Inflation Reduction Act. BIL refers to the Bipartisan Infrastructure Law. BHA refers to the Biden-Harris Administration.
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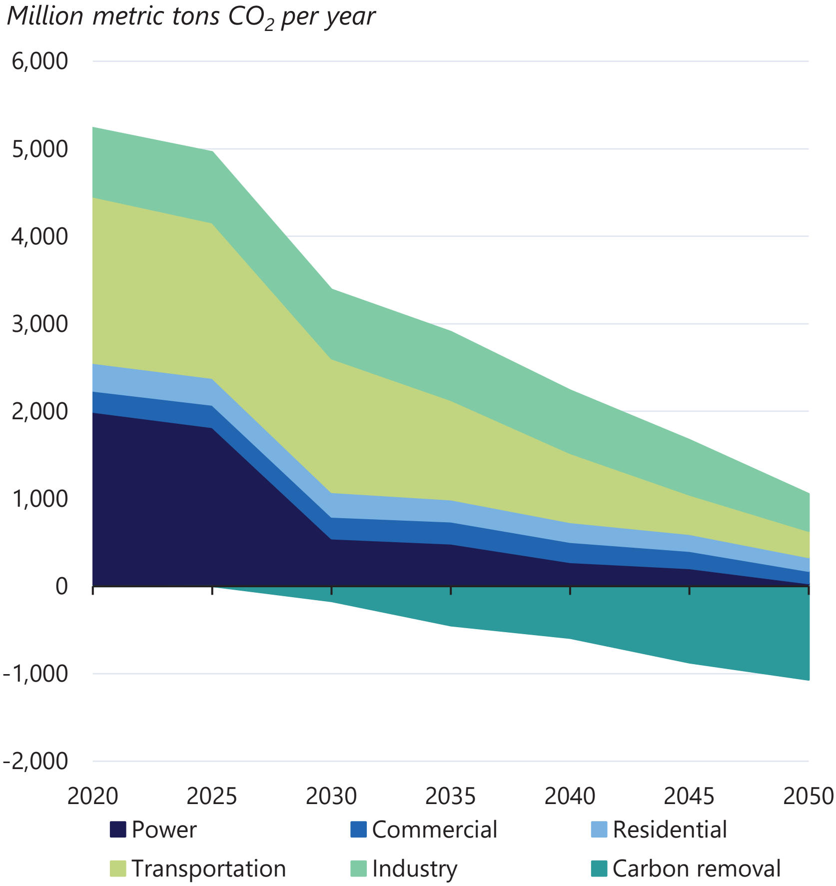
policies, (ii) a scenario with the Administration policies enacted through 2022, (iii) a scenario also including the IRA-driven changes, and (iv) a path to net zero.[5] Uncertainty exists in any projection, but the broad patterns shown are robust and consistent across modelling efforts (EPA 2023; Bistline et al. 2023). As in figure 5-4, the simulations show that Biden-Harris Administration policies will drive significant emissions reductions relative to a no-policy scenario. At the same time, further policy intervention will likely be necessary to reach net zero.

Figure 5-6 decomposes one possible path to net zero by sector based on a model from Huppman et al. (2023).[6] In the model, electricity is fully decarbonized, but heavy industry and some forms of transportation still require fossil fuel use. To offset these continuing fossil fuel emissions, as well as past emissions, NETs are used to remove CO_2 from the atmosphere. These NETs can be biological, like afforestation and farming practices which increase CO_2 uptake in the soil and biomass, or technological, like direct air capture and storage which uses chemical reactions to pull CO_2 from the air. The U.S. economy does not currently make sufficient use of NETs. As decarbonization advances into harder-to-decarbonize sectors, NETs are likely to become more cost effective.

[5] There are many different projections for CO_2 emissions in each of these scenarios. The CEA's goal is to highlight the general patterns behind such projections, not to endorse a specific result. The first scenario comes from the United States' 7th National Communication to the United Nations Framework Convention on Climate Change (2021b), the two Biden-Harris Administration policy scenarios come from EPA (2023), and the net zero scenario is an illustrative logarithmic extrapolation from 2021 levels to zero CO_2 emissions in 2050. The Long-Term Strategy of the United States (White House 2021b) models several alternative pathways to net zero that include all GHGs.

[6] This study is part of the Energy Modeling Forum, an ongoing collaboration between several groups, and provides thorough coverage of sector-level and independent NETs. The model used in figure 5-6 is the US-REGEN model from the Electric Power Research Institute (2021).

Figure 5-6. CO_2 Emissions by Sector, Net Zero Scenario



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Sources: Huppman et al. (2023); CEA calculations.

Note: Projections are based on the REGEN model developed by the Electric Power Research Institute. Sector emissions are net of sector-level carbon capture and storage (CCS). Carbon removal includes bioenergy with carbon capture and storage (BECCS), direct air capture and storage (DACS), and biological processes such as plant growth.

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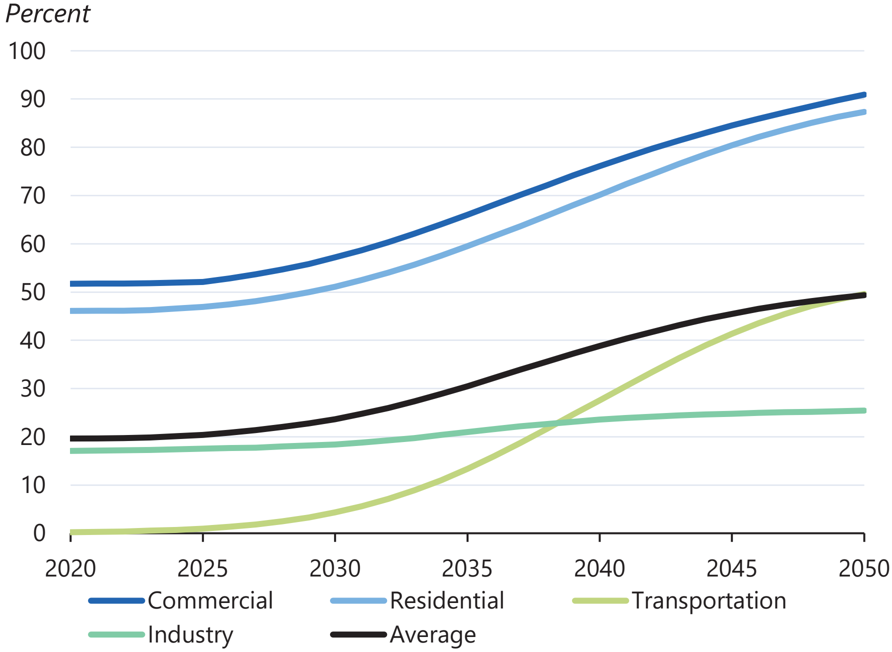
Electricity

Achieving complete decarbonization in electricity production is considered both technologically possible and inexpensive relative to abatement options in other sectors (Davis et al. 2023). This section discusses how to achieve net zero CO_2 emissions in electricity production and how electrifying other sectors can help achieve net zero economy-wide. Figure 5-7 shows one

Figure 5-7. Electrification by Sector for Net Zero CO_2 by 2050



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Sources: Williams et al. (2021); CEA calculations.

Note: Electrification is measured as electricity sales to ultimate customers in the end-use sector (EJ) divided by end-use energy consumed by the end-use sector (EJ).

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projection of how the share of electricity in final energy demand within each sector could evolve to achieve a net zero economy in 2050.

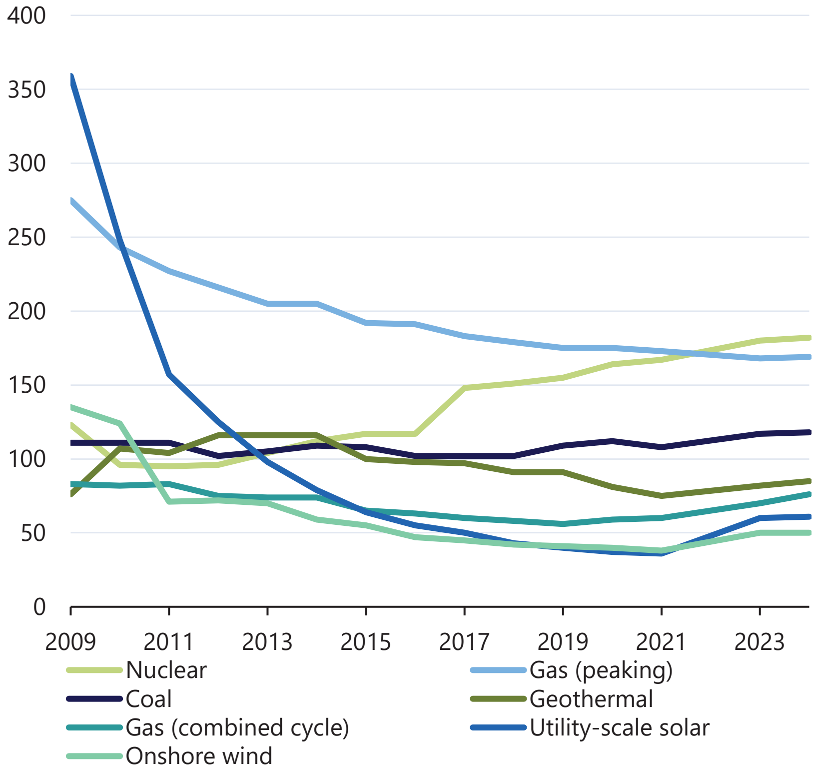
Decarbonizing Electricity

The carbon intensity of electricity production has dropped over the last two decades, driven in part by the falling price of renewables and in part by the switch from coal to natural gas fossil fuel use. Figure 5-8 shows the average cost per megawatt-hour of generating electricity over the lifetime of the production infrastructure (i.e., the levelized cost of electricity) for several different energy sources.[7] The cost of wind and solar has decreased dramatically. Indeed, solar went from being the most expensive energy source in 2009 to

[7] The levelized cost of electricity is a measure of the net present cost of electricity generation for a given generator over its lifetime. Often used to plan investments or compare costs of generation methods, it is calculated as the sum of total costs over the lifetime of a plant divided by total electricity produced. However, levelized costs may not account for all relevant characteristics of an energy project (Joskow 2011).

Figure 5-8. Levelized Cost of Electricity

Dollars per megawatt-hour



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Source: Lazard (2024).

Note: Data for 2022 are missing; the values in this year are linearly interpolated. Data are calculated by taking the midpoint of the high and low marginal costs of facilities across the United States. Subsidies are not included in the numbers used in the figure.

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one of the cheapest in 2023, second only to wind. These price decreases have helped drive out some fossil fuel-powered electricity by displacing some production and accelerating plant retirements.[8] However, continuing drops in solar and wind prices alone will not lead to full decarbonization of the electricity grid because of the need for complementary resources, permitting new clean energy projects, and expanding transmission.[9]

[8] It can be less expensive to continue running some existing fossil fuel-fired plants until the end of their lifetimes than to replace them early with new solar and wind generation (Davis, Holladay, and Sims 2022).

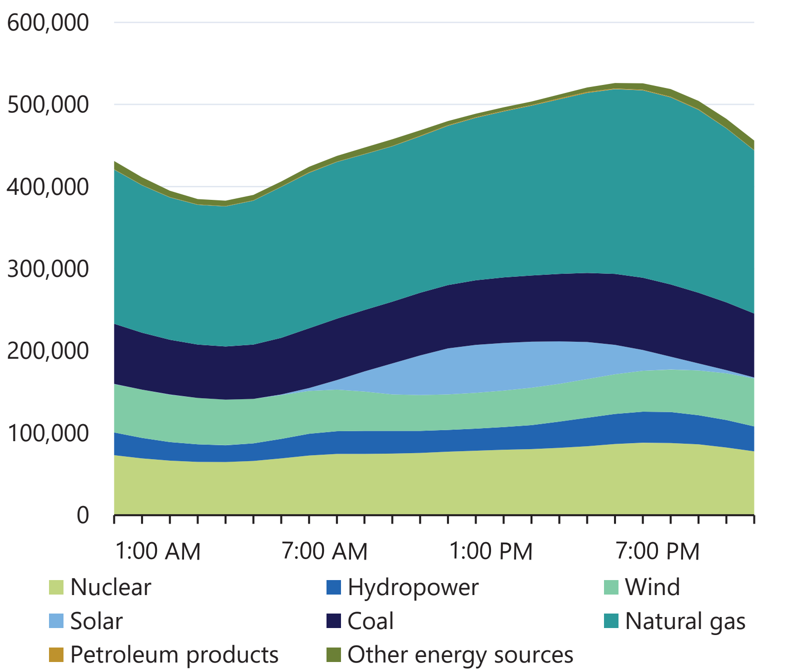
[9] Additional challenges, including workforce development and supply chain constraints for critical minerals needed for battery production, also play a major role but are beyond the scope of this chapter.

Wind and Solar Energy

Modeling studies widely agree that achieving net zero emissions requires the rapid acceleration of wind and solar deployment and that the grid can accommodate significantly more wind and solar energy than is currently deployed (Kroposki 2018). However, wind and solar are not always available. As an illustration, figure 5-9 shows variation in average electricity generation by source over the course of the day in the continental United States. While patterns vary across regions, total electricity use currently peaks in the early evening, just as solar energy becomes unavailable. Although wind power has the potential to meet demand at any time of the day, it is not always available.

Figure 5-9. Hourly Power Generation by Energy Source

Megawatt-hours



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Sources: Energy Information Administration; CEA calculations.

Note: Hourly data are averages from November 2023 through October 2024 that are converted to Eastern Daylight Time for the continental United States. Hour labels correspond to the end of hourly reporting periods.

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To provide reliable electricity, variable wind and solar energy are paired with complementary technologies that can provide electricity when they become unavailable. These complementary sources of electricity—"dispatchable" resources—include nuclear power, energy storage, some types of hydropower, and fossil fuels.[10] For example, because they have low fixed costs and high variable costs, natural gas "peaker" plants can be profitable even if they only run when less expensive, variable renewable sources are not available. Achieving a carbon pollution-free electric power sector also requires eliminating emissions from these complementary technologies.

Batteries and Storage Technology

Grid-scale batteries are an important technology for storing wind and solar energy in the United States so that it can be used whenever it is most needed.[11] Use of short duration grid-scale batteries, especially lithium-ion batteries, is rapidly increasing (EIA 2024c). The use of longer-duration batteries is more nascent, and many technologies are still in a demonstration phase (DOE 2023b). Pumped storage hydro is another key storage technology.[12] Although it has physical requirements that mean it cannot be installed everywhere, the U.S. Department of Energy (DOE) estimates that significantly more pumped storage capacity could be added by 2050 (DOE 2024c).[13]

While falling renewable energy and natural gas prices have driven decarbonization over the last two decades, achieving net zero will likely require the combination of variable renewables and effective storage to be cheaper than the alternative combination of variable renewables and natural gas (MIT 2022; Butters, Dorsey, and Gowrisankaran 2024). Figure 5-10 shows that the current price per megawatt-hour of renewables backed up by natural gas is lower than the price per megawatt-hour of renewables backed up by batteries. Figure 5-11 shows the projected decline in the cost of utility-scale battery storage per kilowatt through 2050. The fall in the cost for long-duration batteries, which last at least 10 hours, will allow daytime

[10] Natural gas availability can also be disrupted due to supply chain issues (Gilbert, Bazilian, and Gross 2021) as well as disruptions caused by extreme weather (DOE 2024b). Disruptions in natural gas availability have posed issues during several recent storms (DOE 2024b).

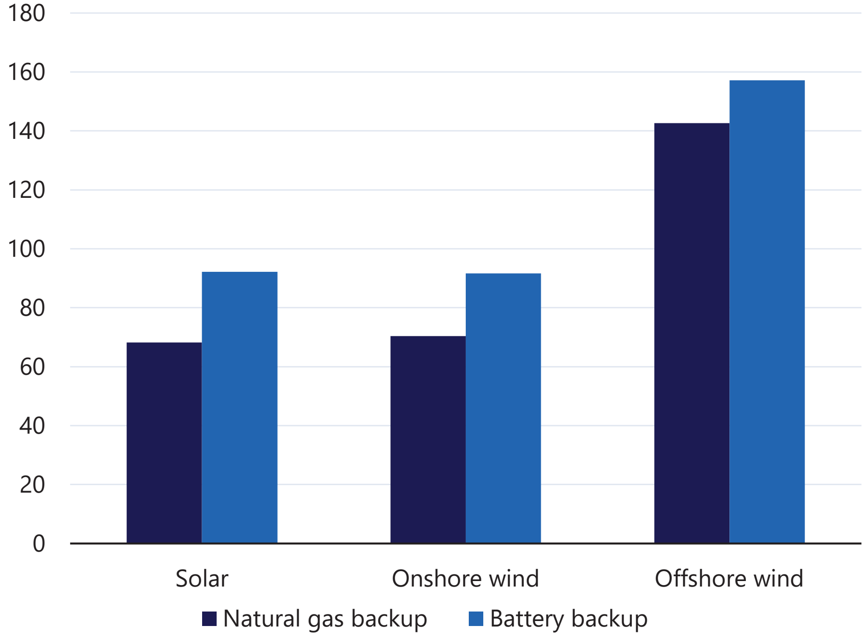
[11] Non-battery storage options also exist, including pumped hydro, compressed air, liquid air, and gravity-based energy storage technologies. Each option has different requirements for land and infrastructure that may make them more or less efficient in different situations (Shine 2023). As of 2022, pumped storage hydropower accounted for 96 percent of all U.S. utility-scale energy storage (DOE 2023c).

[12] When electricity demand is high, water is released from a high-elevation reservoir and generates electricity as it flows into a lower-elevation reservoir through a system of turbines. When electricity demand is low, excess electricity from wind and solar generation can be used to pump the water back up into the higher reservoir.

[13] Other forms of long-duration energy storage can store energy over days, weeks, or seasons (DOE 2023b), though further policy intervention is needed to make them commercially viable in many instances.

Figure 5-10. Levelized Costs of Variable Energy Sources, Spring 2023

Dollars per megawatt-hour



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Sources: Greenstone (2024); Energy Information Administration; CEA calculations.
Note: Backup energy sources ramp up during peak hours. Data are in 2023 U.S. dollars and do not account for subsidies.
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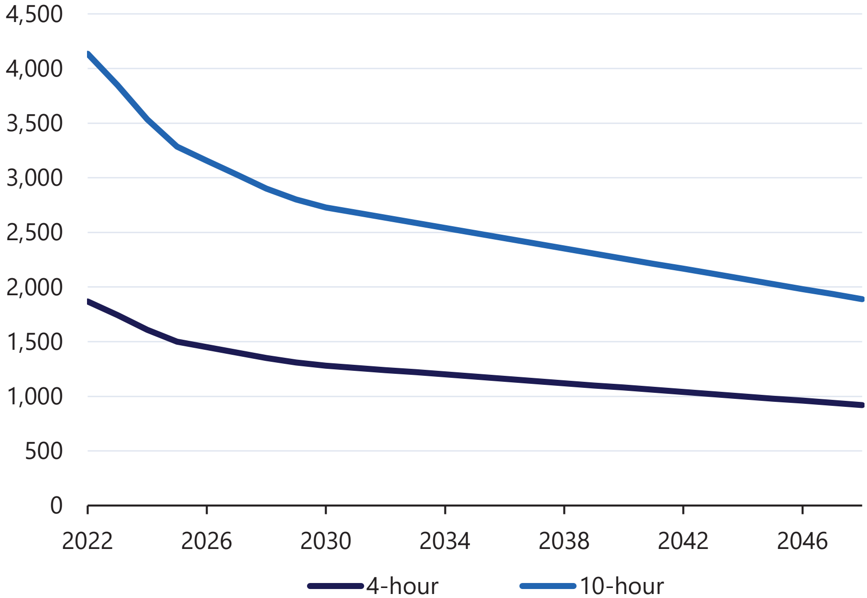
solar energy generation to satisfy nighttime demand and make wind energy available regardless of when the wind is blowing. In addition to supporting renewables and reducing emissions, adding storage to the grid improves resilience and reliability (DOE 2024b).

Governments can reduce energy storage costs by addressing externalities commonly associated with technological improvement. R&D externalities occur because new technological knowledge often benefits all firms working in a sector, not just those that undertake the research (Jones 2005). Learning-by-doing externalities occur because the process of producing a good teaches a firm how to reduce costs, and other firms can follow suit via spillovers (Gillingham and Stock 2018). This externality is especially important for nascent and emerging technologies, like some long-duration storage options, where demonstrating economic feasibility provides valuable information to other firms (Armitage, Bakhtian, and Jaffe 2024). Because the value of engaging in these activities for an individual firm is

Figure 5-11. Utility-scale Battery Storage Projected Costs

Dollars per kilowatt



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Sources: Cole and Karmakar (2023); National Renewable Energy Laboratory; CEA calculations.
Note: Data are centered three-year moving averages of median projected values from 16 different studies, given in 2022 dollars. Data include energy and power costs but do not account for subsidies.
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less than the value to society, there will be an under-provision of technological improvement absent government intervention.

Policy can address these positive externalities by subsidizing R&D, production, and the demonstration of new technologies. To date, the Biden-Harris Administration has invested more than $300 million in long-duration energy storage technologies via the BIL and created the Advanced Manufacturing Production Credit for domestic production of clean technologies, including batteries. The DOE has set the goal of reducing the cost of long-duration energy storage, including batteries, by 90 percent by 2030 (DOE 2023d) and analyzed how near-term government support can lead these technologies to commercial viability (DOE 2023b).

Other Zero CO_2-emissions Options for Electricity Generation

Hydroelectric, nuclear, and geothermal power can also provide zero-CO_2 emissions electricity, and unlike wind and solar, some types of these resources are dispatchable. Hydropower plants, which convert kinetic energy from dammed water into electricity, provided 6 percent of electricity generation in 2023 (EIA 2024d). Hydropower is renewable, and it can be operated to provide stable generation or flexibly to complement wind and solar (DOE 2024c). While its potential to scale up is limited by natural resources (Fendt and Parsons 2021), the DOE estimates that significant new hydropower generation could be added by 2050 through upgrades to existing plants, adding capacity at existing dams and canals, and limited development of new stream-reaches, in addition to the potential for new pumped storage capacity already discussed (DOE 2024c).

Nuclear energy provides roughly 20 percent of current electricity generation in the United States. Nuclear plants have high fixed costs and low variable costs, making them well-suited for stable production. Most U.S. nuclear plants are large light-water reactors, which can offer low marginal costs per megawatt-hour due to economies of scale (DOE 2024d). In addition, investments in small modular reactors (SMRs), which have a smaller geographic footprint than traditional reactors and can be partially prefabricated offsite, can potentially allow for faster, cheaper construction in areas unsuitable for standard nuclear facilities. While SMRs may cost more per megawatt-hour than large reactors, they may be more suitable for replacing smaller retiring coal plants or industrial processes requiring high heat, and they may be more attainable for investors with limited land, labor, and capital (DOE 2024d). Recent technological advancements have improved their suitability for flexible production as well (Renteria, Schwartz, and Jenkins 2024), implying that nuclear could be used as a replacement for natural gas plants in complementing variable renewables.

Concerns about rare disasters and the challenges of storing nuclear waste have given rise to safety regulations that drive up the cost of nuclear energy (Lovering, Yip, and Nordhaus 2016), likely contributing to the decline in the construction of new plants since the 1980s (Makarin, Qian, and Wang 2024). However, nuclear plants can be safely built and operated at economically viable costs (Ritchie 2020). For example, France opened its first nuclear plant in the 1960s and produces the majority of its electricity using nuclear power today (EIA 2023). Scaling up U.S. nuclear power would require catalyzing private sector investments by streamlining regulation and investing in innovation, demonstration, and deployment (DOE 2024d; White House 2024a). The IRA provides tax credits for nuclear energy production and investment, and the Biden-Harris Administration funds a number of demonstration and research programs, offers low-cost loans for deployment of commercial technologies, and signed the ADVANCE Act to increase licensing efficiency (DOE 2024d).

Paths to net zero that prioritize geothermal energy will likely require further R&D investment (DOE 2024e). Geothermal contributed less than 1 percent of electricity generation in 2023 in part due to the geographic distribution of natural thermal resources (EIA 2024e). However, new technologies, such as enhanced geothermal, can help extract geothermal energy from a much wider range of natural environments (DOE 2024e). Some analyses project that geothermal will contribute more than 10 percent of electricity generation by 2050 (Augustine et al. 2023). The Biden-Harris Administration supports demonstration projects with BIL funding (DOE 2024f) and is working to streamline geothermal resource exploration on federal lands (DOI 2024).

Long-distance Transmission

The National Transmission Planning Study finds that the United States will need to more than double its 2020 electricity transmission capacity by 2050 to meet demand growth (DOE 2024g). This will require both new transmission lines and increased capacity on existing transmission lines (DOE 2024h; DOE 2024g). Increased transmission also increases the reliability of the grid, especially after natural disasters that hamper electricity generation in some locations (NERC 2023), and promotes the use of carbon-free energy sources.

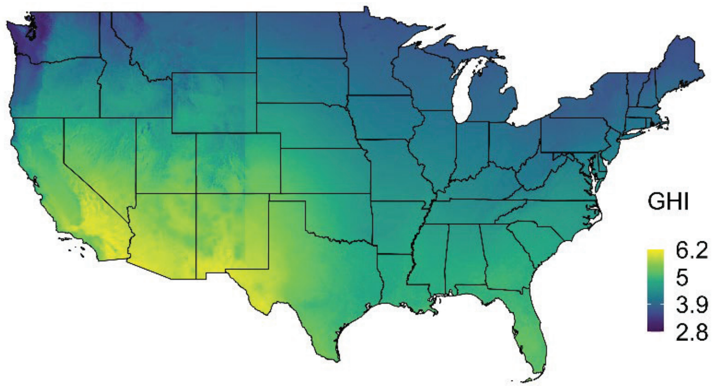
The United States has three main power grids, or “interconnections:” the Eastern, Western, and Texas grids (DOE n.d.a). Regional transmission refers to sending electricity across long distances within each grid on powerful, high-voltage transmission lines. Electricity could also be transmitted inter-regionally across interconnections, but the grids are currently not closely connected.

Transmission across regions and interconnections can help deal with the variability of wind and solar by reallocating renewable energy across space, complementing the ability of batteries to reallocate renewable energy across time. For example, many of the best locations for wind-based electricity production are in the center of the country, while most electricity demand occurs on the coasts (Joskow 2021). In addition, wind speeds are not constant even in windy locations. Figure 5-12 shows the uneven distribution of wind speed and solar irradiation across the country.

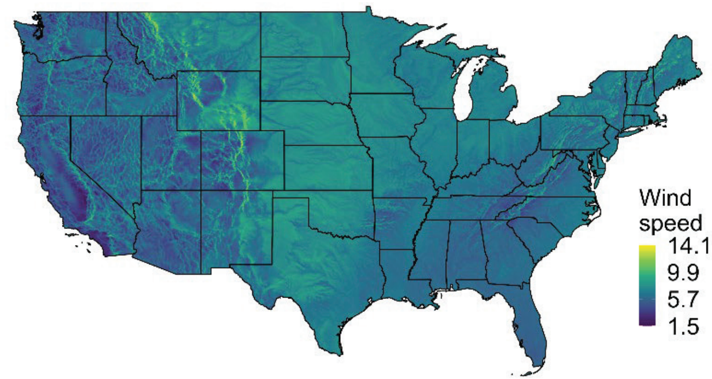
The grid system is not currently set up to optimally redistribute clean energy resources over long distances (Simeone and Rose 2024). In the extreme, places with high renewable energy potential may have negative electricity prices, because more electricity can be cheaply generated than is demanded within the regional grid. At the same time, prices may remain high in other regions, with demand exceeding renewable energy potential (Davis, Hausman, and Rose 2023). This price discrepancy implies that electricity produced inexpensively cannot be effectively routed to where it is

Figure 5-12. Distribution of Continental U.S. Solar and Wind Potential

A. Solar Irradiation



B. Wind Speed



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Sources: National Renewable Energy Laboratory; Census Bureau; CEA calculations.

Note: Solar irradiation is measured as average Global Horizontal Irradiation (kWh/m^2/day). Wind speed is measured as the average wind speed at 100m above surface level (m/s).

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needed. If renewables could be transmitted to locations with higher demand, they could push out higher-cost fossil fuel production, leading to cheaper electricity and fewer emissions in the receiving area. The financial benefits of transmission across interconnections have been estimated to be as high as almost three times greater than their cost on average (Bloom et al. 2020).

Planning for long-distance transmission is particularly difficult because the lines must pass through many states, Tribal lands, and privately owned properties. Moreover, the United States does not have a planning authority to coordinate inter-grid transmission projects (Joskow 2021). This inability to coordinate stakeholders when a project's benefits are widely distributed is a classic market failure (Coase 1960). There is also considerable scope to upgrade transmission capacity without building new lines (O'Boyle, Baker, and Solomon 2024), including reconductoring lines with high performance conductors and deploying grid-enhancing technologies. Such investments are not subject to the same coordination problems and can provide faster and more cost-effective routes to upgrading the grid.

Increased transmission would cause wholesale prices to rise in some regions and fall in others (Davis, Hausman, and Rose 2023). Locations sending electricity over long distances would tend to see prices increase, while receiving locations would see prices decrease. Thus, some power producers in receiving regions have incentives to block new transmission projects (Hausman 2024; Davis, Hausman, and Rose 2023).

The Biden-Harris Administration has taken steps to address the costs and coordination challenges that impede new transmission projects. The Administration funds large-scale interregional transmission projects through the $2.5 billion Transmission Facilitation Program and grid resilience through the $10.5 billion Grid Resilience and Innovation Partnerships Program (GRIP), both introduced under the BIL (DOE 2023e; DOE 2024i; DOE n.d.b). The Administration has also created the Coordinated Interagency Transmission Authorizations and Permits Program, which aims to speed up the federal permitting process for transmission projects, and the National Interest Electric Transmission Corridor Designation Process to expedite key projects (DOE n.d.c; DOE 2023f). The Federal Government also supports state-level actions through programs like the Federal-State Grid Modernization Initiative, technical assistance from the National Labs, and low-cost financing through the DOE Loan Programs Office (White House 2024b; Lawrence Berkeley National Lab n.d.; DOE 2024j). Additionally, the independent Federal Energy Regulatory Commission (FERC) has introduced new rules to expedite regional transmission projects (FERC 2024a).

Permitting for Energy Generation

Infrastructure projects, including clean energy and transmission projects, may be subject to a variety of state and local requirements, such as land use and zoning laws, as well as federal statutes including the National Environmental Policy Act (NEPA). NEPA requires agencies to consider the reasonably foreseeable environmental effects of major federal actions, which can be done through an environmental impact statement (EIS), environmental assessment (EA), or categorical exclusion. NEPA reviews often serve as a vehicle for projects to address compliance with substantive federal environmental laws, including the Endangered Species Act, the National Historic Preservation Act, the Clean Air Act, the Clean Water Act, and more (Luther 2011). EISs require the most thorough agency reviews and have historically taken several years, on average, for agencies to complete, which can delay the buildout of clean energy infrastructure (Morales and Rigby 2023).

Permitting requirements change the economic incentives to undertake clean energy projects by creating deterrents to investment. The financial return on a project is determined by the present discounted value of future profits, which depends on the size of future profits, how long firms must wait to receive them, the interest rate, and the certainty with which profits will be received. Permitting affects the present discounted value through two channels. First, delays in permitting processes can delay projects and push profits further into the future. Second, permitting can increase uncertainty about whether projects will come to fruition. Both effects decrease the risk-adjusted return to financial capital tied up in a project, creating additional barriers to new clean energy generation unrelated to the cost of generation.

The Biden-Harris Administration has taken steps to improve the efficiency of the federal permitting process. First, the IRA allocated $1 billion to hire experts and invest in new technologies to expedite review (White House 2024c). Additionally, amendments made to NEPA in the Fiscal Responsibility Act of 2023 and implemented by the Council on Environmental Quality's Bipartisan Permitting Reform Implementation Rule now require that an EIS must not exceed 150 pages (or 300 pages for a proposal of extraordinary complexity) and must be completed within two years, while an EA must not exceed 75 pages and must be completed within one year (White House 2024c; CEQ 2024). These reforms will further the progress the Biden-Harris Administration has already made in cutting six months off the median time it takes for agencies to complete EISs, while protecting the environment and communities (White House 2024d).

Interconnection Queues

Before new energy generation projects can be connected to the grid, transmission operators must ensure that the grid can handle the increase in load. Historically, projects have been evaluated in the order they are submitted. Each additional project in the queue then imposes a cost on future projects by increasing wait times, which can delay the return on investment and dissuade investors from undertaking otherwise-profitable clean energy generation projects (Johnston, Liu, and Yang 2023). Because these costs do not enter into firms' decisions to join the queue, this creates a negative externality that can lead to inefficient project selection, and government intervention to decrease wait times can increase completions. If the grid is at capacity, new applicants must also pay to upgrade transmission infrastructure, providing positive spillovers to other projects that can free-ride on their investment (Johnston, Liu, and Yang 2023). Using BIL funds, the DOE has analyzed solutions for reducing interconnection queues (DOE 2024k) and invested in interconnection infrastructure, including through the $10.5 billion GRIP and Title 17 Clean Energy Financing Program (DOE 2024j). FERC Order 2023 also aims to reduce interconnection queues by guiding transmission providers to conduct batch studies of multiple projects at once, as well as incentivizing faster completion (FERC 2024b; DOE 2024j).

Demand Response

Variability in renewable energy availability can also be addressed by adjusting demand, much like congestion pricing for traffic. Most retail consumers, including households and small businesses, do not pay retail rates that fully reflect changes in the cost of producing electricity (Borenstein, Bushnell, and Mansur 2023). This means that many customers have no incentive to adjust their consumption patterns to match the availability of cheap, renewable energy. Allowing electricity prices to reflect fluctuations in demand or supply (e.g., after sudden increases in heat or drops in the availability of wind power) could help consumers time their electricity consumption for when renewables are available (Joskow and Wolfram 2012).

New technologies, such as digital meters and advanced sensors, make it easier for consumers to adjust electricity demand in response to changes in electricity prices (DOE n.d.d). They can help consumers respond to changes in electricity prices without having to take additional action or even be aware of the rate changes (Bollinger and Hartmann 2019). Recent evidence suggests that time-varying prices with caps to limit consumer spending can improve the timing of energy demand (Hinchberger et al. 2024). Demand response can also be used by environmentally conscious consumers to reallocate demand in the absence of time-varying electricity prices. The Biden-Harris Administration has promoted demand response programs as part of a wider effort to promote the use of automation technologies to better balance electricity supply and demand (DOE 2023g).

Carbon Capture and Storage

Many efforts to decarbonize electricity focus on ensuring that new clean generation displaces fossil fuels. Another approach is to alter the process of fossil fuel combustion to reduce CO_2 emissions. Carbon capture and storage, or CCS, is a term for a suite of technologies that aim to capture CO_2 from process exhaust and prevent it from reaching the atmosphere.[14] The equimarginal principle implies that CCS should be used at power plants to reduce emissions when it is less expensive than using a combination of renewables and storage, other generation technologies, or adjusting demand. As a result, CCS can be used to ensure that the economy achieves net zero CO_2 emissions as quickly as possible and can be phased out when zero-carbon energy sources become lower cost alternatives to supply all electricity. Knowledge gained from R&D and deployment of CCS in the power sector will spill over to other sectors that make use of CCS.

The EPA has found that CCS is a cost-effective way to reduce emissions, and its recent regulations adopted under section 111 of the Clean Air Act will require all long-term coal-fired plants and some new gas-fired plants to control 90 percent of their CO_2 emissions (EPA 2024d). This regulatory design requires firms to limit emissions without mandating use of a specific technology, incentivizing them to do so in the least expensive way possible. CCS is a cost-effective way to comply in part due to tax credits that were increased and extended by the IRA, highlighting the interaction of recent legislation and regulatory efforts in propelling the economy toward net zero.

Electrification

Given the potential for rapidly decarbonizing the electricity sector, further electrification of the economy is crucial for reaching net zero. This section discusses the economics of electrification in each sector of the economy.

The Transportation Sector

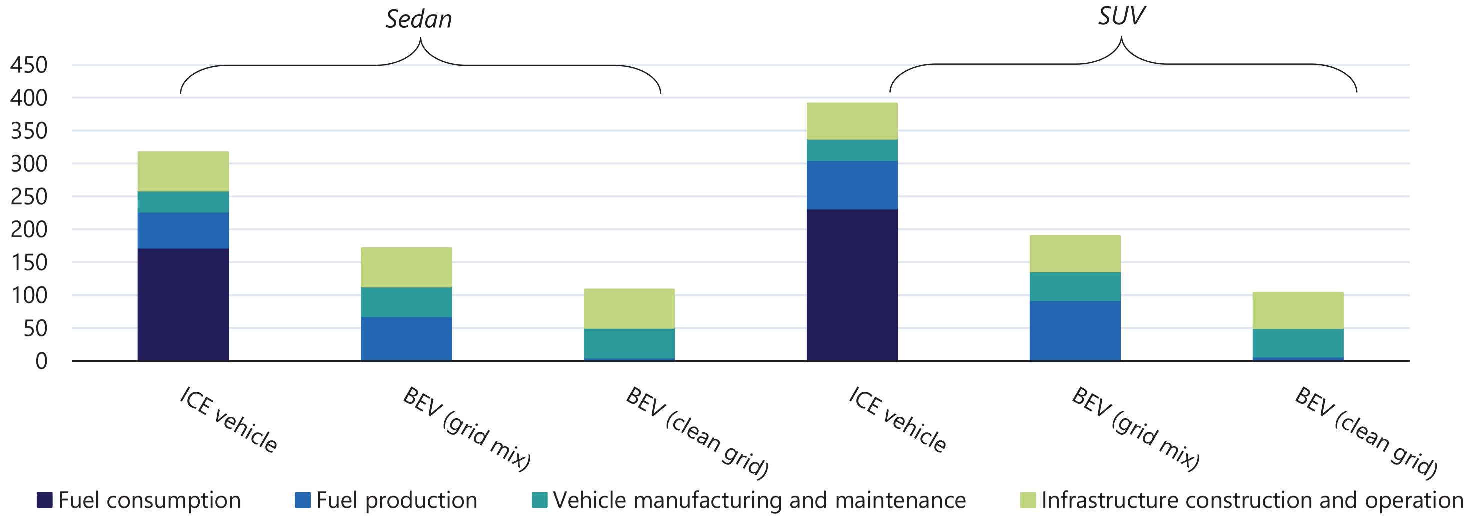
In 2023, transportation contributed nearly 40 percent of energy-related CO_2 emissions (see figure 5-1). Electrification offers significant opportunities for reducing emissions not only from fuel consumption, but also from fuel production, vehicle manufacturing and maintenance, and infrastructure.

Personal vehicles. Replacing internal combustion engine (ICE) with EVs is central to achieving net zero in the transportation sector. More than 90 percent of American households have at least one car (Census 2022), and tailpipe CO_2 emissions from passenger vehicles and light trucks made up 18 percent of total U.S. CO_2 emissions in 2022 (EPA 2024e). Figure 5-13 compares lifecycle emissions from ICE vehicles and EVs. Replacing all ICE vehicles with EVs would reduce emissions per passenger mile traveled (PMT) by 46 percent with the mix of electricity generation sources projected

[14] CCS in the power sector prevents emissions from fossil fuel use but does not pull CO_2 from the atmosphere. For this reason, it is not considered to be a NET.

Figure 5-13. Emissions per Passenger Mile from Personal Vehicles

Grams CO_2-e per passenger mile traveled



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Sources: International Council on Clean Transportation; CEA calculations.

Note: ICE vehicle refers to vehicles with internal combustion engines and BEV refers to battery electric vehicles. Calculations are made for vehicles registered in the United States in 2021 using the GREET model from Argonne National Laboratory. Grid mix refers to electricity generated from both fossil fuel and renewable sources projected for 2021–2038. Clean grid refers to electricity produced with zero emissions. CO_2-e is a measure of total greenhouse gas emissions that converts non-CO_2 gases into their equivalent quantity of CO_2 in terms of warming potential.

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to be used from 2021–2038 and by 66 percent with a zero-carbon emissions grid.

The Biden-Harris Administration has set the target that 50 percent of new passenger cars and light trucks should be zero- or low-emissions vehicles, including battery electric, plug-in hybrid electric, and fuel cell electric vehicles, by 2030 (White House 2021c). As of the second quarter of 2024, low-emissions vehicles made up 9 percent of new vehicle sales, up from less than 1 percent in 2014, and battery EVs alone made up 7 percent (EIA 2024f). As older ICE vehicles are retired, the share of EVs on the road will increase.

There are two main challenges to increasing EV adoption, both of which the Biden-Harris Administration has taken action to address. First, EVs have historically been more expensive than ICE vehicles in the United States, although the market prices are converging (see figure 5-14a) in part thanks to government support for R&D (White House 2024e) and critical mineral supply chains (White House 2022). In addition, the IRA funds EV tax credits that lower the price for many consumers below the trend shown in figure 5-14a, and EVs often have lower operating costs (Treasury 2024; Orvis 2022). Second, consumers have concerns about EVs' range and ease of travel. ICE vehicles have historically been able to travel farther than EVs before refueling (although EV and ICE vehicle ranges are converging, as shown in figure 5-14b), charging typically takes longer than filling a gas tank, and charging stations are not as common as gas stations.

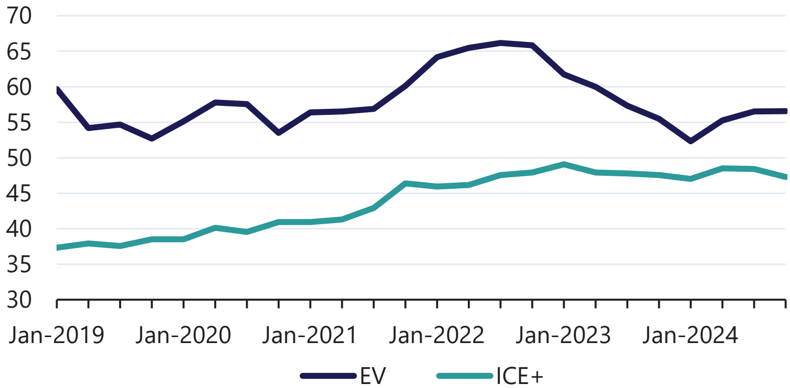
To make EVs better substitutes for ICE vehicles, complementary investments are needed to extend battery range and build charging stations (Rapson and Bushnell 2024). Without government intervention, investment in charging stations would be insufficient because of a coordination problem: Investments in charging stations are not profitable unless many people drive EVs, and fewer consumers will buy an EV if charging stations are not available along long-distance routes (Gillingham and Stock 2018). In response, investments from the BIL and IRA are working to reduce EV prices, increase range, and expand charging networks, which have contributed to the quadrupling of EV purchases and the doubling of the number of publicly available chargers since the Biden-Harris Administration took office (White House 2024e; DOT 2024). More than $25 billion of investment in the U.S. EV charging network has been announced to date, including over $10 billion from the private sector (White House 2024e). The investments may need to be adjusted over time to keep adoption on track. These investments will also encourage adoption of electric medium-duty vehicles such as delivery vans.

Shared transit. Shared transit addresses congestion and emissions externalities, which means that government intervention to increase its availability can increase wellbeing. Increasing ridership can also reduce emissions. Figure 5-15 shows emissions per PMT for an average bus occupancy

Figure 5-14. Range and Transaction Price for New Light-duty Vehicles

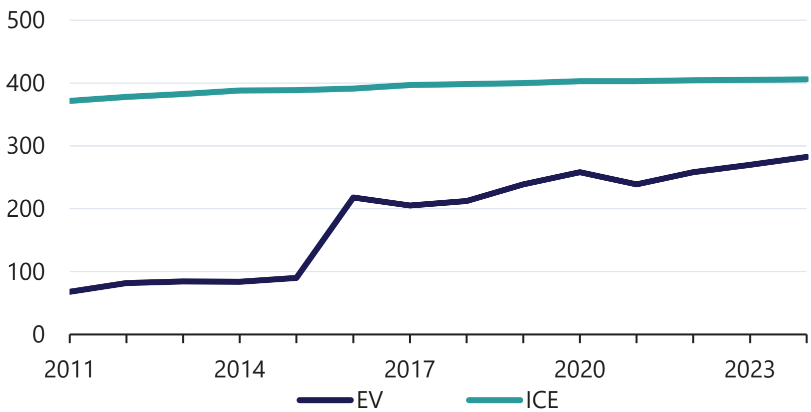
A. Transaction Price

Average transaction price (thousands of dollars)



B. Range

Median range (miles)



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Sources: Department of Energy; Cox Automotive; CEA calculations.
Note: Average transaction price is calculated as a three-month moving average and is based on all transacted models, thus reflecting differences in the composition of model categories. Median range is based on all available model configurations certified by the Environmental Protection Agency (EPA) in a given year and does not represent sales- or production-weighted data. Range for electric vehicles is based on EPA estimates; range for ICE vehicles is based on tank size and combined city/highway fuel economy. The ICE model category includes gasoline vehicles, while the ICE+ model category includes all internal combustion engine vehicles as well as hybrid vehicles.
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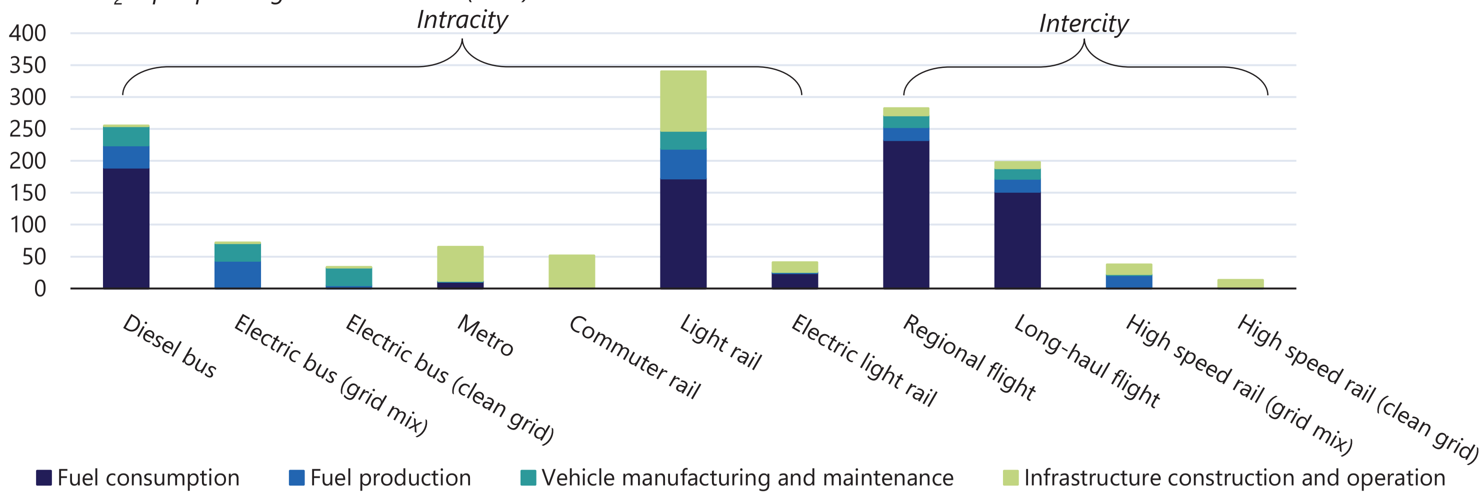
Figure 5-15. Emissions per Passenger Mile from Mass Transit

Grams CO_2-e per passenger mile traveled (PMT)



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Sources: Transportation Life-Cycle Assessment Passenger Database; Fuels Institute; Federal Highway Administration; CEA calculations.

Note: Metro, commuter rail, and light rail with an energy mix (20 percent renewable energy) are calculated for the San Francisco systems; electric light rail is calculated for Los Angeles. Grid mix refers to electricity generated from both fossil fuel and renewable sources; assumptions about the shares are described in each source. Clean grid refers to electricity generated with zero emissions. Bus PMT are calculated for 11 passengers, the average occupancy in 2018. CO_2-e is a measure of total greenhouse gas emissions that converts non-CO_2 gases into their equivalent quantity of CO_2 in terms of warming potential.

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of 11 people (Federal Highway Administration 2018), though most buses can transport 50–70 passengers at a time (Transportation Research Board 2013). While both private and public EVs have low marginal operating emissions, displacing private vehicles with shared transit helps decrease life-cycle emissions via reduced vehicle production, maintenance, infrastructure investments, and vehicle end-of-life.

Increasing public transit ridership will require government action to build new networks, connect long-distance transit with last-mile travel modes, reduce trip times, and set optimal prices considering environmental externalities. A recent study finds that optimal fares for public transit can be as low as $0.16 and optimal service is more frequent when emissions and congestion are taken into account (Almagro et al. 2023). The benefits of expanding the use of a fully electric, zero-emissions public transit fleet would be greater.

Federal, state, and local governments can act to make a rapid transition to an electrified public transit system. For example, the EPA's Clean School Bus Program buys electric school buses with funding from the BIL (EPA 2024f). Federal funding and incentives for the electrification of rail can help fund the replacement of older, high-emissions locomotives with new electric locomotives (Federal Railroad Administration 2024). As shown in figure 5-15, meeting demand for new regional transportation by building new high-speed rail can also help reduce emissions.

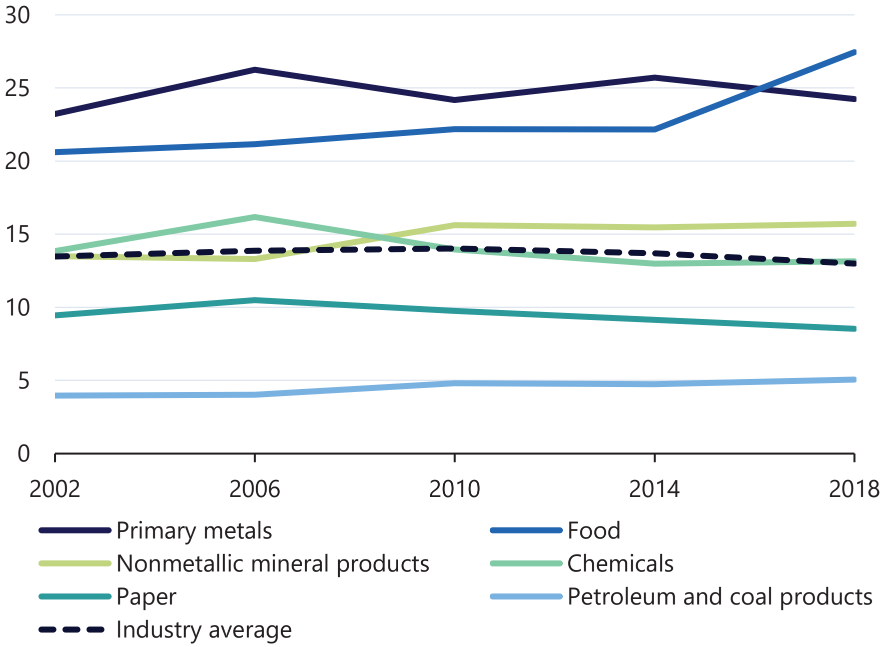
Freight. Freight is transported by container ship, rail, air, and heavy-duty vehicles. While inexpensive batteries could enable the electrification of heavy-duty vehicles (Ledna et al. 2024) and shorter-distance, interregional container shipping (Kersey, Popovich, and Phadke 2022), decarbonizing global shipping and aviation will likely make use of other technologies that will be discussed later.

The Residential and Commercial Building Sectors

Direct emissions from buildings comprise 12 percent of annual U.S. CO_2 emissions (EIA 2024a). Electrifying heating and cooling, water heating, and cooking will deliver increasing emissions reductions over time as the grid decarbonizes (Leung 2018). Because buildings are durable, retrofits will play a major role in building electrification: 75 percent of homes and 51 percent of commercial space projected to exist in 2050 have already been built (DOE 2024l). However, retrofits tend to be costly, and without subsidies, many households and businesses will continue to use existing technologies until they must be replaced. The Biden-Harris Administration supports electrification through IRA tax credits and home energy rebates (White House 2024f). While building codes are set at the state and local level, the Federal Government can participate in model code development and offer incentives

Figure 5-16. Electrification by Industry Subsector

Percent of end-use energy coming from electricity



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Sources: Energy Information Administration; CEA calculations.

Note: The subsectors included are the six most energy-intensive subsectors in 2018. Primary metals includes steel and aluminum. Nonmetallic mineral products includes cement and glass. Chemicals includes fertilizer. Values are calculated as electricity sales to ultimate customers in the end-use subsector (Btu) divided by end-use energy consumed by the end-use subsector (Btu). The average value represents the average across all industry subsectors, not just those shown.

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and support for local jurisdictions to require new construction to be electric ready (DOE 2024l).

Because buildings already consume 75 percent of electricity production, decreasing demand for electricity in buildings through improved energy efficiency will tend to lower electricity prices (O'Shaughnessy et al. 2022). This decrease in prices will then promote electrification throughout the rest of the economy.

The Industrial Sector

The decarbonization of industry will rely on a combination of electrification, energy efficiency, low-carbon fuels, and CCS, among other solutions (DOE 2022a). Because of the wide range of industrial processes, optimal measures will depend on the industrial subsector. For example, in sectors that use low and medium temperature heat, electrification can be cost effective with existing technologies, which generally means using industrial heat pumps to replace natural gas boilers (Rissman 2022). This process of electrification will be spurred by policies that lower the cost of electricity relative to natural gas, including subsidies for clean energy generation and batteries. For applications where higher temperatures are required, such as producing steel, cement, and glass, heat electrification is unlikely to be economical soon. For many energy-intensive subsectors, electrification is still nascent (figure 5-16). The Biden-Harris Administration has funded a wide range of R&D and demonstration projects to promote electrification and other forms of industrial decarbonization, which will be discussed in the following sections (DOE 2024m; DOE 2020; DOE 2024n).

Beyond Electricity

This section discusses the economics of decarbonization for un-electrified parts of the economy and the use of NETs to remove emissions that are difficult to eliminate.

Decarbonization Beyond Electrification

While grid decarbonization plays a critical role in economy-wide decarbonization, it is still possible to decarbonize portions of the economy that do not rely on electricity.

Sustainable Fuels

When full electrification is not cost effective, using fuels that have fewer emissions on a lifecycle basis can be an effective way to reduce emissions. These fuels are likely to play a large role in decarbonizing both high-heat industrial processes and freight transportation (Lu et al. 2023). Powering aviation and cargo ships with electricity is not efficient with current technology, because batteries with the capacity to handle long-distance ranges are very heavy and take up considerable cargo space (Kennedy and Feldman 2023). The United States is investing in alternative energy-dense sustainable aviation fuels derived from biomass, wastes, or captured CO_2 and hydrogen as part of its target to reduce aviation emissions by 20 percent by 2030 (White House 2021d; DOE 2024o).

Hydrogen can also be used as an alternative to fossil fuels in ICE vehicles, fuel cells, and heavy industry. However, there is a tradeoff between emissions intensity and cost across the available production technologies. Without subsidies and given current grid conditions, it is currently cheapest to produce liquid hydrogen using fossil fuels in a manner that produces CO_2 and other GHG emissions, rather than using electricity (Schelling 2023). In 2020, 95 percent of hydrogen production used natural gas as an input (DOE 2020). Due to uncertainty about the future economic viability of low carbon fuels like clean hydrogen (Davis et al. 2023), subsidies for R&D and production—such as the IRA's Clean Hydrogen Production Tax Credit—are likely to be important. The BIL funds the establishment of Regional Clean Hydrogen Hubs (DOE 2024p) in addition to other projects promoting research, development, demonstration, and deployment of clean fuels (DOE 2023h).

Increasing Energy Efficiency

Energy efficiency has been the driving force behind past decarbonization of the U.S. economy. CO_2 emissions per dollar of gross domestic product fell 55 percent from 1990–2022, largely due to increases in economy-wide energy efficiency (i.e., decreases in primary energy use per dollar of real GDP). While improvements in energy efficiency will never be sufficient to achieve complete decarbonization on their own while fossil fuel energy sources are in use, the equimarginal principle suggests they are likely to be an important component of reaching net zero carbon emissions, especially in economic activities that are not completely electrified.

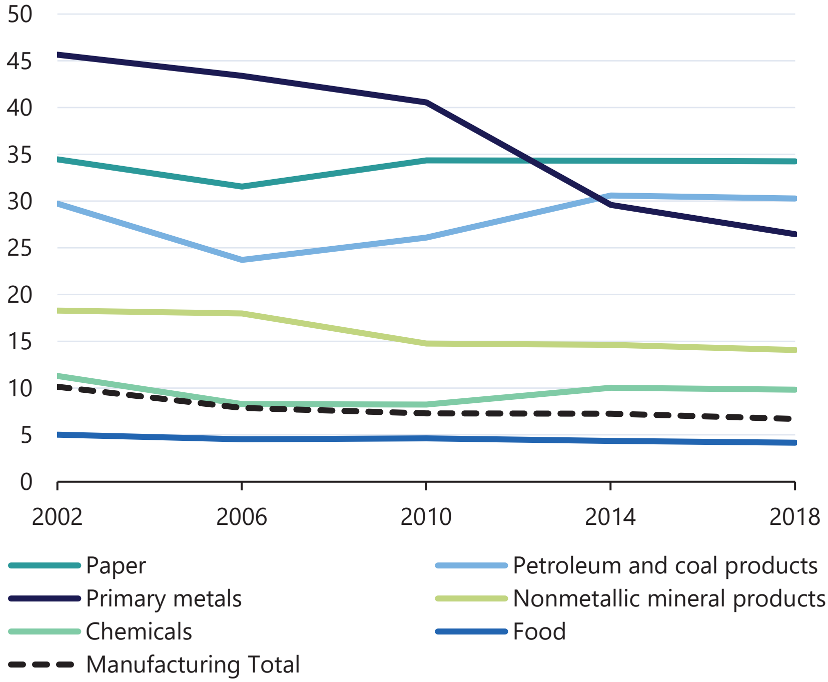
Energy efficiency is a central component of industrial decarbonization, with specific applications differing by subsector. Figure 5-17 shows that energy efficiency improved from 2002–2018 even within subsectors that did not experience significant electrification. The Industrial Decarbonization Liftoff report outlines how the Biden-Harris Administration has promoted energy efficiency with tools including R&D and demonstration projects (DOE 2023i).

Energy efficiency can also play a key role in decarbonizing freight transportation and global shipping (Lu et al. 2023). Improvements in the design of trucks, ships, planes, and engines as well as new innovations in the use of sails to capture wind for maritime freight can all reduce CO_2 emissions per ton-mile (Kennedy and Feldmann 2023). The Biden-Harris Administration issued the U.S. National Blueprint for Transportation Decarbonization, which discusses how to increase energy efficiency within transportation modes and incentivize switching activity to more energy efficient modes, such as shared transit, when possible (DOE 2023j).

Increasing energy efficiency is also crucial to decarbonizing the building sector. Buildings can be made more energy efficient through investments in insulation, air sealing, envelope requirements, and energy efficient appliances and lighting (DOE 2024l). The Biden-Harris Administration supports these efforts with IRA tax credits and home energy rebates (White House 2024f), energy efficiency standards for appliances and commercial and industrial equipment as directed by Congress (DOE 2024q), energy code

Figure 5-17. Energy Use per Real Dollar of Value Added by Industry Subsector

1,000 Btu per chained 2017 dollar



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Sources: Bureau of Economic Analysis; Energy Information Administration; CEA calculations.

Note: The subsectors included are the six most energy-intensive subsectors in 2018. Primary metals includes steel and aluminum. Primary metals includes steel and aluminum. Nonmetallic mineral products includes cement and glass. Chemicals includes fertilizer. Values are calculated by dividing total energy use (Btu) by gross real value added for each industry subsector. The average value represents the average across all industry subsectors, not just those shown.

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requirements for federal programs, and $1.2 billion in IRA and BIL funding to support local jurisdictions in adopting new energy codes (DOE 2023k).

Where buildings are located also affects energy use through the impact of weather on energy demand for heating and cooling, emissions from commuting (Lyubich 2024; Almagro et al. 2024; DOE 2023j), and land use (Hong et al. 2021). Indeed, place effects account for 14–23 percent of heterogeneity in household energy use (Lyubich 2024). In 2021, 14 percent of building emissions were estimated to come from embodied carbon in material manufacturing, transport, construction, and disposal (DOE 2024l), suggesting that switching to less carbon-intensive building materials and practices and reducing the frequency of repairs and rebuilding can lower CO_2 emissions per year of use. As a result, rezoning to encourage dense construction in low disaster-risk, transit-rich areas, combined with updating building codes for energy efficiency and climate resilience, can ensure that housing construction and emissions reduction goals advance together (Schuetz 2022). The Biden-Harris Administration emphasizes the role of land-use planning and transit-oriented development in reducing emissions in its Blueprint for Transportation Decarbonization (DOE 2023j).

CCS in Industry and Transportation

As in the electric power sector, CCS could play an important role in decarbonizing heavy industries like steel and cement production, as well as the production of low-carbon fuels used for transportation. CCS is more likely to be both a short- and long-term solution in these sectors, unlike in the power sector where it is likely to be a short-term tool for speeding up the transition (Browning et al. 2023).

Negative Emissions Technologies

Reaching net zero will require offsetting emissions from sectors where cost-effective mitigation is not feasible (DOE 2022b). In other words, there is a need for NETs, which can allow the economy to reach net zero even when carbon emissions still occur in some sectors.

Biological NETs are any biological process pulling CO_2 from the atmosphere, usually through plant growth, to maintain or enhance natural carbon sinks. In particular, forest growth consumes significant CO_2, and some farming practices can increase the carbon uptake of soil.

Technological NETs are engineered systems that remove CO_2 from the atmosphere. The simplest technological NET is direct air capture and storage (DACS). DACS pulls CO_2 from the atmosphere using chemical reactions (IEA 2024a). DACS requires an external source of energy that may itself be produced with either fossil fuels or carbon-free energy sources. As a result, the net cost of using DACS to remove emissions depends on both the technology for capturing and storing emissions and the technology for generating the energy inputs.

Bioenergy with carbon capture and storage (BECCS) is a hybrid NET that involves growing, harvesting, and converting plants into electricity or biofuel (IEA 2024b).[15] In the conversion process, CCS is applied to capture and store emissions. Unlike CCS used to decarbonize fossil fuel electricity generation, BECCS can result in net negative emissions because plant growth pulls CO_2 from the atmosphere.

The ability of DACS and BECCS to yield net negative emissions, rather than simply preventing new emissions, makes them potentially important tools for meeting international targets to limit global temperature change, like the 1.5–2 degrees Celsius goal in the Paris Agreement. While the Biden-Harris Administration's targets are expressed in terms of flow emissions, long-run climate targets depend on the stock of carbon in the atmosphere. As highlighted by the United Nation's Intergovernmental Panel on Climate Change (IPCC), negative emissions can play an important role by offsetting positive emissions that occur during the transition to net zero and legacy emissions from before the transition in order to keep total warming from exceeding the target (IPCC 2018).

Recent analyses show great potential for NETs to contribute significantly to achieving net zero by 2050 (Pett-Ridge et al. 2023; IPCC 2018). However, due in part to the early stage of development and significant technology uncertainties, a wide range of costs for technological NETs have been reported.[16] DACS is currently considered too expensive to be widely deployed. Producing electricity with BECCS is less expensive than using DACS, but still costs more than other abatement options. Certain biological NETs, such as afforestation/reforestation, are much less expensive but may be less permanent, since, for example, the carbon stored in a forest would be released if it were burned or cleared (NASEM 2019; Cook-Patton et al. 2020; Fuss et al. 2018).

The equimarginal principle suggests there is no need to undertake an action that reduces emissions at a higher cost than it takes to remove a ton of emissions through NETs. For this reason, technological NETs are often referred to as the "backstop technology" (Heal 2009). As technology improves and the price of this backstop technology comes down, the upper limit of the cost of reaching net zero will also decrease.

R&D is expected to reduce the costs of DACS and BECCS meaningfully (DOE n.d.e). For example, a survey of technical experts found an expected decrease from the 2020 cost of DACS of over 50 percent by 2050 (Abegg et al. 2024). Achieving such cost reductions will require government policy to address externalities related to R&D spillovers and learning-by-doing (Jones et al. 2024). Higher tax credits for CCS—which also apply to DACS and BECCS—in the IRA will potentially help spur learning-by-doing.

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[15] BECCS is part of a broader category of NETs known as Biomass Carbon Removal and Storage (BiCRS) that includes any process that stores CO_2 captured by plants and algae (DOE 2022b).

[16] See, for example, Fuss et al. (2018), NASEM (2019), Cook-Patton et al. (2020), Abegg et al. (2024), Homsy et al. (2024), and DOE (n.d.e).

In addition, the Biden-Harris Administration is funding four Regional Direct Air Capture Hubs and the Carbon Capture Demonstration Project to harness learning-by-doing externalities and accelerate the demonstration and deployment of DACS (DOE 2024r; DOE 2024s). Regional hubs also help address coordination externalities by ensuring that carbon capture facilities and carbon transportation infrastructure are co-located (Armitage, Bakhtian, and Jaffe 2024). Government support to create market incentives for NETs is particularly important, because NETs do not always yield a marketable product (Jones et al. 2024).

The Path Ahead

The Biden-Harris Administration has made the transition to net zero GHG emissions a policy priority, setting out targets for a carbon pollution-free electricity sector by 2035 and net zero GHG emissions by 2050. The Administration signed into law the most significant climate legislation in U.S. history, including the IRA, BIL, and CHIPS and Science Act. These historic achievements have made significant and unprecedented progress in pushing the economy toward the Administration's targets.

Achieving these goals will require transformation across all sectors of the economy, implying that the equimarginal principle will play an important role in climate policy. Net zero can be accomplished most cost effectively with a combination of (i) a fully decarbonized electric power sector, (ii) significant electrification across other sectors, (iii) the use of clean fuels, energy efficiency, and CCS to decarbonize un-electrified activities, and (iv) NETs to offset remaining emissions.

The central goal of climate policy is to address the negative externality of GHG emissions, including CO_2. The Biden-Harris Administration's efforts are projected to fundamentally alter the country's emissions trajectory. Future administrations can build on this progress in several ways, including using carbon pricing to address this externality simultaneously throughout the economy or continuing the current strategy of addressing the externality separately with different policies aimed at different economic activities.

Achieving net zero will also require policy to address a set of additional market failures beyond the CO_2 emissions externality, such as promoting R&D and demonstrating the economic feasibility of nascent technologies. Through historic investments in the advancement and deployment of clean energy technology, the Biden-Harris Administration has taken the first necessary steps to address the market failures and achieve the transition to a net zero economy.

★★★★★★

Chapter 6

America's Role in International Capital Flows

Just as international supply chains are vital for goods trade to function, international capital flows are essential to a resilient global monetary system, allowing savings to flow across borders to facilitate investment.[1] The United States participates actively in both sending and receiving funds internationally, whether by domestic citizens buying foreign equities or foreign investors helping to finance new semiconductor plants on U.S. soil.

International capital flows are cross-border investments in financial assets recorded in the financial account of the balance of payments. These flows include investment in stocks and bonds known as portfolio investment, real assets such as factories and equipment known as foreign direct investment (FDI), and cross-border lending by global banks. Capital inflows thus provide an important source of funds that finance investment in the United States. Analogously, U.S. firms and investors provide significant amounts of capital to finance investments in stocks, bonds, and factories around the world.

The strength and resilience of the U.S. post-pandemic recovery helped to make the United States a magnet for foreign investment. Equally important, the Biden-Harris investment agenda in infrastructure, clean energy, and semiconductor technology has served as a productive target for inflows.[2]

[1] International capital flows provide the United States numerous benefits, including access to financing, increased capital allocation efficiency, and enhanced diversification and risk sharing across borders. More broadly, global financial flows allow capital to be allocated to the most productive global investment opportunities.

[2] A significant share of this new foreign direct investment into the United States originates from trading partner countries, such as Canada, Japan, South Korea, and the United Kingdom (CEA 2023a).

The United States has increased its dominance of global financial flows, receiving the highest share of international capital flows in 2022-2023. Approximately 41 percent of global gross inflows were destined for the United States, almost doubling the country's pre-pandemic share of 23 percent (Allen and Bems 2024). The United States' currency also plays a unique role on the international stage, functioning as a reserve currency, denominating an outsized share of global trade, and denominating a large share of cross-border financial transactions (Boz et al. 2020).

A balance of pull and push factors helps determine the pattern of international capital flows (Fratzscher 2012; Forbes and Warnock 2012; Obstfeld 2024). Pull factors are domestic macroeconomic fundamentals, such as strong economic growth relative to trading partners, that can draw in foreign capital flows, allowing countries to invest in amounts exceeding the domestic savings pool. The strength of property rights institutions, investor protections, and corporate governance standards can also serve as pull factors on foreign capital (Chari 2020). Emphasizing pull factors and demand-based explanations suggest that some countries invest more than they save domestically due to expenditures at home financed by foreign capital inflows. Here, domestic macroeconomic fundamentals and domestic absorption patterns in receiving countries are the underlying drivers of current account deficits.

Push factors are common global factors that can move global savings towards certain destinations. Events like flights to safety during times of heightened global economic uncertainty can push funds, as can precautionary motives for channeling savings into reserve or safe haven currencies (Chari, Dilts Stedman, and Lundblad 2022; Goldberg and Krogstrup 2023). Another push factor dynamic was described by former Federal Reserve chairman Ben Bernanke in 2005 in the context of the "global savings glut," where excess savings in the rest of the world drove down global real interest rates (Bernanke 2005). In certain cases, such global imbalances can have damaging effects on capital-receiving countries, lowering savings rates and contributing to bubble investments (Obstfeld and Rogoff 2009), or sapping aggregate demand when there is short supply in the context of global liquidity traps (Eggertsson and Egiev 2019).

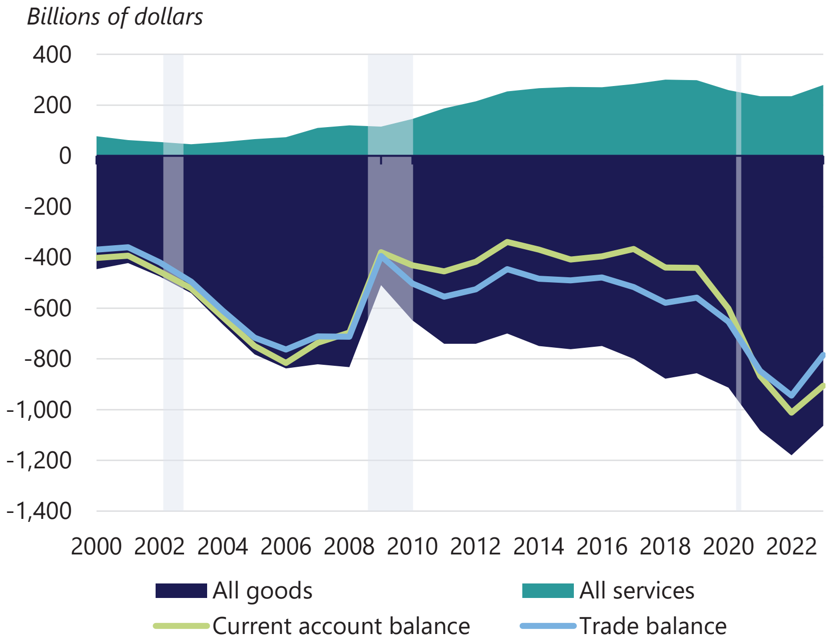
Both a strong economic recovery (pull factors) and investments into safe debt assets (push factors) have fueled the growing dominance of the United States in international capital flows. After a brief discussion of the U.S. current account, this chapter explores the financial account of the United States by tracking its different types of claims and liabilities. Given that flows of international capital into and out of the United States are the counterparts to the international trade transactions of imports and exports, we begin by providing a broad overview of the U.S. current account. Next, we explore the U.S. financial account and the international capital flows landscape. The chapter delves into the different classes of investment, beginning with portfolio investments in debt and equity and the returns that accrue to them, followed by changes in FDI and changes in other investments that primarily include cross-border bank lending. Attention is also paid to the international role of the dollar and the holdings of U.S. dollar reserves as safe assets by foreign investors.

The Current Account and Financial Account

Balance of payments accounts divide international transactions into three broad categories: the current account, the capital account, and the financial account. While the financial account captures the capital flows described above, the current account captures international trade transactions and net factor income from abroad.[3] For the balance of payments to balance, U.S. financial account surpluses that reflect tremendous global investor appetite for U.S. assets, financial and real, are mirrored by current account deficits.

[3] The current account includes statistics on the international trade of goods and services as well as receipts and payments of primary and secondary income. The capital account is usually a small part of the balance of payments records and includes capital transfer transactions like foreign aid and transactions of non-financial, non-produced assets like intangible capital. According to the Bureau of Economic Analysis, the financial account refers to "investment transactions—including direct investment, portfolio investment, other investment, reserve assets, and financial derivatives—between U.S. residents and nonresidents" (Bruner 2021).

Figure 6-1. U.S. Trade and Current Account Balances



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Sources: Census Bureau; Bureau of Economic Analysis; CEA calculations.
Note: Trade data are on a balance of payments basis. Gray bars indicate recessions.
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The current account has long been a subject of economic analysis, in part because the United States has nearly continuously run a current account deficit since the early 1980s. Because prior *Economic Reports of the President* have extensively covered the current account deficit, this chapter briefly touches on the subject before moving on to an in-depth analysis of the U.S. financial account (CEA 2022; CEA 2023b; CEA 2024a).

Figure 6-1 shows the U.S. current account from 2000 to 2023. The current account has averaged a deficit of $552 billion over the period, representing 3.3 percent of GDP. In 2023, the current account deficit was $905 billion, of which the balance on trade in goods and services was almost $785 billion. In 2023, income receipts were $1.57 trillion, and income payments were $1.69 trillion (BEA 2024a). Canada, China, and Mexico were the top U.S. trade partners in 2023, accounting for more than 30 percent of the country's exports and imports.

Breaking down the trade deficit into goods and services provides useful insight. The U.S. goods deficit ($1.1 trillion in 2023) overshadows the surplus in U.S. services trade ($278 billion in 2023), but notably the United States maintains a global comparative advantage in services exports.

Most of the services surplus has been driven by digitally-enabled services, which include all activities performed with information and communication technologies. Digital services are the fastest-growing trade category as the United States moves toward an increasingly services-based and digitally-enabled economy (CEA 2024b).

Economists have alternative views about the fundamental causes of America's persistently negative trade balance. Aligning with a focus on global push and pull factors, some economists note the role played by high savings rates in other countries, which can contribute to large capital inflows into the United States (Bernanke 2005; Pettis 2017). Such flows can boost productive investment. They can also depress savings rates and raise aggregate demand if they lower interest rates or contribute to the formation of bubbles.[4] The latter dynamic can contribute to more debt-fueled consumption than is healthy (Obstfeld 2017). Additionally, such flows tend to appreciate the country's exchange rate, and can contribute to an increase in the trade deficit if a country's exports become more expensive and uncompetitive on world markets while imports become cheaper. Recent trends in the exchange rate show that the U.S. dollar (hereafter referred to as the dollar) has risen by 7.4 percent in nominal terms relative to a representative basket of trading-partner currencies since 2020, according to the Federal Reserve's Broad Dollar Monthly Index as of October 2024, and the real trade-weighted value of the dollar is 15 percent above its 20-year historical average.

Foreign countries can have high savings rates for various reasons, ranging from demographic factors like an aging population to government policies suppressing consumption and thereby encouraging savings. Relevant government policies include limited public retirement systems or insufficient social safety nets leading households to save more than they otherwise would for precautionary purposes (Zhang et al. 2018). The implication of this dynamic is that trading-partner countries can play a role in shaping trade balances of other countries (Gourinchas et al. 2024).

It is important to recognize that a negative trade balance does not constitute a negative "score" for an economy. Indeed, the United States' post-pandemic recovery has been uniquely characterized by high levels of business investment, one third of which has gone toward factory construction (Van Nostrand 2024a). As a result, much of America's investment appears to be going to productive ends. Productivity is rising, business formation is increasing, and it is likely that these potentially lasting and transformative advances would not be possible without the supportive role played by international financing.

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[4] A widely cited example of unproductive investment is the housing bubble of the early 2000s accompanied by a consumption boom that culminated in a global financial crisis with lasting negative effects on the U.S. economy.

Moreover, the global increase in international trade with U.S. trading partners has been essential in increasing the supply of goods, services, and capital. It has given rise to many new domestic business opportunities and jobs in export sectors. It has fostered competition and boosted productivity. This latter dynamic has been an especially favorable development over the past few years, motivated in large part by legislation that is crowding in private capital from abroad into critical new sectors of U.S. domestic production (CEA 2023a; CEA 2024c).

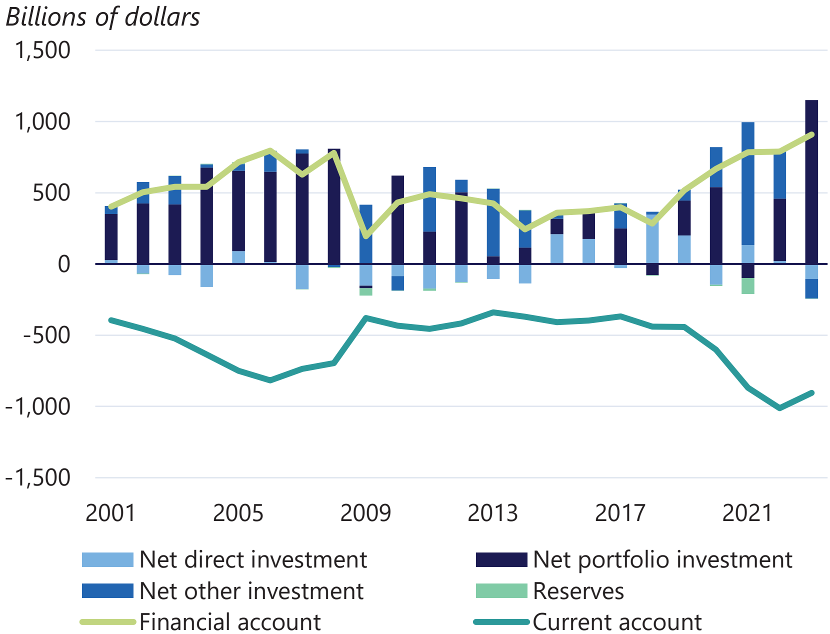
However, it is also important to recognize that certain aspects of trade flows can have downsides. Non-market practices and policies deviating from rules-based trading conventions have hurt communities over the past few decades (USTR 2024). In this vein, the Administration has taken consequential actions to protect American workers, producers, and taxpayers from violations of rules-based trade, particularly against China's long-applied strategy of capturing global market share, gained via subsidies and non-market policies and practices. The Administration has also addressed urgent national security challenges, for example, by blocking exports of advanced technologies to those who might use them against the United States, and regulating investments that can be exploited to pose risks to U.S. national security in certain technologies and products in countries of concern (White House 2024).

Turning back to the other side of the balance of payments ledger, figure 6-2 shows that the United States has run a steady financial account surplus throughout the 21st century. Between 2000 and 2023, the financial account balance averaged \$530 billion.[5] The composition of gross capital inflows into the United States has varied over time. In 2023, the United States received approximately \$1.9 trillion in foreign capital inflows, and U.S. investors and multinationals supplied nearly \$979 billion in capital to foreign countries (BEA 2024b). These flows substantially exceeded their pre-pandemic levels. On a global scale, international capital flows retrenched from their pre-pandemic values, but the U.S. share of gross capital flows nearly doubled from 23 percent in 2019 to 41 percent in 2023 (Allen and Bems 2024).

Capital flows play critical economic roles. By internationalizing their portfolios, investors can increase returns while mitigating risk via diversification. The United States plays an important role in this process. U.S. Treasuries are considered safe assets worldwide due to low default risk, high liquidity, and a strong governance environment. Firms, investors, and

[5] The financial account includes asset transactions between the United States and foreign countries. If an investor living in the United Kingdom, for example, buys shares in an American company, the transaction appears as a liability in the U.S. financial account, since the investor has a claim on domestic profits. If an American investor buys shares in a British company, the transaction appears as a claim in the financial account.

Figure 6-2. U.S. Financial and Current Accounts



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Sources: Bureau of Economic Analysis; CEA calculations.
Note: Derivatives are excluded.
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governments hold U.S. Treasuries in their portfolios for precautionary and risk diversification purposes, especially in times of heightened uncertainty, such as the global financial crisis or COVID-19 pandemic, when investors seek to reduce the risk exposure of their portfolios (Chari, Dilts Stedman, and Lundblad 2020). Foreign investors also invest in U.S. equities and direct investment assets to realize higher returns than are available elsewhere.

Evidence suggests that incoming foreign financial flows lower the cost of capital in recipient economies, which can spur real investment and growth (Chari and Henry 2005; Chari and Henry 2008). Capital inflows have the potential to expand a country's productive capacity by increasing domestic investment, while closed economies have access only to the domestic savings pool. Therefore, when net capital inflows are positive (i.e., inflows exceed outflows), domestic investment can exceed domestic savings.

Investment flows other than portfolio equity and debt, such as cross-border lending and FDI, can play similar roles. In many instances, FDI can provide access to improved technologies leading to productivity improvements as well as knowledge transfers to the host country (Alfaro and Hammel 2007; Alfaro et al. 2010; Fons-Rosen et al. 2018; Branstetter 2006).

Additionally, access to international credit allows countries to smooth consumption over time, lending in good times and borrowing when faced with adverse shocks (Obstfeld and Rogoff 1996). International borrowing and lending can therefore insulate countries from the fate of lurching from feast to famine. Similarly, when there is a foreign appetite for purchasing a country's government bonds, international capital flows allow governments to finance their budget deficits at lower interest rates than would otherwise prevail.

The International Capital Flows Landscape

Shifts in the composition of international financial flows as a result of changes in foreign investor preferences or international shocks can impact U.S. financial asset prices, such as bond yields, stock prices, and the dollar exchange rate. Taking stock of changes in cross-border investment patterns is thus an important issue for policymakers and market participants.

Cross-border financial flows and portfolio holdings provide detailed information about the types of investors (foreign private or foreign official)[6] seeking U.S. assets, the geographies from which the investors come, and the types of instruments (stocks, bonds, or direct investment) that draw their attention across sectors and over time.

International capital flows have long played an important role in U.S. economic development. Capital inflows into the United States in the form of bonds and bank loans during much of the 19th century helped finance several key industries, most notably the railway sector (Wilkins 1991). Following World War I, the United States became a lender for the first time in U.S. history, but U.S. foreign investment leveled off during and after the Great Depression (Cardoso and Dornbusch 1989). After World War II, the post-war Bretton Woods system secured dollar dominance on the international stage (Siripurapu and Berman 2023). By the mid-1970s, however, U.S. net capital flows started to reverse as the economic situation in the United States resulted in trade deficits where once there had been trade surpluses (Reinbold and Wen 2020). Except in 1991, the United States has run a trade deficit since 1982.

Recent U.S. Capital Inflows and Outflows

Moving forward to the 21st century, capital inflows into the United States rapidly increased, peaking at more than $2 trillion on the eve of the global financial crisis in 2007. Figure 6-3 depicts the increase in foreign investment into the United States since 2020, reflecting the strength of the U.S.

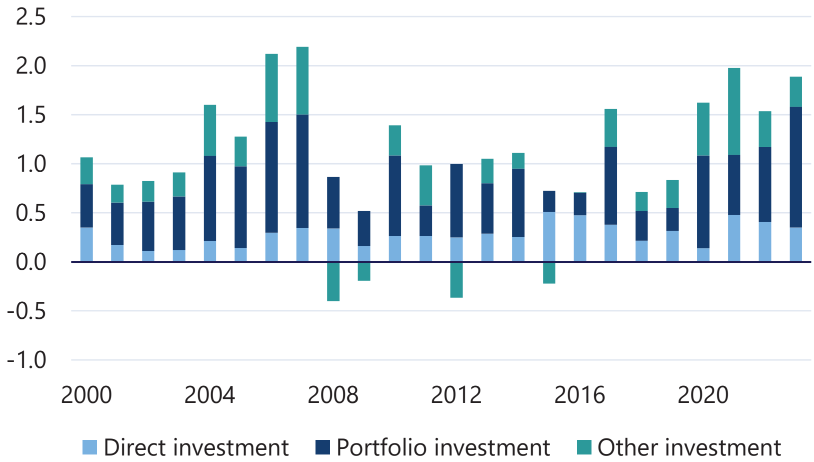
[6] Official flows, as classified by the U.S. Federal Government, represent purchases and sales of U.S. assets by foreign governments and central banks (Treasury 2024).

post-pandemic recovery. The growth was spurred in large part by a 30 percent increase in portfolio investment in lucrative U.S. equity and debt markets. Portfolio inflows increased to $1.23 trillion in 2023 during the Biden-Harris Administration, the highest annual amount on record.[7]

The pattern of inflows stands in contrast to figure 6-4, which shows more modest growth in U.S. outflows over the past few decades. Outflows

Figure 6-3. U.S. Capital Inflows

Trillions of dollars



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Sources: Bureau of Economic Analysis; CEA calculations.
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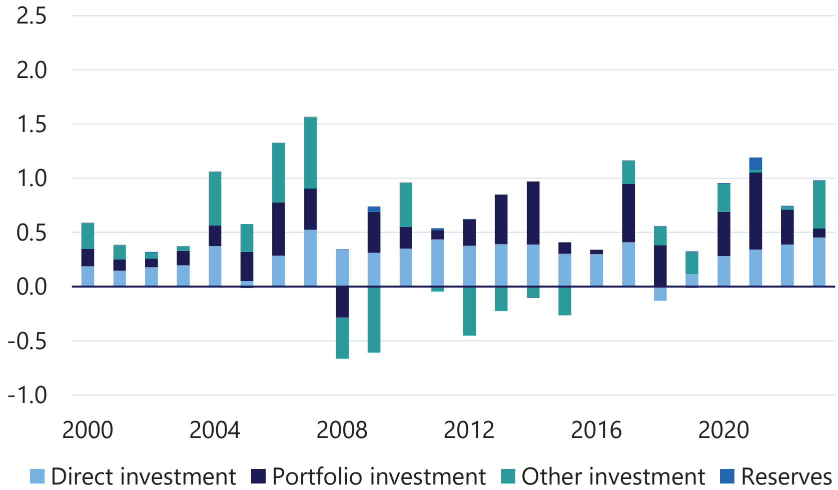
declined substantially in the wake of the global financial crisis but have recovered over the past decade and a half.

Figure 6-5 provides a snapshot of the composition of U.S. capital flows in 2023. The composition of the $979 billion in capital outflows was nearly evenly split between FDI outflows and other investment outflows, with a small fraction in portfolio outflows (figure 6-5a). On the other hand, nearly two thirds of the $1.9 trillion in inflows were in the form of portfolio debt and equity, with FDI and other investments that include cross-border lending by foreign global banks making up the rest of the balance (figure 6-5b).

[7] Negative inflows in the category of "other" investments refer to liquidations of cross-border lending in certain years, such as in 2008 during the global financial crisis.

Figure 6-4. U.S. Capital Outflows

Trillions of dollars



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Sources: Bureau of Economic Analysis; CEA calculations.
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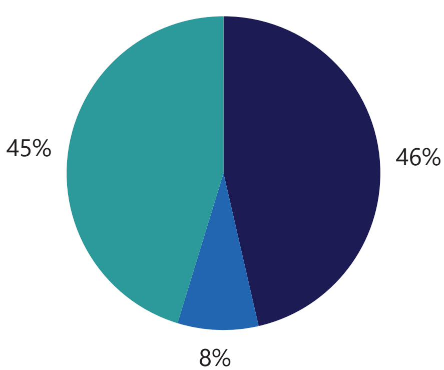
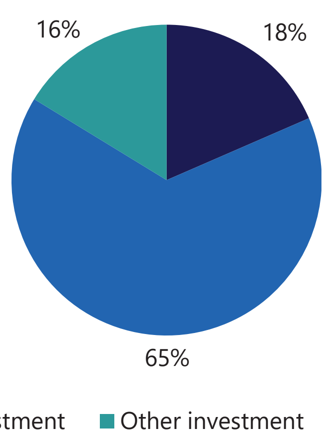
Figure 6-5. Capital Inflows and Outflows

2023 shares

A. Capital Outflows



B. Capital Inflows



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Sources: Bureau of Economic Analysis; CEA calculations.
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Table 6-1. Top Contributors and Recipients of U.S. Flows in 2023, by Country

Countries	*Net US Inflows (billions of dollars)*	*Countries*	*Net US Outflows (billions of dollars)*
United Kingdom	368.9	United Kingdom	263.0
Canada	157.0	Canada	133.3
France	100.4	France	62.3
Luxembourg	99.5	Singapore	45.2
Singapore	77.8	Hong Kong	37.8
Japan	76.3	Australia	32.1
Germany	73.0	Netherlands	31.5
Taiwan	67.7	Luxembourg	24.3
South Korea	46.0	India	12.4
Netherlands	42.3	Mexico	12.1
Total	1108.7	Total	654.0

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Source: Bureau of Economic Analysis.
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The Geography of Capital Flows

Unsurprisingly, most of the top contributors to U.S. capital flows are also top trading partners and geopolitical allies of the United States. In 2023, the United Kingdom was the top contributor to U.S. inflows, followed by Canada and France (see table 6-1). Offshore financial centers like Luxembourg and Singapore also feature in the set of top contributors and recipients of financial flows.

Mirroring U.S. inflows, the United Kingdom was also the top recipient of U.S. outflows for three out of the four years from 2020 to 2023. The United States is a diverse investor, often allocating large amounts to different sets of countries each year.[8]

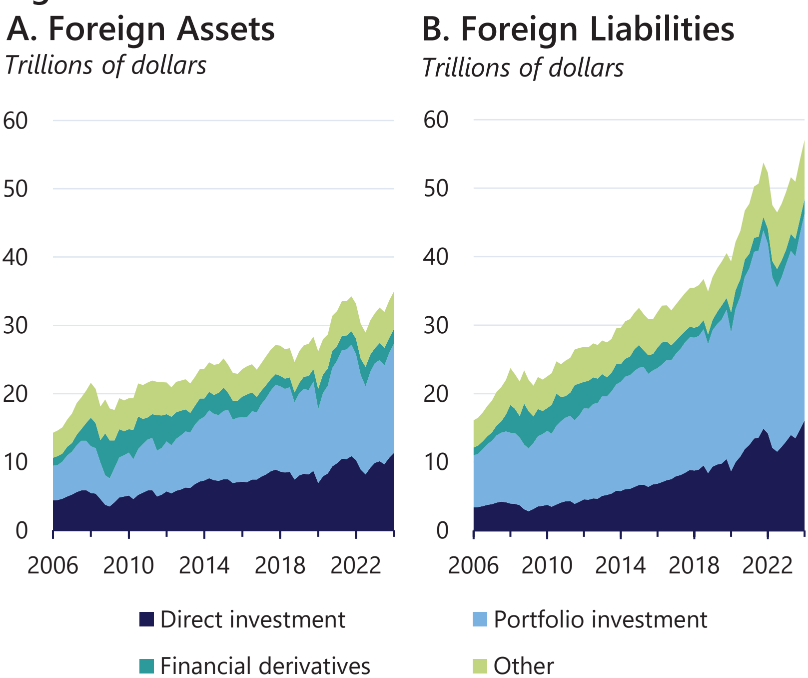
[8] Outward direct investment is a popular destination for U.S. outflows in 6 of the top 10 countries. For example, 84 percent of U.S. outflows to Singapore went to outward direct investment, the largest share of the top 10 countries. Reserve assets, conversely, received the smallest share of U.S. outflows for all countries in the top 10 in 2023. Most U.S. outflows to the United Kingdom and Hong Kong (77 percent and 81 percent, respectively) were in the form of loans and currency and deposits, whereas slightly more than half of U.S. outflows to France and Luxembourg were in the form of portfolio investments.

The International Investment Position

A final piece of the international capital flows picture is the international investment position (IIP), which records the stock of a country's international assets and liabilities accumulated over time (Lane and Milesi-Ferretti 2007). Current account surpluses or deficits (flows) accumulate into the stocks of foreign assets and liabilities. The difference between foreign assets and foreign liabilities is the U.S. net international investment position (BEA 2024b).

The U.S. net IIP stood at negative $21.3 trillion at the end of the first quarter of 2024, representing the difference between the stock of foreign assets ($36.0 trillion) and foreign liabilities ($57.1 trillion), as shown in figures 6-6a and 6-6b. By 2024, the U.S. stock of foreign assets more than

Figure 6-6. U.S. International Investment Position



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Sources: Bureau of Economic Analysis; CEA calculations.
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doubled from its value of $16.4 trillion in 2006, and the stock of foreign liabilities nearly tripled from $18.2 trillion over the same period.[9]

Valuation effects through changes in the prices of assets and liabilities and exchange rate fluctuations impact the outstanding stocks. For example, the rise in U.S. stock prices in 2023 exceeded the rise in foreign stock prices, increasing the market value of U.S. foreign liabilities relative to U.S. foreign assets (BEA 2024c). Valuation effects have played an important role in the change in the U.S. net international investment position over the past decade (Milesi-Ferretti 2021).

America as the World's Broker: Cross-Border Returns

Examining the purchases and flows of assets across borders provides insight into how investors view the international economic and financial landscape. The purchase of foreign equities or debt appears in a country's financial account under the category of portfolio investment. While foreign investors have long viewed American debt as safe investments, they increasingly see U.S. equity markets as attractive investment destinations due to their persistent dynamism and growth on a scale often surpassing that of other countries. Relative to those of the nation's trading partners, American companies continue to offer highly productive and, as a result, highly lucrative investment opportunities. Thus, the United States is increasingly the world's brokerage (Tabova and Warnock 2024).

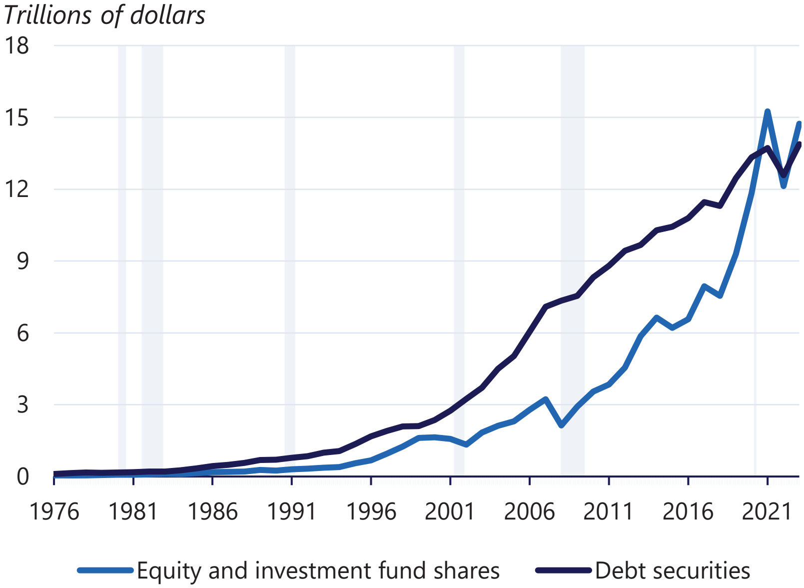
The high and rising demand for taking part in the U.S. financial ecosystem is reflected in the rapid rise in U.S. foreign liabilities (i.e., domestic financial assets owned by foreign investors). Total U.S. international portfolio liabilities more than tripled between 2006 and 2024. The increase represents both changes in asset valuation and purchase volume.

Although the increase in portfolio liabilities occurred in both debt and equity investments, the composition of U.S. liabilities has shifted from debt to equities (Tabova and Warnock 2024; Atkeson, Heathcote, and Perri 2023). Two decades ago, most foreign investors bought more U.S. debt than equities. In the last several years, U.S. equities have become more popular, with current total equity liabilities exceeding total debt liabilities (see figure 6-7), reflecting a steady increase in purchases from abroad as well as valuation effects.

This holdings composition explains why foreign investors now earn slightly more on their investments in the United States than domestic

[9] Foreign assets in the first quarter of 2024 included a stock of portfolio investments valued at $16.8 trillion, foreign direct investment of $11.3 trillion, and other investments, which include cross-border bank loans valued at $3.2 trillion and derivatives of $2.2 trillion. On the liabilities front, foreign investments in U.S. portfolio assets stood at $30.2 trillion, FDI was $16.1 trillion, other investments were $8.6 trillion, and derivatives were $1.6 trillion.

Figure 6-7. Foreign Investment in U.S. Equities and Debt



Council of Economic Advisers
Sources: Bureau of Economic Analysis; Tabova and Warnock (2024); CEA calculations.
Note: Gray bars indicate recessions. Data through 2023.
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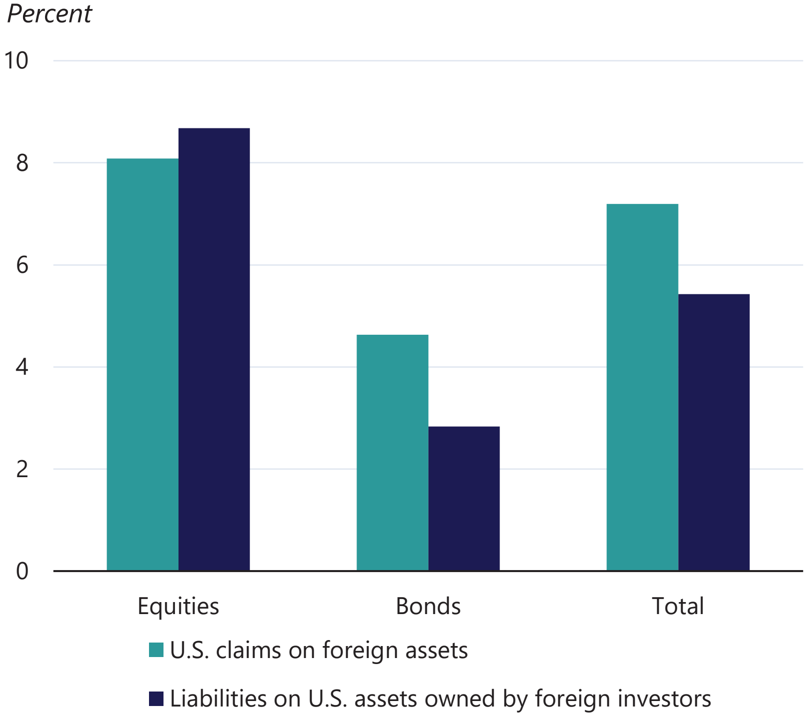
investors earned abroad from 2003 to 2023 (Curcuru, Thomas, and Warnock 2013; Tabova and Warnock 2024; Atkeson, Heathcote, and Perri 2023). Previously, foreign investors earned mostly low yields from American debt while U.S. investors received high returns from foreign equity and debt investments.[10]

The consistent demand for U.S. assets can be attributed to the relatively strong returns earned by foreign investors in U.S. markets. Figure 6-8 provides the average annual returns earned on investments by foreigners from 2003 to 2023 (denoted by liabilities on domestic assets) as well as the returns earned by Americans investing abroad (denoted by claims on

[10] Earlier evidence suggested that the U.S. returns differential abroad averaged 1.5 to 2 percent. Specifically, a 6.1 percentage point differential in FDI yields earned in foreign countries was responsible for the bulk of the 1.9 percentage point overall returns differential for the 1990–2011 period. Additionally, the returns effect (i.e., the yields component) accounted for almost the entire capital gains differential, with the U.S. earning higher yields abroad. The differential was, on average, almost entirely due to fluctuations in prices, rather than exchange rates (Curcuru, Thomas, and Warnock 2013).

Figure 6-8. Average Annual Investor Returns on U.S. and Foreign Portfolio Investments, 2003–2023



Council of Economic Advisers
Sources: Bureau of Economic Analysis; Tabova and Warnock (2024); CEA calculations.
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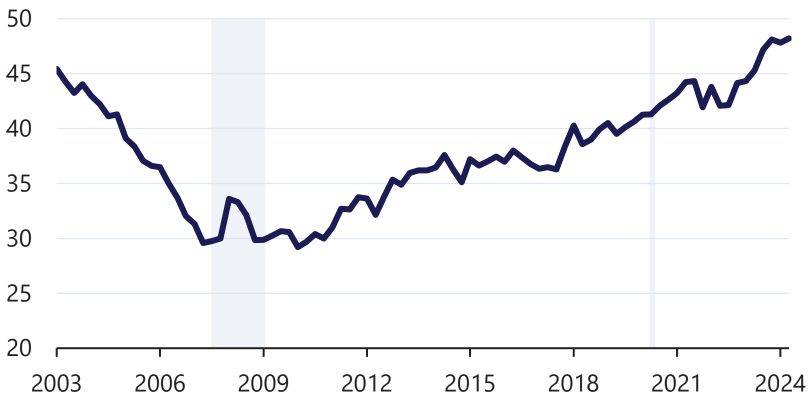
foreign assets).[11] During the period, foreign investors averaged 8.7 percent yearly returns on U.S. equities and 2.8 percent yearly returns on U.S. debt. Although portfolio values may fluctuate from year to year, the averages show investors have been rewarded for placing their money in U.S. financial assets. Across both asset classes, total returns for foreign investors were 5.4 percent over the decade. Foreign investor returns in dollar terms reflect the rise in the stock prices and the rising dollar since 2012.

The equity returns earned by foreign investors in U.S. equity markets were slightly higher, about 0.6 percentage points more on an annual basis, than the returns earned by U.S. investors in equity markets abroad, over the past two decades. The differential can be attributed to the faster growth U.S. equity markets have experienced over the last decade, which can be seen by

[11] Only arithmetic means are presented in figure 6-8. Geometric means tend to be lower for more volatile return streams. Tabova and Warnock (2024) show that the differential between American and foreign investment returns is lower using geometric averages.

Figure 6-9. U.S. Market Cap as a Share of World Market Cap



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Sources: Bloomberg; CEA calculations.
Note: Gray bars indicate recessions.
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comparing U.S. market capitalization to total world market capitalization (figure 6-9). The U.S. equity share achieved its highest value in two decades under the Biden-Harris Administration. As discussed more in the following section, FDI tells a similar story: Corporations with foreign ownership earn lucrative returns in the United States' large and dynamic domestic market.

The high returns earned by foreign investors on U.S. financial assets have been accompanied by American investors seeing large returns on their investments abroad. U.S. investors averaged 8.1 percent yearly returns on foreign equities and 4.6 percent yearly returns on foreign debt from 2003 to 2023. Indeed, when considering both debt and equities, American investors' returns abroad were higher on average than their foreign counterparts' returns on U.S. investments. The difference was historically due largely to higher yields on foreign debt compared to U.S. debt (Curcuru, Dvorak, and Warnock 2008). The low yields on domestic debt can be attributed to continued high demand for U.S. debt offerings, due to their safety and liquidity in the eyes of investors in the United States and around the world as well as steady Federal Reserve policy (Krishnamurthy and Vissing-Jorgensen 2012).[12]

Foreign Direct Investment

In addition to buying American stocks and bonds, foreign investors often acquire partial or full ownership in domestic companies. These purchases come under the "direct investment asset" category within a country's financial account of the balance of payments. Such FDI differs from portfolio investment, as investors gain a measure of influence over the target companies. FDI can occur through the following channels: multinational firms launching subsidiaries (known as "greenfield operations") in foreign countries, the expansion of existing foreign operations, the acquisition of new foreign assets through mergers and acquisitions, or investments in joint ventures (BEA 2024d).

The United States has historically been the largest recipient of FDI inflows (Commerce 2024a). The increase is consistent with both the strength of investment opportunities in the U.S. economic recovery and Biden-Harris Administration policies effectively crowding in foreign investment (CEA 2023a; Van Nostrand 2024b). The United States also invests in foreign companies around the world. The investments return earnings to American stakeholders while improving economic cooperation and knowledge transfers across partner countries. Indeed, primary income receipts—which include interest, dividends, and profits earned for American investors abroad—increased by nearly $200 billion in 2023 (BEA 2024a).

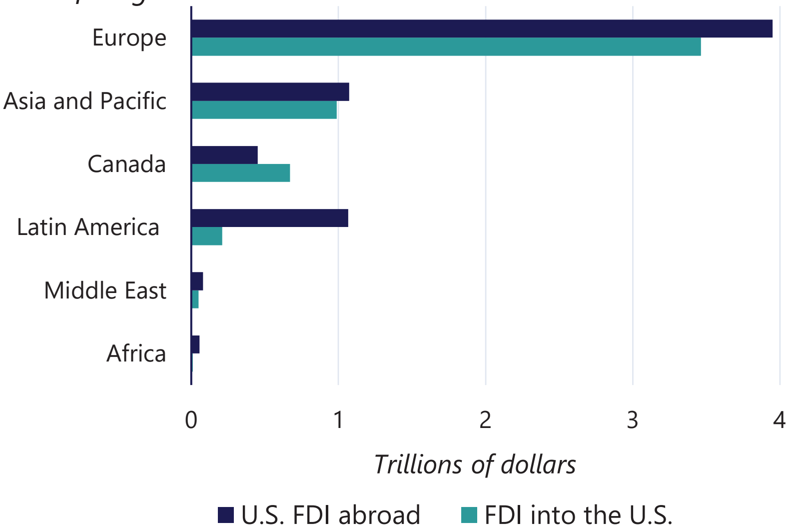
The Benefits of FDI and the Administration's Role in Stimulating Direct Investment

Firms engage in FDI for a variety of reasons, ranging from seeking resources to efficiency considerations, such as reducing costs or forming strategic alliances internationally. By providing capital, FDI fosters development in host countries. The resulting efficiency gains help stimulate economic growth and spur job creation. Another key FDI benefit is knowledge spillover gained by sharing expertise and know-how across borders, including the introduction of advanced technologies. Finally, FDI flows are crucial drivers of international economic integration and help establish supply chains with

[12] A final metric tells the same story of the high returns American markets offer. Internal rates of return (IRR) are defined as the interest rates required to set the net present value of an investment equal to zero. A high IRR indicates an elevated return, as the payoff from the investment must be discounted at a higher rate to reduce it to zero in net present value terms. Similar to the annual returns above, from 2003 to 2022 foreign investors had an IRR on their investments in the United States of 8.7 percent, slightly higher than the 7.9 percent that American investors had abroad (Tabova and Warnock 2024).

Figure 6-10. Foreign Direct Investment into and out of the United States

2023 foreign direct investment stock



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Sources: Bureau of Economic Analysis; CEA calculations.
Note: Data are on a historical-cost basis.
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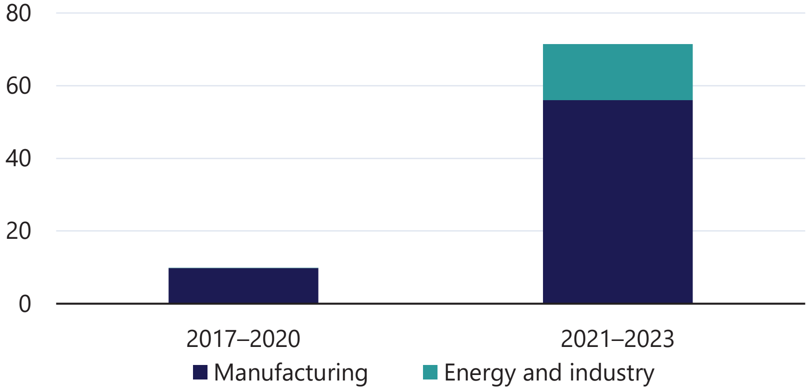
strategic partners across borders, also known as global value chains (Qiang et al. 2021; Lipsey 2004). See figure 6-10.

The Biden-Harris Administration has helped achieve record FDI levels by actively courting foreign investment in American industries, especially into manufacturing and clean energy. The strategy has been a critical part of the Administration's agenda to produce quality jobs. Indeed, a large share of the historic increase in manufacturing investment under the Biden-Harris Administration comes from foreign investors. The Administration has facilitated and encouraged the investments with targeted tax credits established by the Inflation Reduction Act and CHIPS and Science Act to promote renewable energy and semiconductor production. The incentives crowd in foreign investment to critical sectors and historically left-behind areas (CEA 2024c). In 2023, South Korea emerged as the biggest source of FDI into the United States, with announced commitments of $21.5 billion in new investments comprising 90 new projects across a range of industries (Chu 2024). FDI into clean energy and manufacturing of clean energy is more than seven times as large as it was under the prior administration (figure 6-11).

The Biden-Harris Administration policies, including the Made in America initiative, help ensure that the United States remains the world's

Figure 6-11. Announced Investment in Clean Energy Projects by Foreign Companies

Billions of dollars



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Sources: Clean Investment Monitor; CEA calculations.

Note: Energy and industry refers to new or expanded facilities to produce clean energy, capture carbon dioxide emissions, or decarbonize industrial activity. Manufacturing refers to the construction or expansion of factories that manufacture clean energy, clean vehicle, building electrification, or carbon management technology.

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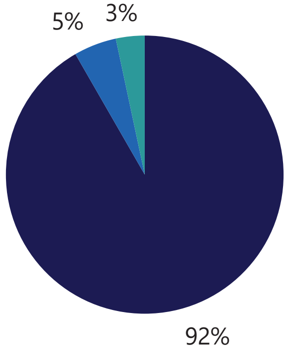
top destination for foreign investment. For example, Samsung Electronics received $6.4 billion in funding in 2024 to develop a computer chip manufacturing and research cluster (Commerce 2024b). This funding is in addition to the company's $61 billion in planned manufacturing projects expected to create more than 8,000 jobs (Tarasov 2023). Additionally, Taiwan Semiconductor Manufacturing Company (TSMC) financed a nearly $40 billion project to construct and operate a high-tech semiconductor fabrication plant in Arizona, whose yields have recently been announced to surpass factories in Taiwan (Reuters 2024; Hawkins 2024). Similarly, Panasonic Energy announced a $4 billion investment in a lithium-ion battery factory in Kansas, expected to create 4,000 jobs (Panasonic 2024).

Investment into the United States

Due to its highly productive companies and the Biden-Harris Administration's policies, the United States continues to be the top international investment destination for FDI flows. FDI is commonly decomposed into new investments and the accumulated stock of prior investments, the former representing the acquisition, establishment, or expansion of U.S. businesses (BEA 2024e).

Figure 6-12. New Foreign Direct Investment in the United States

2023 shares



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Sources: Bureau of Economic Analysis; CEA calculations.
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The breadth of foreign firms investing in the United States also reflects the attractiveness of the country's large consumer market, advanced infrastructure, and business-friendly environment. The total stock of FDI into the country has more than doubled in the last 16 years and reached $5.4 trillion in 2023, up from $2.1 trillion in 2009 (BEA 2024f). In 2023, new net FDI totaled $148.8 billion domestically (BEA 2024e). Acquisitions tend to dwarf establishments and expansions (see figure 6-12).

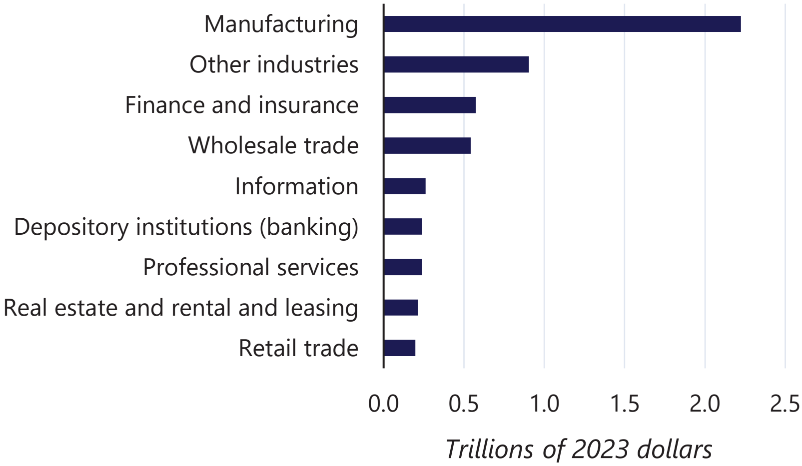
One critical aspect of these 2023 FDI flows is that they overwhelmingly originate from U.S. allies and strategic partners. Measured according to the location of the foreign parent company, the top three investors in terms of the total FDI stock in 2023 were the Netherlands ($717.5 billion), Japan ($688.1 billion), and Canada ($671.6 billion).[13] Cumulatively, Canada, Japan, the United Kingdom, and the Netherlands made up more than half of FDI flows into the United States in 2023, reflecting the Biden-Harris Administration's goal of forming strong financial linkages with partner countries (BEA 2024f).

Companies in a range of sectors, including retail trade ($199 billion), real estate ($213 billion), and professional and scientific services ($239 billion), benefitted from FDI funds in 2023 (BEA 2024f). The industry with the highest FDI position through 2023 was manufacturing, at $2.2 trillion (see figure 6-13). The FDI stock in manufacturing has risen 16 percent since

[13] All FDI statistics are on a historical-cost basis, meaning the price of the investment at the time of investment.

Figure 6-13. Foreign Direct Investment in the United States, by Industry

2023 stocks



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Finance category excludes depository institutions. Professional services includes scientific and technical services.

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2020, reflecting the Biden-Harris Administration's goal of revitalizing the American manufacturing industrial base (White House 2022).

As with stocks and bonds, foreign investors receive substantial returns on their direct investments in the United States,[14] averaging 7.4 percent annually from 2003 to 2023 on an arithmetic mean basis.[15]

Investment into Other Countries

Because U.S. companies develop and use cutting-edge technology, foreign countries and businesses often welcome American FDI. Along with funding, the investments bring technical know-how and knowledge spillover (Lipsey 2004). In 2023, the stock of FDI by U.S. firms worldwide totaled $6.7 trillion. During 2023, new FDI abroad totaled $364 billion (BEA 2024f).

The United States benefits from outward FDI into other countries by acquiring market share abroad, strengthening supply chains, accessing

[14] Although FDI statistics are imprecise due to ambiguity regarding where corporations locate profits, the returns broadly suggest the magnitude and direction of profits.

[15] The literature attributes the difference between yields on U.S. direct investment abroad and FDI into the United States to differences in (i) taxes, (ii) risk-adjusted returns, (iii) affiliate/subsidiary age, and (iv) other factors, such as transfer pricing, industry mix, and intangibles. See Curcuru, Thomas, and Warnock (2013) for a literature summary.

know-how abroad, and bringing earnings back home (Cohen 2007; Chari, Ouimet and Tesar 2010; U.S. Chamber of Commerce 2021). U.S.-based multinational companies earned $577 billion in income from investments abroad in 2023, much of which makes its way back to American stakeholders (BEA 2024f). Other countries benefit from the investments, and American technical expertise and capital spreads abroad (Loungani and Razin 2001; Mohseni-Cheraghlou 2021).

The majority of countries engaged in global trade receive U.S. FDI in some form. Indeed, more than 50 countries received at least $1 billion in new investment from the United States in FDI in 2023. The United Kingdom ($1.1 trillion), the Netherlands ($980 billion), and Luxembourg ($532 billion) were the top three recipients, measured by total stock of U.S. FDI (BEA 2024f). In terms of outward direct investment, America engages overwhelmingly with strategic partners.

At the same time, inbound investments from China and outbound investments have ticked downward. The Chinese footprint in the United States measured via the stock of accumulated direct investments declined by 23 percent from 2017 to 2023 (BEA 2024f).

While the Biden-Harris Administration has deepened America's financial integration with its allies and partners, it also protects against potential risks from direct investment. The Committee on Foreign Investment in the United States (CFIUS) considers transactions on a case-by-case basis, evaluating any potential risk arising from FDI irrespective of its country of origin (CFIUS 2023). CFIUS upholds the United States' longstanding commitment to an open investment economy, while recognizing that a critical component of FDI is identifying and mitigating national security risks. CFIUS ensures that any risks to national security arising from FDI are sufficiently addressed through the narrow tools at the Committee's disposal.

The Biden-Harris Administration has also been particularly focused on securing the intangible benefits that often accompany U.S. outbound investments in certain national security technologies and products—notably in the semiconductors and microelectronics, quantum information technologies, and artificial intelligence sectors—which could be used to undermine U.S. national security (White House 2023). Similarly, the Biosecure Act has increased oversight of the pharmaceuticals sector.

Cross-Border Lending and Global Banks

The cross-border lending market is another important aspect of global financial integration. Grouped in the category of "other flows" in the financial account of the balance of payments, capital flows intermediated through foreign and global banks are an important part of cross-border credit flows.[16]

Making up an increasingly large share of total lending, cross-border lending plays a critical and growing role for the United States. Specifically, lending by foreign banks to firms in the United States serves a critical diversification function for banks around the world, and this lending also helps to stabilize the domestic banking system by accessing foreign bank balance sheets via internal capital markets (Gupta 2021). American bank branches abroad and U.S. government liquidity facilities perform a similar function for foreign banking systems.

Financial Intermediation within the United States

American cross-border financial ties are extensive and growing. The stock of U.S. cross-border lending assets increased from $3.2 trillion in the fourth quarter of 2019 to $3.8 trillion in the second quarter of 2024. The stock of U.S. cross-border lending liabilities increased from $3.5 trillion to $4.8 trillion over the same time period, according to the Bank for International Settlements' locational banking statistics (BIS 2024a).

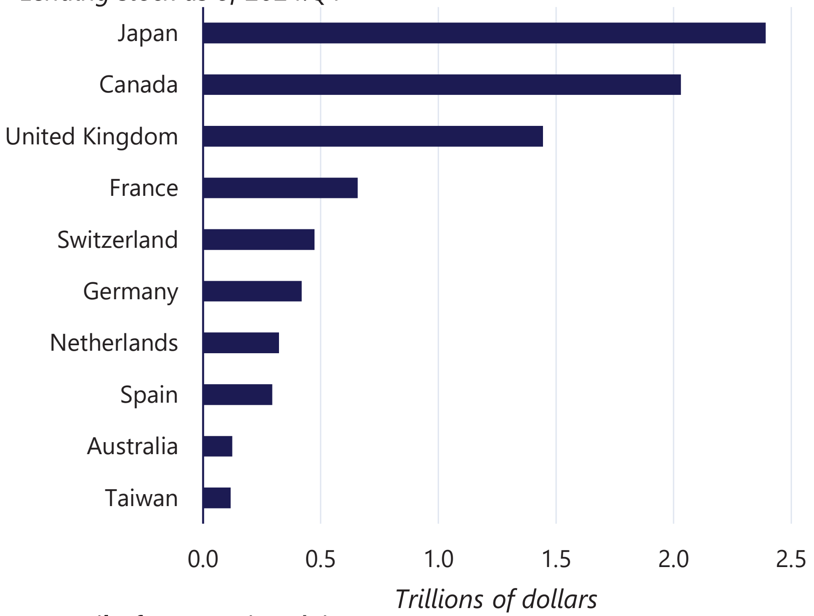
Foreign lending represents a large share of credit provision in the United States (Cetorelli, Goldberg, and Ravazzolo 2020). As of September 2024, foreign banks accounted for $1.1 trillion in U.S. loan provision and held $3.1 trillion in aggregate assets, approximately 13 percent of the U.S. banking system's total assets. The total assets of branches and agencies as well as foreign subsidiaries currently total more than $4 trillion (Federal Reserve Board 2024). Like other forms of investment moving to U.S. shores, the loans signal a continued faith in the profitability and creditworthiness of American businesses.

The presence of global banks in domestic financial intermediation can act as a stabilizing force during times of financial market strain. Foreign banks can access liquidity from their parent firms though internal capital markets, thereby overcoming the liquidity shocks and frictions faced by domestic local banks (Cetorelli and Goldberg 2011). When adverse shocks hit the U.S. economy, the continuation of credit provision through foreign-hosted branch lending can provide an important buffer for domestic financial intermediation, thus providing diversification by playing a stabilizing role in the U.S. banking system (Cetorelli and Goldberg 2012). At the same time, foreign banks can also channel funds to their U.S. operations, ensuring the robust continuation of credit provision during a crisis or funding liquidity strain (Choi et al. 2022; Obstfeld, Shambaugh, and Taylor 2009).

[16] Cross-border credit refers to any financing that spans international jurisdictions and includes loans and trade credit made by U.S. banks to borrowers abroad or foreign banks to U.S. borrowers. Cross-border credit also includes international debt issuance.

Figure 6-14. Lending Claims on the United States, by Country

Lending stock as of 2024:Q1



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Source: Bank for International Settlements.

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As with FDI, cross-border lending funds primarily originate from U.S.-allied countries, strengthening financial ties with strategic partners (see figure 6-14). According to the Bank for International Settlements' consolidated banking statistics, the top three countries for cross-country lending are Japan ($2.4 trillion), Canada ($2.0 trillion), and the United Kingdom ($1.4 trillion) (BIS 2024b).[17]

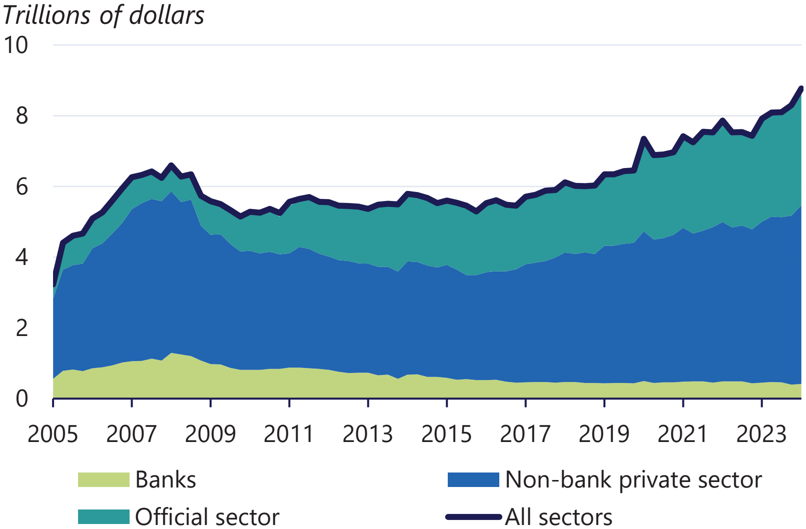
Changes in Cross-Border Lending

Cross-border lending has evolved dynamically over the decades. In the 1980s, banks primarily engaged in sovereign lending, which shifted into interbank lending activity across borders. More recently, global banks have engaged in direct lending to non-bank financial intermediaries and non-financial corporations (Buch and Goldberg 2024).

Figure 6-15 depicts the recent shifts, decomposing cross-country claims into the banking sector, non-bank private sector, and the official sector. While total cross-border claims almost tripled between 2005 and 2024,

[17] The tally of total claims, based on BIS data, is likely an underestimate due to missing data and country underreporting.

Figure 6-15. Lending to the United States, by Sector



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Sources: Bank for International Settlements; CEA calculations.
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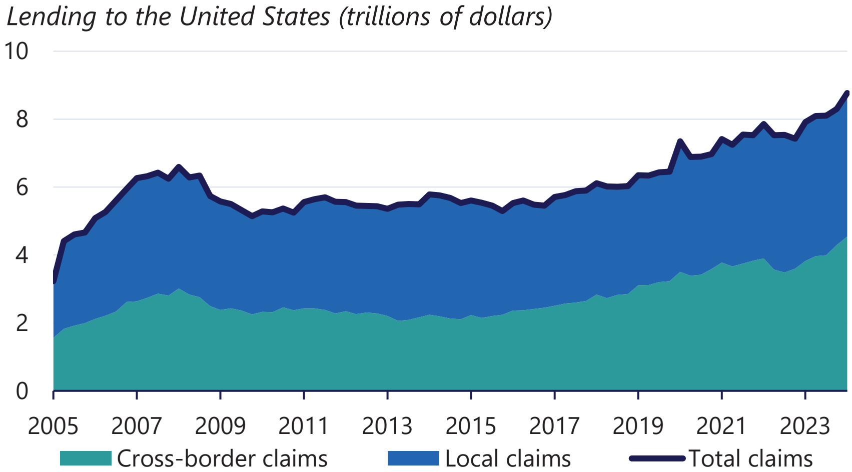
their composition also changed. Cross-border lending by banks fell significantly from a pre-crisis peak of approximately 20 percent of total claims in 2008 to 4.8 percent in 2024. In contrast, cross-border non-bank private sector (e.g., mutual funds and hedge funds) and official sector claims have increased significantly since the mid-2010s. The liquidity and financial stability risks associated with non-bank financial intermediation and the rise of the shadow banking sector outside the purview of the regulatory perimeter are the subject of considerable current policy discussion (Claessens 2024; Chari 2023).

Global banks also establish branches and subsidiaries in foreign countries that engage in domestic lending (McCauley et al. 2017; Buch and Goldberg 2024; Goldberg 2024)—for example, German banks establishing branches in the United States and lending directly to U.S. firms or U.S. banks establishing branches in Mexico to lend directly to Mexican firms.[18] Both local and cross-border lending have increased since the pandemic, representing a further financial integration of the world economy and greater diversification of risk (see figure 6-16).

[18] Statistics on cross-border credit provision understate the role of foreign ownership as a subset of foreign banks that are chartered in the United States and subject to the country's regulatory and supervisory framework as U.S. banks.

Figure 6-16. Local and Cross-border Lending Claims



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Sources: Bureau for International Settlements; CEA calculations.
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Finally, differences in funding costs and exchange rate movements can impact the provision of credit in a particular currency (Hattori and Shin 2009). Monetary policy tightening and broad-based dollar appreciation reduced the provision of cross-border dollar credit (loans plus debt securities holdings) in 2022, while yen depreciation and below-zero interest rates in Japan led to a rapid increase in yen credit. In 2023, banks in Japan reported increased claims on the U.S. non-financial sector as credit to non-banks in the United States grew (BIS 2024c). The pattern is consistent with vast amounts of carry trade activity, with the yen being the funding currency invested in dollar lending.[19]

Flight to Safety: U.S. Treasuries and the Dollar

In addition to serving as a destination for profitable investment and bank lending, the United States plays a critical role in offering safe assets to the

[19] A carry trade is a speculative financial strategy where investors borrow in currencies with low interest rates (funding currencies) and invest in high interest rate currencies (target currencies). The aim is to make speculative profits from the interest rate differential between two countries in expectation that the differential will not be offset by unfavorable exchange rate movements. Carry trade profits therefore depend on the high-yielding currency either remaining stable or appreciating. Carry trades in foreign exchange markets are often executed by institutional investors and speculators looking to exploit differences in global interest rates.

world in the form of government debt.[20] A safe asset is a debt instrument that is expected to preserve its value across various states of the world, including adverse systemic events (Eisenbach and Infante 2017). Flights to the safety of U.S. Treasuries often happen during periods of stress or heightened uncertainty in international financial markets (Gourinchas, Rey, and Govillot 2017; Krishnamurthy and Vissing-Jorgensen 2012). The United States' currency also functions as a reserve currency on the international stage, underpinning trade and financial transactions (Boz et al. 2020). As noted above, U.S. debt offerings fall under the portfolio investment category in a country's financial account.

Today, U.S. currency and debt offerings still command a dominant position in the international financial system. However, debt brinkmanship of the type that occurs during debates over raising the U.S. debt ceiling—a Congressionally mandated ceiling on the amount the Federal Government can borrow—has the potential to damage this valuable status (CEA 2023c). Losing U.S. Treasuries' status as safe assets would be economically harmful, reducing U.S. fiscal capacity. In addition, the dollar's role as a reserve currency has economic and security benefits. The dollar's broader role in financial flows and payments ensures that capital flows through a system with strong governance, rule of law, and high-quality anti-money laundering rules that help to counter the financing of terrorism (Shambaugh 2024).

U.S. Debt as a Global Safe Asset

A wide range of investors hold U.S. Treasuries, displaying an international consensus in the safety of U.S. debt. The share of foreign holdings in publicly held outstanding Treasuries was approximately 14 percent in 1990 and peaked at 34 percent in 2014. In 2023, foreign official and foreign private investors accounted for nearly a quarter of U.S. Treasury holdings (figure 6-17).

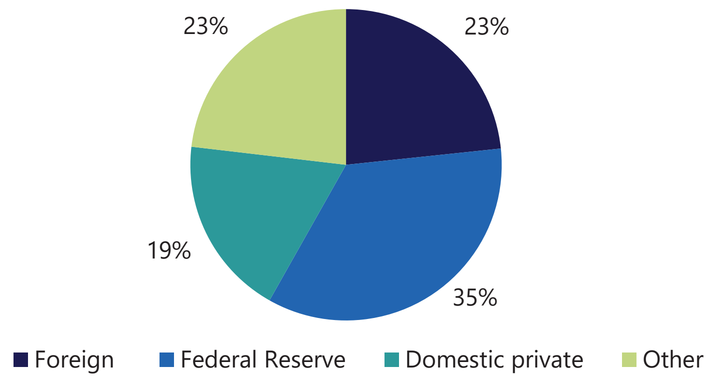
The demand for U.S. Treasuries spans the globe (see figure 6-18). Of foreign-held Treasuries, European investors accounted for more than a two-fifths share (44 percent) and investors from Asia and the Americas held approximately 25 percent each in 2023. The top three investor countries, as of August 2024, were Japan ($1.1 trillion), China ($774.6 billion), and the United Kingdom ($743.8 billion). Saudi Arabia, the United Arab Emirates, Kuwait, and several other oil producers also held significant Treasuries.[21]

[20] In a world where there is a scarcity of safe assets, U.S. Treasuries meet the global demand for safe, liquid, and collateralizable assets (Gorton and Ordonez 2022; Holmstrom and Tirole 1998; Greenwood, Hanson, and Stein 2015).

[21] The other oil producing countries with reported U.S. Treasury holdings include Algeria, Gabon, Iraq, Nigeria, and Oman. Iran and Qatar, two additional oil-exporters, did not report U.S. Treasury holdings in 2022.

Figure 6-17. U.S. Treasury Holders, by Type

Share of total Treasury holdings, 2023



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Sources: U.S. Department of the Treasury; CEA calculations.

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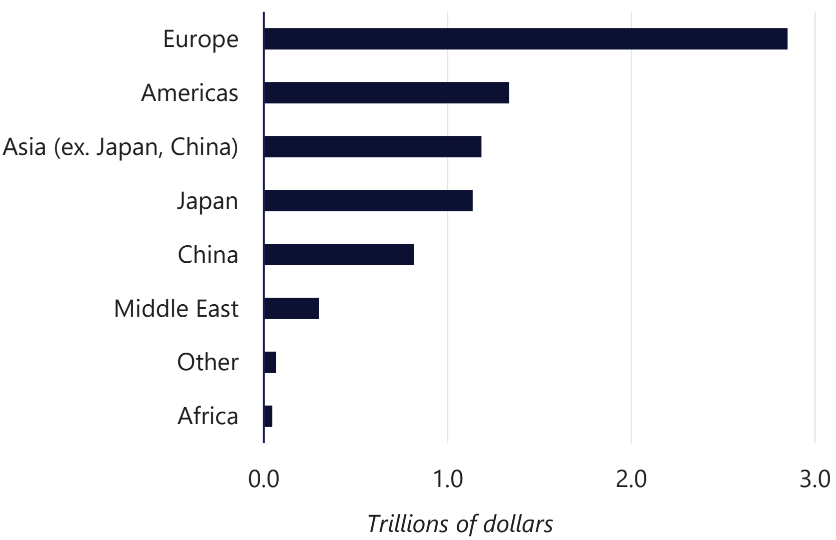
Figure 6-18. Holdings of U.S. Treasuries, by Geographic Region



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Sources: U.S. Department of the Treasury; CEA calculations.

Note: Data are for 2023. End-of-period values are used. Americas includes Canada, Latin America, and the Caribbean.

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While foreign official holdings of U.S. Treasuries held steady at about $3.5 trillion over the 2013–2023 period, foreign private holdings more than doubled from approximately $1.3 trillion in 2013 to $3.0 trillion at the end of 2023. Foreign holdings suggest that reserve managers at most foreign central banks continue to view U.S. Treasuries as safe investments, which also constitute a stable source of demand.[22] Foreign countries also hold dollar reserves in the event that they need to stabilize their exchange rates through interventions in currency markets. The evidence refutes arguments that the dollar is losing its dominance in the international financial system or that U.S. Treasuries are no longer desirable as safe haven investments.

The rising worldwide demand for U.S. Treasuries plays a key role in reducing the cost of financing American debt (Weiss 2022). Researchers have estimated the magnitude of foreign official purchases of U.S. government securities on Treasury yields (Bertaut and Judson 2014; Warnock and Warnock 2009; Beltran et al. 2013).

Both America and the world benefit from U.S. safe assets, a principle exemplified by the flight to safety that occurred during the global financial crisis. Although the United States was at the epicenter of the crisis, foreign and domestic investors sought the safety of U.S. government debt instruments. The share of Treasuries held by private and official investors abroad, which had been unchanged over the early 2000s, saw dramatic increases following the crisis, suggesting that the assets were viewed as particularly safe during a time of economic stress (Neoth and Sengupta 2010). Indeed, evidence suggests that the United States has a greater risk-bearing capacity than the rest of the world (Gourinchas, Rey, and Govillot 2017; Maggiori 2017; Sauzet 2023; Kekre and Lenel 2024).

The increase in demand for U.S. Treasuries was large enough during the crisis that Treasury prices rose despite a massive simultaneous supply increase (Neoth and Sengupta 2010). Bond purchases by the Federal Reserve during the period of quantitative and monetary policy easing also served to lower yields (Krishnamurthy and Vissing-Jorgensen 2011). In other words, the surge in demand for Treasuries exceeded the supply increase, resulting in elevated bond prices and lowered yields (He, Krishnamurthy, and Milbradt 2016).[23] In addition to providing a safe asset source, heightened Treasury purchases during the global financial crisis lowered financing costs for the

[22] Foreign official demand for U.S. Treasuries is particularly notable in an environment of quantitative tightening, when the U.S. Federal Reserve is reducing the size of its balance sheet.

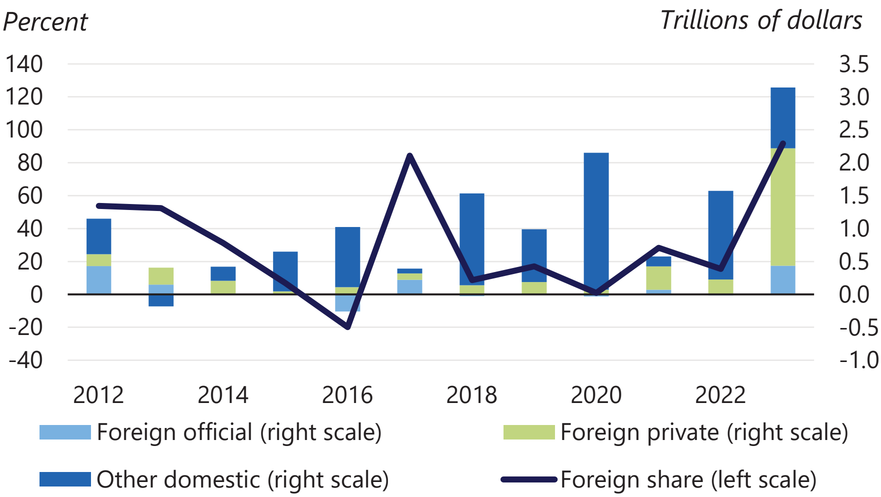
[23] The price increase was unexpected given that the Treasuries supply rose substantially to fund the Emergency Economic Stabilization Act of 2008, a $700 billion program designed to take bad assets off the books of the U.S. financial sector. The increase was unexpected because any increase in supply would have resulted in decreased prices or increased yields had the demand for Treasuries remained unchanged (Neoth and Sengupta 2010).

United States. The rising prices indicated that the yield to maturity (i.e., the government's cost of raising additional funds) fell.[24]

Foreign investors also turned to U.S. debt during the period of uncertainty surrounding the COVID-19 pandemic. At the onset of the pandemic, private and official foreign investors sold U.S. Treasuries to cover precautionary liquidity needs (referred to as the "dash for cash"), but the demand for Treasuries quickly rebounded (Barone et al. 2022; He and Krishnamurthy 2020).[25] In fact, foreign absorption of Treasury net issuances increased in 2021 (Weiss 2022).

U.S. Treasury demand remained high into the post-pandemic period. Foreign private investor net purchases of Treasuries in 2023 were more than ten times their pre-pandemic (2017–2019) average (see figure 6-19).

Figure 6-19. Absorption of Treasury Net Issuance, by Sector



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Sources: Bertaut and Judson (2022); U.S. Department of the Treasury; Federal Reserve Bank of New York; CEA calculations.

Note: Shares can sum to less than 0% and to more than 100% due to valuation changes in Treasury holdings not tracked by official data as well as due to purchases of Treasuries issued in a prior year.

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[24] The yield to maturity is defined as the interest rate that makes the present value of a bond's payments equal to its price.

[25] Outside the global financial crisis, net sales by foreign official investors, especially from emerging market countries, are a common occurrence during stress episodes (Weiss 2022). Therefore, the pandemic-induced sales in March 2020 were not unusual given the extreme uncertainty that accompanied the pandemic shock.

On average, foreign investors absorbed roughly 19 percent of Treasury net issuance in the five years preceding the pandemic (Weiss 2022). Over the 2021–2023 period, foreign investors absorbed an average of 45 percent annually.

The Dollar as Global Reserve Currency

Foreign exchange reserves allow countries to finance the purchase of imports denominated in reserve currencies and make payments on their foreign currency-denominated debts.[26] When faced with adverse shocks or turmoil, accumulated foreign exchange reserves provide countries with buffers that can be drawn upon to pay for imports and service foreign debt.

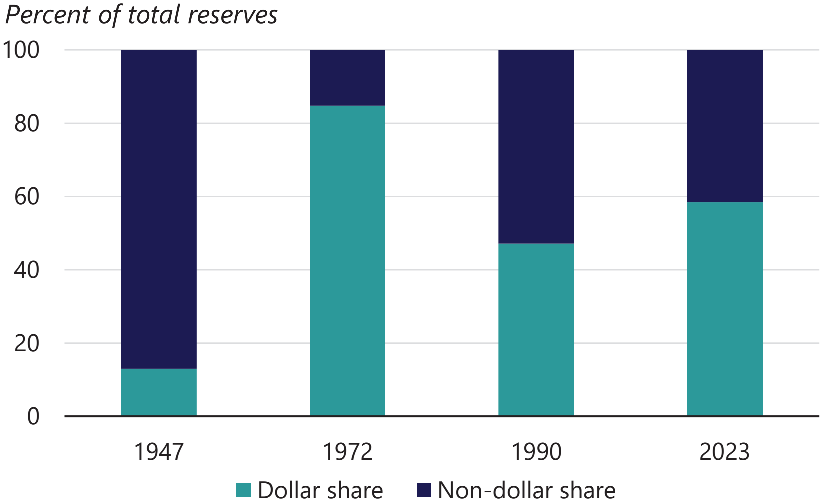
The role of the dollar as the world's dominant reserve currency was cemented after World War II (Nelson and Weiss 2022; Siripurapu and Berman 2023). The share of the dollar in global foreign exchange reserves grew from about 13 percent in 1947 to 85 percent by 1972, when the dollar became the currency of denomination for trade in commodities like oil and world trade invoicing. Today, the foreign borrowings of many countries are predominantly in dollars, and the dollar occupies a central position in the international monetary system, playing an outsized role in facilitating international trade (Eichengreen 2012; Ilzetzki, Reinhart, and Rogoff 2019).

In 2023, the dollar accounted for about 60 percent of global foreign exchange reserves (Atlantic Council 2024; IMF 2024).[27] About 54 percent of international trade is invoiced in dollars as of 2022, and about 64 percent of all international loans and international debt securities are denominated in dollars as of 2024 (Boocker and Wessel 2024). The dollar dominates the foreign exchange market, which has a $7.5 trillion daily turnover, and nearly 90 percent of all trades in 2022 involved the dollar on at least one side (BIS 2022; Nelson and Weiss 2022).

Reserve currency status confers several benefits on the United States. While the dollar plays a pivotal role as an international medium of exchange, it also functions as an important store of value. Countries use their dollar reserves to purchase dollar-backed safe assets, namely U.S. Treasuries. The dominant reserve currency status and global demand for safe assets allow the United States to issue debt at relatively low yields compared to other sovereign nations (Chen et al. 2022; Maggiori, Neiman, and Schreger 2019). The ability to borrow and pay for imports in dollars shields the United States from adverse exchange rate movements and the potential for balance of payments crises.

[26] Reserve currencies are foreign currencies held on central bank balance sheets to fulfill debt obligations and finance imports.
[27] Other major reserve currencies include the Australian dollar, the British pound, the Canadian dollar, the Chinese renminbi, the euro, the Japanese yen, and the Swiss franc (IMF 2024).

Figure 6-20. Composition of Foreign Exchange Reserve Holdings



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Sources: IMF Currency Composition of Official Exchange Reserves; Gluschenko (2024); CEA calculations.
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The dollar's global reserve currency status was boosted by the fact that the Bretton Woods fixed exchange rate system was based on the dollar as well as denomination of oil in dollars, or petrodollars, in the 1970s (Tran 2024). At the time, oil-exporting countries reinvested their dollar revenues in U.S. government debt. While there may be a gradual decline in the dollar share in foreign exchange reserves (figure 6-20), this is not matched by the rise in other major currencies like the euro, the British pound or the Japanese yen (Crow 2024). Rather, there has been a recent emergence of non-traditional reserve currencies and digital currencies as well as increased allocations into gold (Arslanalp, Eichengreen, and Simpson-Bell 2022; Tran and Matthews 2023; Gopinath 2024).

Recent evidence suggests, however, that the decline in the dollar share of reserves is primarily driven by a small group of countries, both due to monetary policy reasons and due to a small group of large foreign exchange reserve balance countries (Goldberg and Hannaoui 2024). The extent of international payment system fragmentation also remains modest (Gopinath et al. 2024). SWIFT data show that 80 percent of trade finance transactions continue to be settled in dollars. Commodity trade also continues to be invoiced and settled predominantly in dollars and the dollar's strength bears testimony to foreign investors moving into dollar assets (Gopinath 2024).

Reserve currency status allows the United States to use the dollar as a tool for international diplomacy and advancing its foreign policy objectives. While the recent use of financial sanctions has led to de-dollarization fears, the depth and liquidity of U.S. Treasury markets and robust global demand for Treasuries as a safe asset suggest that the dollar's utility remains intact (Siripurapu and Berman 2023; Lu 2023).

A Full Accounting of International Accounts

This chapter explores the recent evolution of major international investment policies under the Biden-Harris Administration, with a focus on the financial account of the U.S. balance of payments.

A detailed analysis of capital flows into and out of the United States is critical for understanding America's role in the international financial system. A variety of motivations, ranging from seeking the high returns that accompany economic growth to investing in U.S. assets for precautionary or safety reasons, drive international capital flows into the country. The United States is considered a safe haven by investors around the world, as evidenced by the demand for U.S. Treasury assets, which is significant and has remained stable or even risen over several decades. The role of the dollar as the world's dominant reserve currency also remains steady, and the demand for portfolio investments has increased substantially over the last two decades, as evidenced by the country's thriving equity and debt markets.

The Biden-Harris Administration's industrial policy agenda to encourage investments to facilitate the green transition and shore up supply chain resilience in critical sectors has facilitated a welcome surge of FDI from the nation's allies and partners. The importance of the United States in global capital markets continues to go from strength to strength reflecting our robust economy.

Chapter 7

The K-12 Education System: Economic Impacts and Opportunities for Innovation

Kindergarten through 12th-grade (K-12) education is the cornerstone investment our society makes in the human capital of its people. U.S. elementary and secondary schools serve as engines for both individual opportunity and macroeconomic growth. However, challenges posed by economic recessions, the COVID-19 pandemic, advances in technology and artificial intelligence (CEA 2024a), and an increasingly interconnected global economy (CEA 2024b) have placed new pressure on schools to rethink how best to prepare students for the future. To meet these challenges, federal, state, and local policymakers must ensure that K-12 schools are prepared to equip all children with the skills to compete and thrive in the 21st century.

The long history of public education in the United States predates the nation's founding (Mendez, Yoo, and Rury 2017). Local movements have driven the expansion of K-12 education over the last three centuries, and decentralization and local control remain hallmarks of the system today (Kober and Rentner 2020). In the last 50 years, states have assumed an expanded role in funding education and setting education policy (Pelsue 2017). Government spending on K-12 education across the local, state, and federal levels exceeded $880 billion annually in fiscal year (FY) 2021–2022, 3.5 percent of GDP (Pelsue 2017; Cornman et al. 2024).

While federal contributions to K-12 education funding—typically about 9 percent of the system's total revenue—are small relative to those of state and local governments, the Federal Government has played a critical role in stabilizing education expenditures during recessions through the American

Recovery and Reinvestment Act (ARRA) and the American Rescue Plan (ARP) (Jackson, Wigger, and Xiong 2021); facilitating equity in spending through supplemental funding for schools serving a higher percentage of students from low-income backgrounds via Title I, Part A (Title I); promoting student health and nutrition via free and reduced-price school meals through the National School Lunch Program; and funding career and technical education (CTE) through the Carl D. Perkins Vocational and Technical Education Act (Perkins Act). Federal laws also directly influence state policy and school practices; for example, they have helped ensure the rights of students with disabilities under the Individuals with Disabilities Education Act (IDEA) and elevate more holistic measures of school performance under the Every Student Succeeds Act. Finally, federal grants and reporting requirements promote evidence-based policies, support workforce development, incentivize innovation, fund research, and expand data collection to enhance K-12 education.

Significant public investments in the K-12 school system allowed the United States to be a world leader in academic outcomes (both basic literacy and high school graduation rates) through much of the 20th century (Goldin 2006; Snyder 1993). However, school districts have faced growing challenges in hiring and retaining qualified teachers as salaries in K-12 education have not kept pace with those in the broader market. Some measures suggest that student achievement began to decline in the decade following the Great Recession. Moreover, aggregate statistics mask substantial inequities in educational resources, opportunities, and outcomes across individual districts and by student race and socioeconomic status. The COVID-19 pandemic exacerbated these longstanding challenges, causing a sharp decline in academic achievement across multiple measures (particularly for less-advantaged student populations), increasing rates of chronic absenteeism, and creating an even more pressing need to support students' basic needs as well as their social-emotional and mental wellbeing. The result is an increasingly urgent need to attract and retain qualified teachers and support staff with competitive wages and supportive working conditions, as well as find innovative ways to scale evidence-based practices to raise student achievement.

The Biden-Harris Administration has made unprecedented federal investments in K-12 schools through the ARP, the Bipartisan Safer Communities Act (BSCA), and the Infrastructure Investment and Jobs Act. The Administration also has secured major increases to Title I funding for schools enrolling a high percentage of students from low-income backgrounds and IDEA, Part B funding for special education and related services for students with disabilities. These investments have helped accelerate post-pandemic academic recovery, modernize school infrastructure, and provide resources to address students' mental health challenges (Department of Education 2024a). However, challenges to ensuring that all students benefit from well-staffed, well-maintained, and safe schools remain.

This chapter outlines the well-established links between education and overall economic growth and summarizes the contemporary microeconomic evidence underlying the links. It then builds on existing research to show how increases in student knowledge—as measured by standardized tests—are associated with increases in GDP, discusses contemporary challenges facing K-12 education, and draws on the research literature and new analyses to identify promising policy solutions for strengthening U.S. K-12 schools for all students. Finally, the chapter explores how three key inputs to education production—labor, physical capital, and technology—all present opportunities for increasing the effectiveness of the K-12 education system. Each section of the chapter highlights the federal role in strengthening public education.

Why Education Matters: Returns to Income and Economic Growth

A long tradition of macroeconomic research links national levels of educational attainment to GDP growth (e.g., Lucas 1988; Romer 1990). In the textbook model of economic growth, overall economic output is produced using the workers in the labor force, capital inputs (e.g., infrastructure and materials), and technology. In models of endogenous growth (e.g., Mankiw, Romer, and Weil 1992; Romer 1994), education affects output through two distinct channels: (i) a human capital effect which makes workers more productive, and (ii) an innovation effect which facilitates technological advancements that increase the productivity of workers and capital (Biasi, Deming, and Moser 2022).

Evidence on the Human Capital Channel

Building on the seminal work by Mincer (1958), microeconomic research using natural experiments and studies of twin siblings from the same household with different levels of education has documented that completing an additional year of schooling (largely holding quality constant) increases an individual's yearly earnings by 6 percent to 15 percent (Gunderson and Oreopolous 2020). Recently, consensus has emerged around the importance of school quality. Leveraging variation within states over time, Doty et al. (2022) find that a 1 standard deviation increase in average eighth grade math achievement (roughly a 37 percentile point increase) is associated with an 8 percent increase in adult earnings. More direct measures of school quality based on randomized admissions lotteries document large differences in effects on student academic and life outcomes across individual schools (Angrist, Hull, and Walters 2022). Similarly, value-added models document how highly-effective teachers increase students' educational attainment and earnings (Chetty, Freidman, and Rockoff 2014). Importantly, policies to enhance school quality, such as those increasing resources, also grow adult earnings (Jackson, Johnson, and Persico 2016; Rothstein and Schanzenbach 2022).

Evidence on the Innovation Channel

Theories of endogenous economic growth argue that increases in education output also affect economic growth by enabling innovation, which can both provide direct benefits to society as a whole and enhance the productivity of individuals. Much of the evidence on education's role in generating ideas comes from research on higher education. Historically, studies link the establishment of land grant colleges to increased innovation and elevated regional incomes (Andrews 2021; Maloney and Caicedo 2022). Modern evidence shows that the number of patents per capita is positively associated with federal and state investments in higher education (Aghion et al. 2009). Studies also document how the establishment of universities increases local innovation internationally (Valero and Van Reenen 2019) and that expanding access to science, technology, engineering, and math (STEM) post-secondary programs can lead to increases in patenting (Bianchi and Giorcelli 2020; Toivanen and Väänänen 2016).

K-12 education systems play a fundamental role in preparing students to pursue higher education and become the next generation of innovators (Biasi, Deming, and Moser 2022). Bell et al. (2019) demonstrate that one's environment, which is impacted by school quality rather than ability, largely dictates whether an individual will become an inventor. As a result, disadvantaged youth who are more likely to attend under-resourced and low-performing schools are underrepresented among inventors.

In this spirit, the Administration has committed to fighting systemic barriers to educational opportunity in multiple ways, including new investments in STEM education for underrepresented K-12 and college students and by promoting a more inclusive STEM workforce (White House 2024a). Increasing investment in higher education helps expand the knowledge frontier, and increasing investment in foundational skills taught in elementary and secondary schools helps ensure that future innovators can reach the frontier and realize their full potential.

Educational Attainment, Knowledge Capital, and GDP Growth

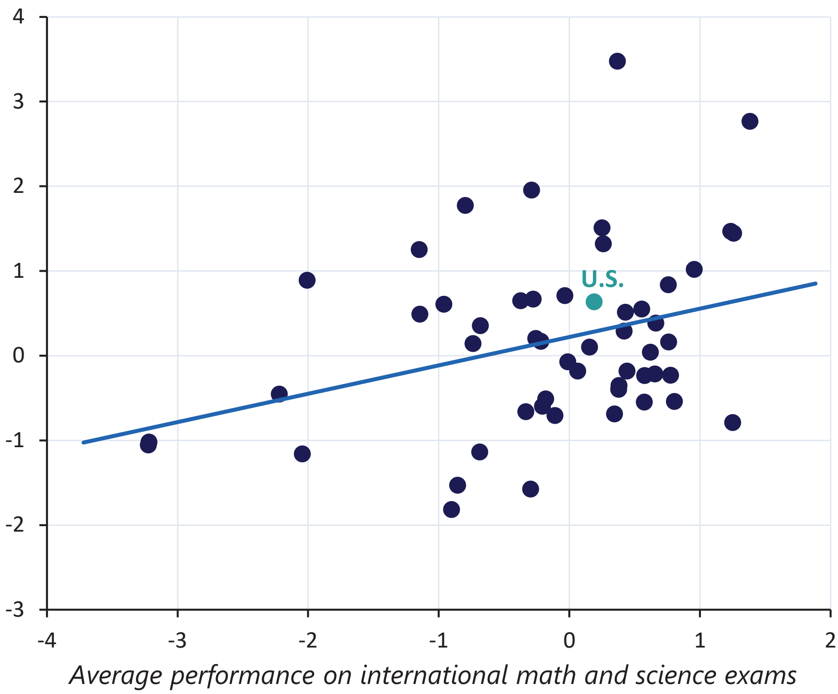
Identifying the causal effect of schooling levels on overall economic growth, as measured by GDP, is challenging. However, estimates across a variety of empirical approaches find that a one-year increase in average years of education for the entire working-age population—a change that can take several years to unfold—is associated with gains in real GDP between 5 percent and 12 percent (Barro and Lee 2013).

Studies examining both quantity of schooling and knowledge capital suggest that test scores may be a stronger predictor of economic growth than years of education. Here, test scores serve as an imperfect proxy for school quality because scores reflect both the effects of formal schooling and important factors outside of school that affect student (Altonji and Mansfield 2011). Aggregate measures are also shaped by the changing demography of students served by school systems over time. Hanushek and Woessmann (2008) find that country-level performance on international assessments between 1960 and 2000 is predictive of average annual GDP growth during the same period. Angrist et al. (2021) find similar results for a broad sample of 107 countries during the decade between 2000 and 2010.

The CEA builds on previous analyses to examine how educational skills predict future macroeconomic growth in the most recent decades. This analysis examines how average educational achievement in math and science, as captured by the 1999 Trends in International Mathematics and Science Study (TIMSS) eighth grade assessment and the 2000 Programme for International Student Assessment (PISA), taken by 15-year-olds, predicts average annual GDP growth between 2000 and 2023. The regression includes controls for real GDP per capita (logged) and average years of education among 25- to 65-year-olds, both measured at baseline in 2000. Figure 7-1 shows that the patterns found in prior studies persist in more recent data and in an approach that removes potential reverse causality by

Figure 7-1. Knowledge Capital and Economic Growth

Conditional average annual GDP growth, 2000–2023



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Sources: 1999 Trends in International Mathematics and Science Study (TIMSS); 2000 Programme for International Student Assessment (PISA); International Monetary Fund; Penn World Tables; Barro-Lee Dataset; CEA calculations.

Note: 1999 TIMSS and 2000 PISA science and math test scores are standardized within test type, grade, subject, and year at the country level and averaged across the four tests. Average annual GDP growth is conditional on average years of education and log GDP per capita in 2000, and the conditional GDP is centered around the panel average.

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relating inputs to outcomes only measured in the future. Specifically, a 1 standard deviation increase in average performance at the country level is associated with a 0.33 percentage point increase in average annual GDP growth (p=0.08) relative to a mean of 3.59 percent.[1] These analyses confirm the importance of education outputs documented in the microeconomic and macroeconomic literature.

The State of the K-12 Education System

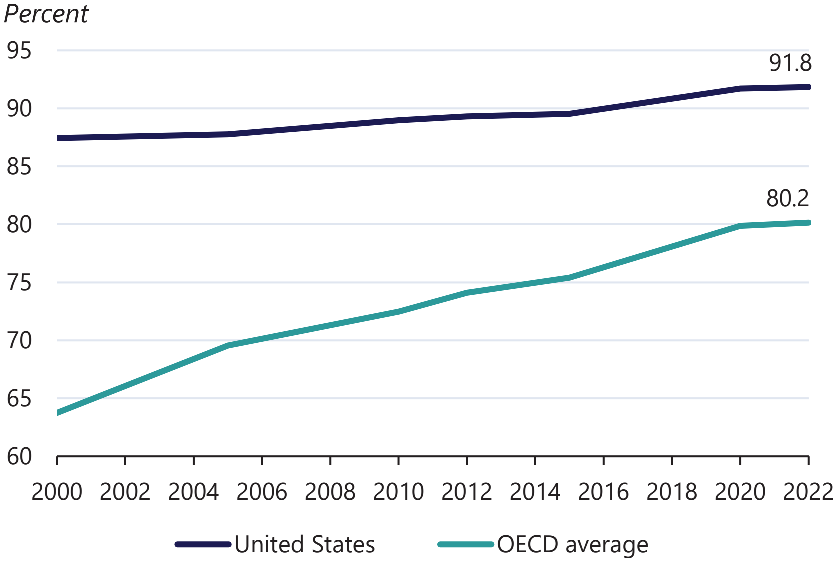
The United States led the world in expanding access to free public education in the early half of the 20th century during what is known as the "high school movement" (Goldin and Katz 2008). The grassroots organizing driving the rapid expansion of secondary education led to an unprecedented increase in worker skills, facilitating increased economic mobility and contributing to the creation of the middle class (Goldin and Margo 1991; Haskins 2008). The gains persist today: 93 percent of U.S. 15-year-olds attend free K-12 public schools, compared to the Organisation for Economic Co-operation and Development (OECD) average of 82 percent (OECD 2020). The United States continues to lead all but three countries—Ireland, South Korea, and Iceland—in years of formal schooling, with an average of 13.3 years (Our World in Data 2023). The United States also continues to see high rates of high school attainment, with 91.8 percent of Americans age 25–64 holding a high school degree in 2022, compared to the OECD average of 80.2 percent (figure 7-2).

As the analyses above illustrate, educational attainment and years of schooling matter, but the quality of the education is paramount. The National Assessment of Educational Progress (NAEP), commonly known as "the nation's report card," provides one window into the quality of the U.S. K-12 education system. Between 1971 and 2012, average long-term trend NAEP scores increased steadily, suggesting rising levels of education quality (see figure 7-3). However, NAEP scores have been in decline since 2012, due in part to the cumulative ill effects of job losses, income reductions, and increased psychological distress (Ananat et al. 2013), as well as sustained budget cuts to public education, in the years following the Great Recession (Jackson, Wigger, and Xiong 2021).

Although student achievement on international assessments such as TIMSS and PISA paints a more mixed picture of achievement trends in the United States over the last two decades, one pattern is increasingly clear. Despite the historical success of the U.S. K-12 education system, many countries are now outperforming the United States on international assessments, particularly in math. As shown in figure 7-4, the United States

[1] The model applies heteroskedasticity-robust standard errors.

Figure 7-2. Share of 25- to 64-year-olds Who Completed High School



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Sources: Organisation for Economic Co-operation and Development (OECD); CEA calculations.

Note: OECD average excludes the United States. Data include degrees classified as high school graduation equivalent (International Standard Classification of Education level 3) with minor exceptions. For more detail, see 2023 Digest of Education Statistics, Table 603.10.

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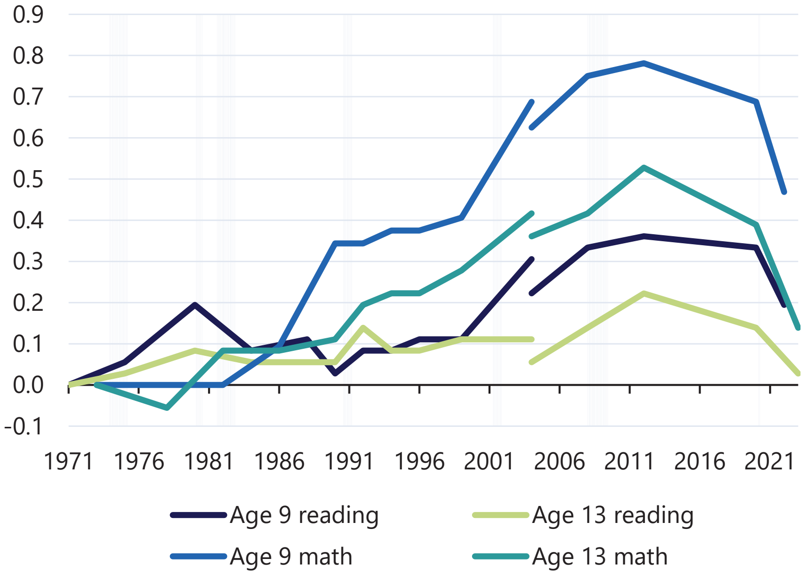
ranked 27th and 22nd on the 2023 TIMSS math assessment among fourth and eighth graders and 31st on the 2022 PISA math assessment among 15-year-olds. In reading, the United States ranked 6th on the 2021 Progress in International Reading Literacy Study assessment for fifth graders and 9th on the 2022 PISA assessment for 15-year-olds. In science, U.S. fourth and eighth graders ranked 14th and 15th on the 2023 TIMSS, respectively. Most recently, U.S. students ranked 17th in computational thinking and 22nd in computer literacy on the 2023 International Computer and Information Literacy Study. These international comparisons provide a helpful benchmark for the competitiveness of the U.S. education system, but they also can be subject to cross-cultural differences in the effort students invest in completing the tests (Gneezy et al. 2019).

Figure 7-3. NAEP Scores Over Time

Change in NAEP LTT score since 1971 in 1990/1992 standard deviations



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Sources: National Assessment of Educational Progress long-term trend assessments (NAEP LTT); CEA calculations.

Note: Gray bars indicate recessions. NAEP changed the assessment format in 2004. Lines prior to 2004 represent the original assessment format; lines after 2004 indicate the revised assessment format. Results from both the original and revised assessment format are reported for 2004.

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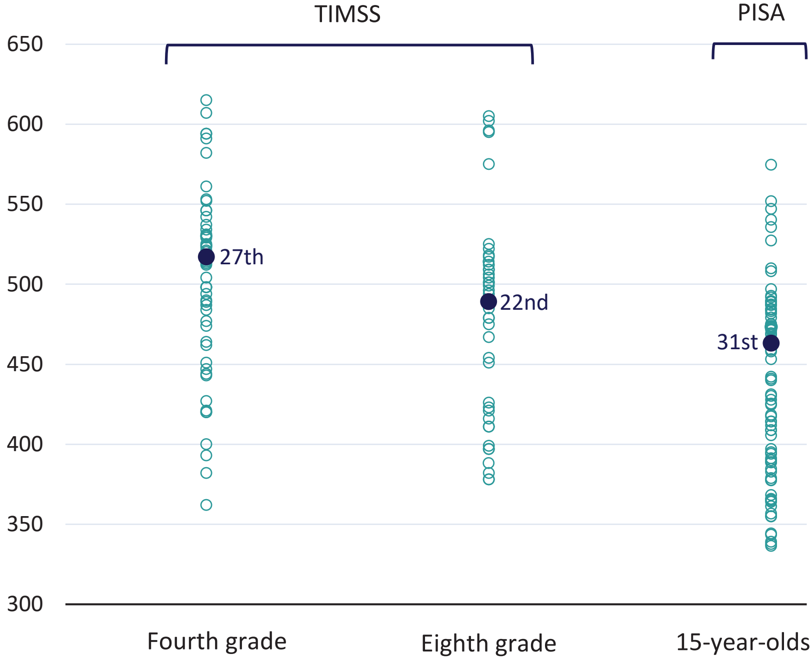
COVID-19 and Student Achievement, Engagement, and Wellbeing

In March of 2020, the COVID-19 pandemic shuttered schools across the United States and around the world. Between 2019 and 2022, estimates across multiple standardized assessments suggest that student achievement fell, on average, between 0.15-0.26 standard deviations in math and 0.07-0.12 standard deviations in English language arts (ELA) (Kuhfeld and Lewis 2024), roughly the equivalent of one half of a grade level in math and one third of a grade level in reading (Fahle et al. 2023). Students' computer and information literacy skills declined even further by 0.37 standard deviations between 2018 and 2023. Furthermore, the pandemic widened achievement gaps across measures of student performance (NAEP n.d.; Callen et al. 2024), with students in high-poverty districts experiencing the most acute negative educational (Goldhaber et al. 2023), economic (Piacentini et al. 2022), and public health effects (Alsan, Chandra, and Simon 2021).

Figure 7-4. U.S. Performance on International Math Assessments

Average scores



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Sources: 2022 Programme for International Student Assessment (PISA); 2023 Trends in International Mathematics and Science Study (TIMSS); CEA calculations.
Note: U.S. rankings are denoted in navy. Rankings reflect raw rankings and do not take into account statistical significance. 58 countries and territories took the fourth grade TIMSS, 44 took the eighth grade TIMSS, and 81 took the PISA.
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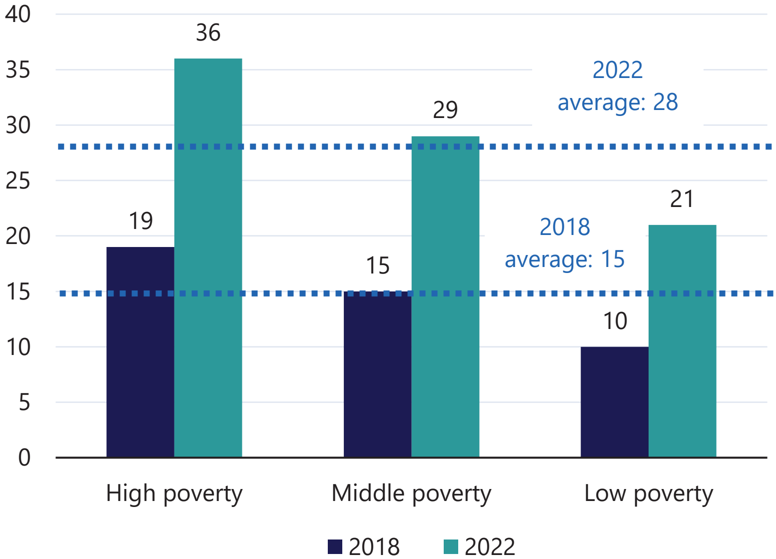
Multiple indicators suggest students are struggling to re-engage with schooling in the post-pandemic era. Chronic absenteeism—missing 10 percent of school or more—has nearly doubled relative to pre-pandemic levels, with rates as high as 36 percent in high-poverty districts (Return2Learn Tracker 2024), as shown in figure 7-5. After decreasing from 2016 to 2019, the rate of children age 3 to 17 with behavior or conduct problems increased by 20.6 percent (1.4 percentage points) from 2019 to the latter half of 2020 (Lebrun-Harris et al. 2022). A record number of special education referrals were made during the 2022–2023 school year, a reflection of the pandemic's lasting effect on students, particularly young children (CRPE 2024; Miller and Mervosh 2024). Data from a nationally representative survey in 2023 found that teachers perceived substantially higher rates of students struggling with

Figure 7-5. Rates of Chronic Absenteeism by Concentration of Students from Low-Income Backgrounds

Percent chronically absent



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Sources: Return2Learn Tracker; CEA calculations.
Note: Data are collected at the district level. Categories represent district types.
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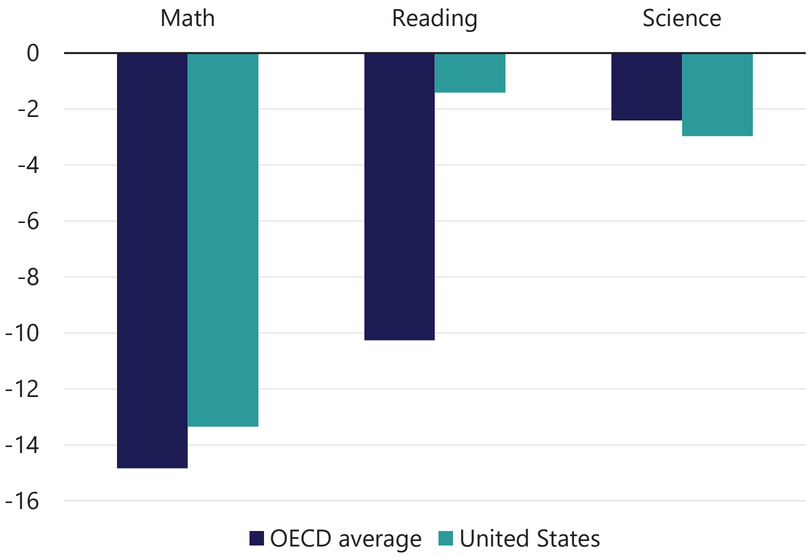
depression, anxiety, and behavioral expectations than they did prior to the pandemic (Jacob 2024).

Federal Investments in K-12 Education Promoting Recovery

The negative effects of the pandemic on students' success in school would likely have been worse without the investments made by the U.S. Federal Government to stabilize revenues and support recovery efforts. U.S. K-12 schools benefitted from an unprecedented $189.5 billion in federal aid through the Elementary and Secondary School Emergency Relief (ESSER) funds, $122 billion of which were funded by the Administration's historic $130 billion investments in K-12 schools as part of the ARP (Department of Education 2024b). The Administration has also played a key role in expanding access to school-based mental health professionals and clinics to support student engagement and wellbeing. For example, the CEA estimates that the number of school-based social workers increased by 64 percent and

Figure 7-6. Change in PISA Scores, 2018–2022

Change in PISA score values



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Sources: Organisation for Economic Co-operation and Development (OECD); 2022 Programme for International Student Assessment (PISA); CEA calculations.

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the number of school nurses increased by 16 percent between the 2018–2019 and 2023–2024 school years.[2] This growth in student-facing support staff was made possible in large part by federal funding provided by the ARP and the BSCA, as well as the Health Resources and Services Administration and Medicaid.

Student performance on the PISA suggests the United States weathered the pandemic better than many peer nations (see figure 7-6). Declines in U.S. performance on the 2022 PISA were less than 10 percent of the average decline among OECD member countries in reading and approximately 86 percent of the average decline in math (CEA 2023).

Recent studies document the important impacts federal relief dollars have had on student academic recovery. Both Dewey et al. (2024) and Goldhaber and Falken (2024) find that, on average, each $1,000 in ARP-funded per-pupil spending for a single year increased math scores by approximately 0.009 of a standard deviation with estimates of similar magnitude for ELA scores. Given that the combined average amount of funds allocated by ESSER II (part of the Coronavirus Response and Relief Act)

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[2] Analyses are based on the Current Population Survey and reflect 12-month averages from August to July.

and the ARP per district was over $3,100, a rough estimate suggests that these federal funds could raise student achievement by 1 percentile point on average.[3] Because the distribution of the vast majority of federal relief funding was based on Title I formulas that provide aid proportional to the number of students from low-income backgrounds, high-poverty districts benefitted from higher levels of funding and were able to narrow the academic achievement gap—exacerbated by the pandemic—between low- and high-poverty districts (Dewey et al. 2024).

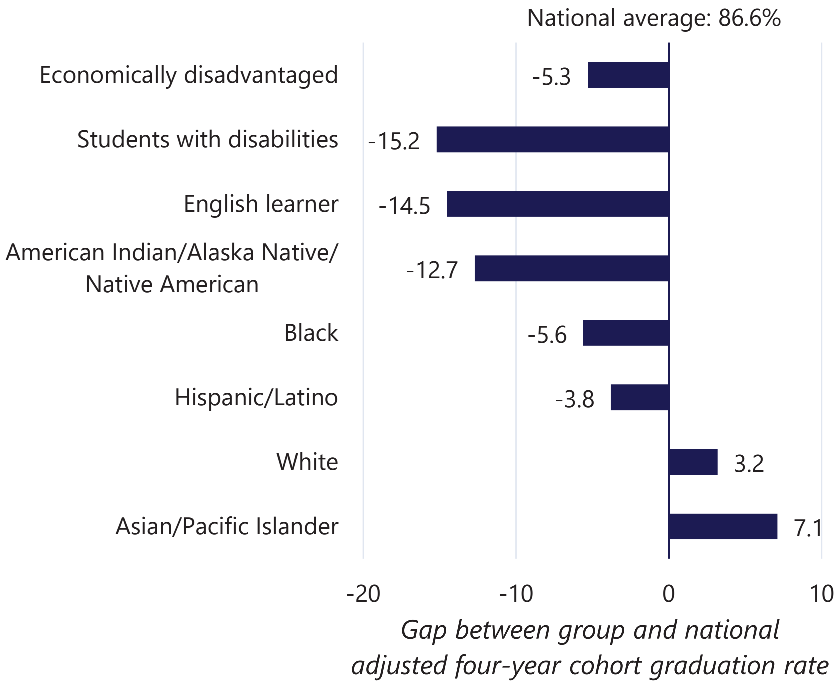
Addressing Structural Challenges and Disparities in Education Outcomes

The devastating effects of the COVID-19 pandemic elevated the critical role of K-12 education in supporting students and families and serving as a core feature of the social safety net. The pandemic also compounded structural challenges that have long persisted in U.S. education. Efforts to recover from the pandemic's ill effects in the short run and strengthen the education system in the long run will require the country to address the underlying inequities in the system.

The decentralized structure of the U.S. education system and its history of de facto and de jure racial segregation have resulted in wide variation and persistent disparities in access to safe, well-staffed, and well-resourced schools (Margo 1990; Antman and Cortes 2023; Anstreicher, Fletcher, and Thompson 2022; Johnson 2019). For example, districts in the top decile of student attainment have four-year high school graduation rates of 97.5 percent or higher, while districts in the bottom decile have graduation rates of 75 percent or lower.[4] Put differently, a student moving from a bottom- to a top-performing district would be exposed to peers that are 30 percent more likely to graduate on time. As shown in figure 7-7, four-year graduation rates also differ dramatically among students based on their socioeconomic status, disability status, language spoken at home, and race/ethnicity. Similar achievement gaps are apparent on the NAEP, affirming the importance of efforts to address disparities in education funding and opportunities (figure 7-8).

[3] Scaling the estimated effects from Dewey et al. (2024) to the average allocated amount of ESSER II and ARP dollars per student ($3,100) suggests an average total estimated effect of 0.028 standard deviations. The CEA then follows Von Hippel (2024) to convert this to a percentile point change.
[4] To avoid pandemic-induced distortions, data are from the 2018–2019 academic year for this calculation only. Graduation rates at the local education agency (LEA) level are not available past the 2020–2021 academic year.

Figure 7-7. Four-year High School Graduation Rates



Council of Economic Advisers
Sources: Ed Data Express; CEA calculations.
Note: Data are from the 2021–2022 academic year adjusted four-year graduation cohort. Students are classified as economically disadvantaged based on individual state criteria such as eligibility for the National Student Lunch Program. New Mexico and Oklahoma did not report data and are not included in national estimates.
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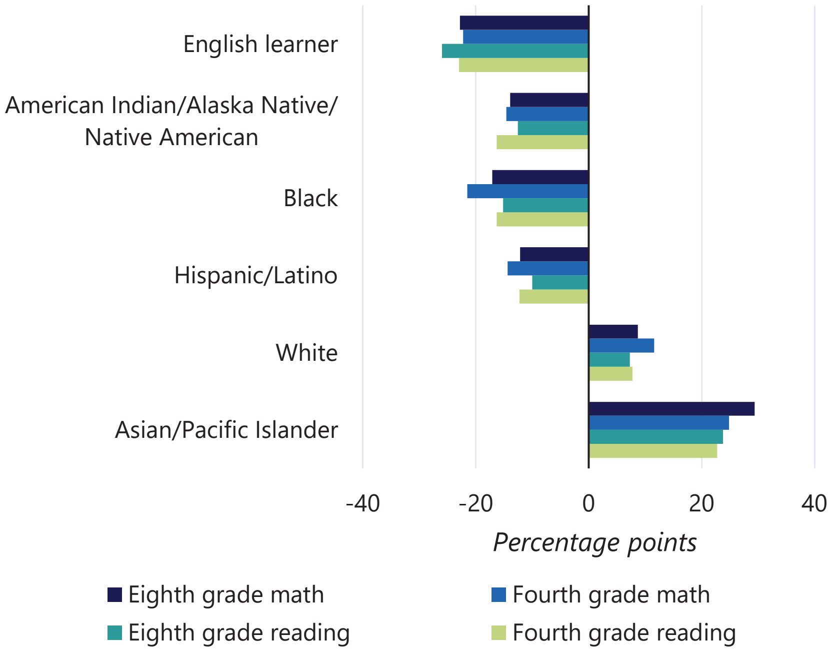
Opportunities for Improvement

Labor, capital, and technology can be thought of as central inputs into both canonical models of economic growth as well as education production. In the context of K-12 education, the framework highlights the central role that educators (labor), school infrastructure and instructional resources (physical capital), and other technologies (from school governance and organizational practices to new education tools) play in shaping the success of the education system.

Any discussion of the U.S. Federal Government's role in enhancing the education production function must acknowledge a central constraint: It contributes a limited share of K-12 funding. During non-recessionary periods, this share hovers around 9 percent. The remaining 91 percent is distributed approximately equally between state and local funding (see

Figure 7-8. Proficiency by Student Group

Percent difference from national average



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Sources: National Assessment for Educational Progress; CEA calculations.
Note: Percent proficient includes students at or above percent proficient (including percent advanced). Data are from the January through March 2022 testing period.
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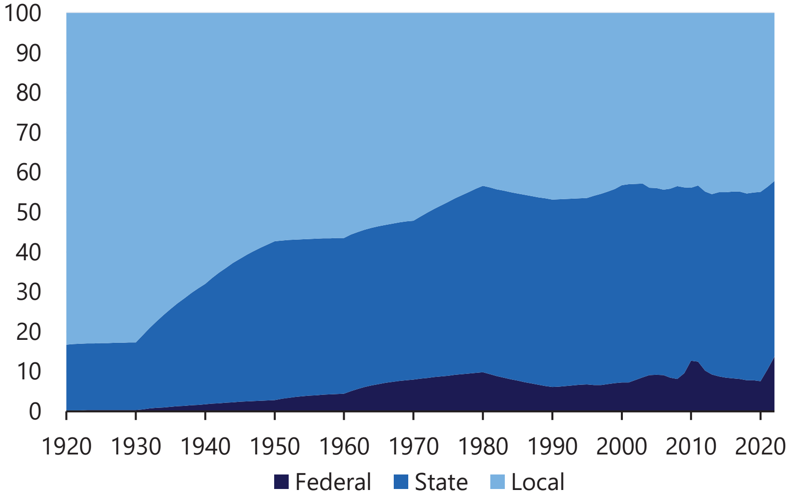
figure 7-9). Despite this limitation, the Federal Government plays a critical role in making funding more equal across districts and stabilizing funding across time.

Equalizing Funding Across Districts

The continued reliance on local and state revenue sources has led to an unequal distribution of funding across U.S. school districts. High-expenditure districts (the 90th percentile) spend 2.4 times as much per pupil, a $17,770 difference, compared to low-expenditure districts (the 10th percentile). This wide variation reflects real disparities, rather than local differences in cost of living, as shown in figure 7-10. A CEA analysis finds that cost-of-living adjustments (COLA) based on county-level regional price parities explain only 3.5 percent of the gap between the top and bottom deciles ($620) in unadjusted expenditures.

Figure 7-9. Public K-12 Education Revenue Sources

Percent of total revenue



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Sources: National Center for Education Statistics; Common Core of Data; Bureau of Labor Statistics; CEA calculations.

Note: Prior to 1995, estimates for the revenue in non-decennial years are imputed assuming linear growth. Data are plotted through the 2021–2022 academic year. X-axis labels represent the spring year of the academic calendar.

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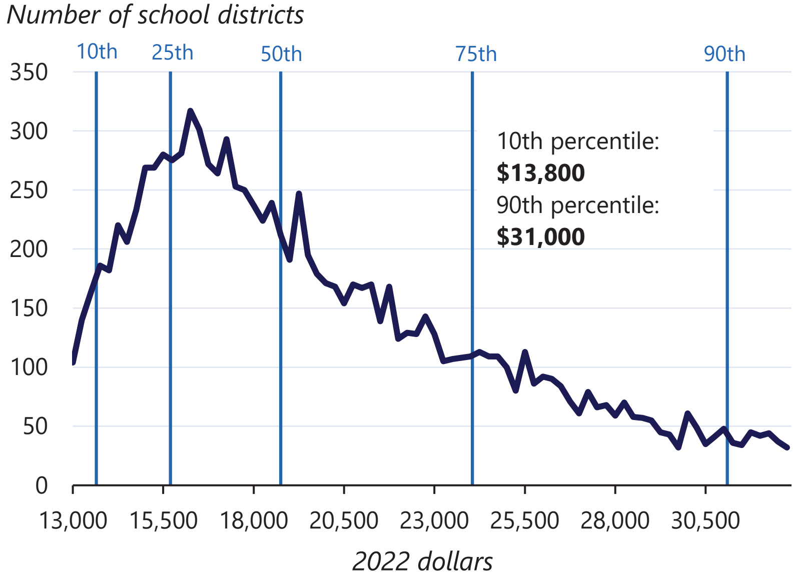
Two primary factors drive funding inequities. First, large differences exist in local property tax bases, which constitutes the primary source of local funding and roughly 36 percent of all public education revenue (NCES 2024a). High-local revenue districts (the 90th percentile) raise 5.7 times as much money per pupil than low-local revenue districts (the 10th percentile), a COLA-adjusted gap of $14,900 per pupil. High-local revenue districts drive the variability: The difference between the 10th and 50th percentile of local funding per pupil is relatively small ($4,200 COLA-adjusted) compared to the difference between the 50th and 90th percentile ($10,700 COLA-adjusted).

Second, states spend vastly different amounts on education. For example, the top five states spend over double the amount of state revenue on education that the bottom five states spend on education—$11,800 versus $5,400 COLA-adjusted. While spending differences across states exacerbate inequities in education funding nationally, many states allocate funds to districts in progressive ways to reduce inequities (Chingos and Blagg 2017).

The Federal Government has played an important role in mitigating spending inequities across local communities and states since the passage of the Elementary and Secondary Education Act (ESEA) in 1965. ESEA

Figure 7-10. District per Pupil Expenditures Adjusted for Cost of Living



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Sources: National Center for Education Statistics; Common Core of Data; McMahon (2024); CEA calculations.

Note: Per pupil expenditures are calculated at the local education agency level for the 2021–2022 academic year. Values are censored at the 5th and 95th percentile and binned into multiples of 250. Analysis is limited to regular public school districts with graded schools and at least 50 students. Expenditures are adjusted using county-level regional price parities compiled by McMahon (2024).

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established Title I, which allocates roughly $17 billion per year in funds across four formulas based on two primary components: need and nonfederal education spending (NCES n.d.; Gordon and Reber 2023a). The first component, the number of students in need (largely determined by student poverty levels), is designed to support supplemental education activities for children from low-income backgrounds. Without Title I and other federal funds, the expenditure ratio between high- and low-expenditure districts would be 15 percent higher (2.8 vs. 2.4). For some districts, the funding is critical. For example, it makes up 8 percent of total funding in Detroit. The second component, state and local revenue per pupil, increases positively based on funding levels. While the approach potentially exacerbates state-level funding differences, it is designed to incentivize states—especially those with high proportions of low-income students—to invest more in education. Evidence suggests it plays a limited role (Gordon and Reber 2023b).

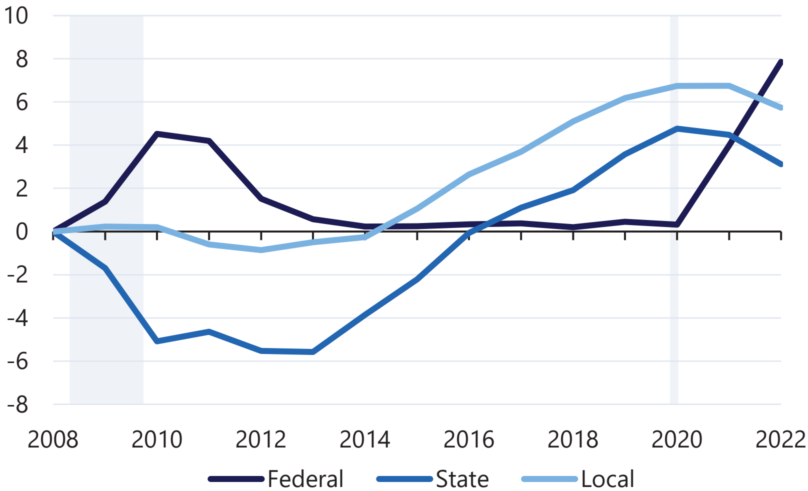
The inequitable distribution of public education funding has lasting impacts on student educational opportunities and outcomes. The school finance reform literature, which leverages a series of court-ordered funding reforms, shows that school funding increases both short-term achievement and long-term outcomes, such as educational attainment and earnings (Lafortune, Rothstein, and Schanzenbach 2018; Hyman 2017; Jackson, Johnson, and Persico 2016), particularly for the most disadvantaged students (Biasi 2023; Jackson et al. 2024; Jackson and Mackevicius 2024).

Stabilizing Funding Levels Over Time

Funding from the Federal Government has served as a backstop against fiscal shortfalls during economic downturns. As shown in figure 7-11, state and local funding is pro-cyclical, meaning it increases in periods of economic growth and contracts during recessions. Because most state governments cannot run deficits to fund current expenditures, they are not able to quickly raise money to respond to crises (Rueben and Randall 2017). Only the Federal Government is able to provide immediate financial resources above and beyond "business as usual" spending to allow districts to respond to

Figure 7-11. K-12 Revenue Sources as a Share of Total 2007–2008 Revenue

Percent change



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Sources: National Center for Education Statistics; Common Core of Data; Bureau of Labor Statistics; CEA calculations.

Note: Gray bars indicate recessions. Y axis represents the change in real dollars from 2008 to the indicated year, divided by the total amount of revenue in 2008. X-axis labels represent the spring year of the academic calendar.

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acute challenges, such as public health emergencies and extreme weather events.

The Federal Government smooths fluctuations in spending associated with the business cycle by increasing funding during recessions. State revenues fell by $46 billion from peak to trough of the Great Recession and $14 billion during the COVID-19 pandemic through 2021–2022, the most recent available data. Both the Obama-Biden Administration's ARRA and the Biden-Harris Administration's ARP helped districts minimize budgetary cuts when state and local revenues declined during recessions (Anglum, Shores, and Steinberg 2021; Department of Education 2021a). ARP funds not only stabilized expenditures, but also covered significant additional costs related to reopening and operating schools safely during a pandemic as well as supporting academic recovery due to school closures.

The counter-cyclical funding helps mitigate the negative human capital losses that accrue as a result of K-12 spending cuts. However, programs like the State Fiscal Stabilization Fund, created by the ARRA to address state budget shortfalls, are one-time appropriations passed in reaction to recessions. Instead of requiring new legislation during each economic downturn and potentially delaying essential aid, the Federal Government could establish a dynamic funding formula that serves as an automatic stabilizer to insure against harmful budget cuts (Boushey et al. 2019).

Ultimately, the equalization and stabilization roles of the Federal Government are intertwined. High-poverty districts are often the most vulnerable to shocks. As the ESSER's impact on the COVID-19 pandemic recovery shows, federal aid targeted to high-needs populations plays a crucial role in ensuring that crises do not exacerbate inequality.

School funding affects student outcomes by improving school quality, whether through labor inputs (hiring more and higher-quality teachers and support staff), capital inputs (investing in environments conducive to learning and high-quality curricula), or technological inputs (having access to the most up-to-date tools as a mechanism to enhance learning and better prepare students for the increasingly digital economy).

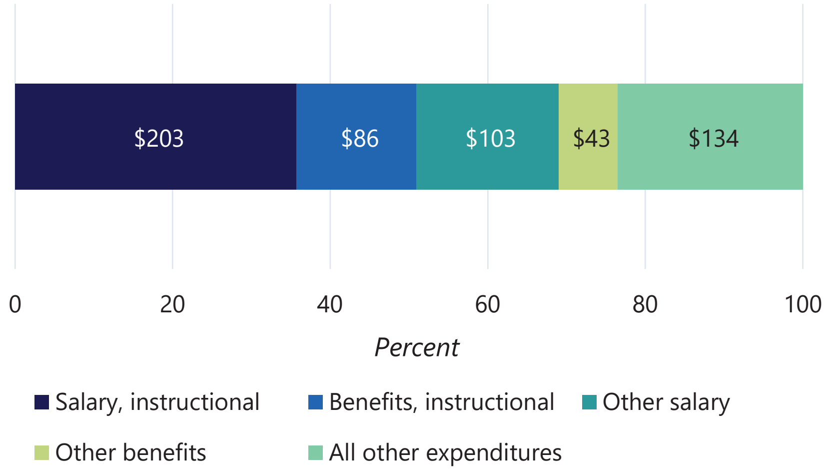
Labor Inputs

Education is a labor-intensive sector, with educators at the core of the production process. As shown in figure 7-12, salary and benefits for instructional staff alone constitute more than half of the K-12 budget. Thus, efforts to improve education productivity and maximize public investments in K-12 schools are directly related to the size and effectiveness of the teacher workforce (Jackson, Rockoff, and Staiger 2014).

An extensive body of evidence documents the large and lasting effects teachers have on their students' academic attainment and labor market

Figure 7-12. Salary and Benefits as a Share of K-12 Expenditures

Billions of dollars



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Sources: National Center for Education Statistics; Common Core of Data; CEA calculations.

Note: This figure excludes non-elementary and secondary expenditures. Data are from the 2021–2022 academic year.

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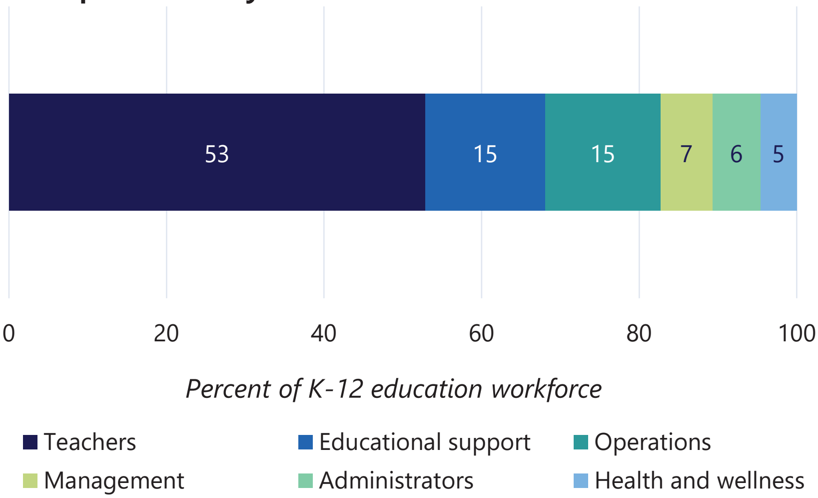
outcomes (Chetty, Friedman, and Rockoff 2014; Petek and Pope 2023). Educators also support students' non-cognitive skills and socio-emotional development (Jackson 2018; Kraft 2019) and serve as informal mentors who share essential social capital for navigating academic challenges and the college application process (Kraft, Bolves, and Hurd 2023). Having a highly-qualified teacher in every classroom is critical for students' academic success, socio-emotional development, and preparation for the workforce.

Although classroom teachers and other education support staff constitute almost 70 percent of all K-12 employees, non-instructional staff also play a key role in education production (see figure 7-13). Schooling is a joint production process in which staff, from the superintendent to education support staff such as bus drivers and food service workers, must all work collectively to create positive and supportive learning conditions for students. For example, school counselors affect students' educational attainment at a level similar in scale to classroom teachers (Mulhern 2023). Principals shape the culture and climate for teaching and learning in their schools through their leadership and staffing decisions (Grissom, Egalite, and Lindsay 2021; Liebowitz and Porter 2019).

Figure 7-13. K-12 Education Workforce Composition, by Role



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Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: Data include the 2022 and 2023 calendar years. Sample includes only currently employed individuals and covers staff in both public and private K-12 education. Values sum to over 100 due to rounding.
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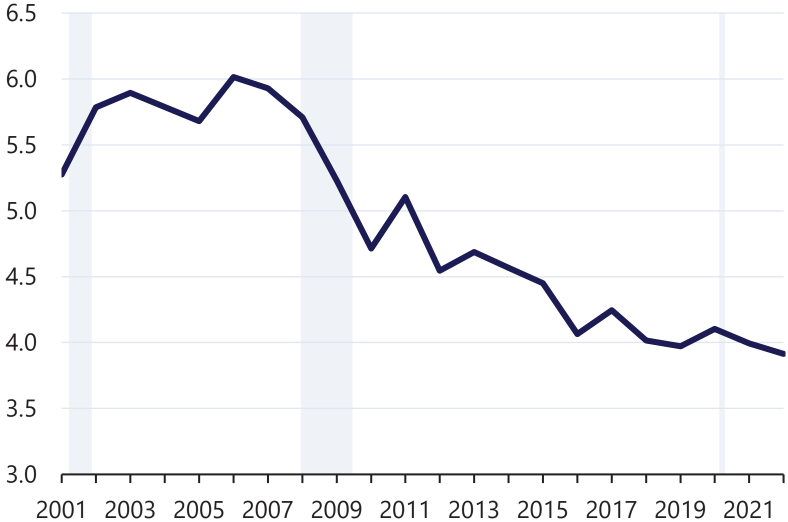
Staffing All Classrooms with Qualified Educators

Recruiting and retaining qualified educators has become an increasing challenge in the United States. Kraft and Lyon (2024) find the percentage of high school seniors and college freshmen interested in becoming K-12 teachers has declined by as much as 40 percent since 2010. The fall in interest has translated into substantial declines in new teacher supply and created significant challenges for staffing every classroom with a qualified teacher (Nguyen, Lam, and Bruno 2024). For example, the number of new state-issued licensures to teach in public schools declined from 280,000 in 2001 to 210,000 in 2022, a 24 percent drop.

Personnel shortages are a product of both labor market supply and demand. Although direct measures of public school teacher demand are not available in the aggregate, overall demand can be proxied broadly based on the total number of school-age children in the United States. Figure 7-14 shows that new flows into the teaching profession as measured by new licensures did not keep pace with aggregate demand during the last two decades. Between 2001 and 2022, the number of new licensures per school-age child

Figure 7-14. New Teacher Licensures

Licensures per 1,000 school-age children



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Sources: Title II of the Higher Education Act; American Community Survey accessed via IPUMS; National Center for Education Statistics; CEA calculations.

Note: Gray bars indicate recessions. School-age is defined as age 5 to 17. Data are not reported for school year 2008–2009, so that data point is imputed linearly. In 2020 and 2021, two and one states, respectively, did not report licensures, so data are also imputed linearly for those states. Academic year licensure data are adjusted using population estimates from the spring of the academic calendar. X-axis labels represent the spring year of the academic calendar.

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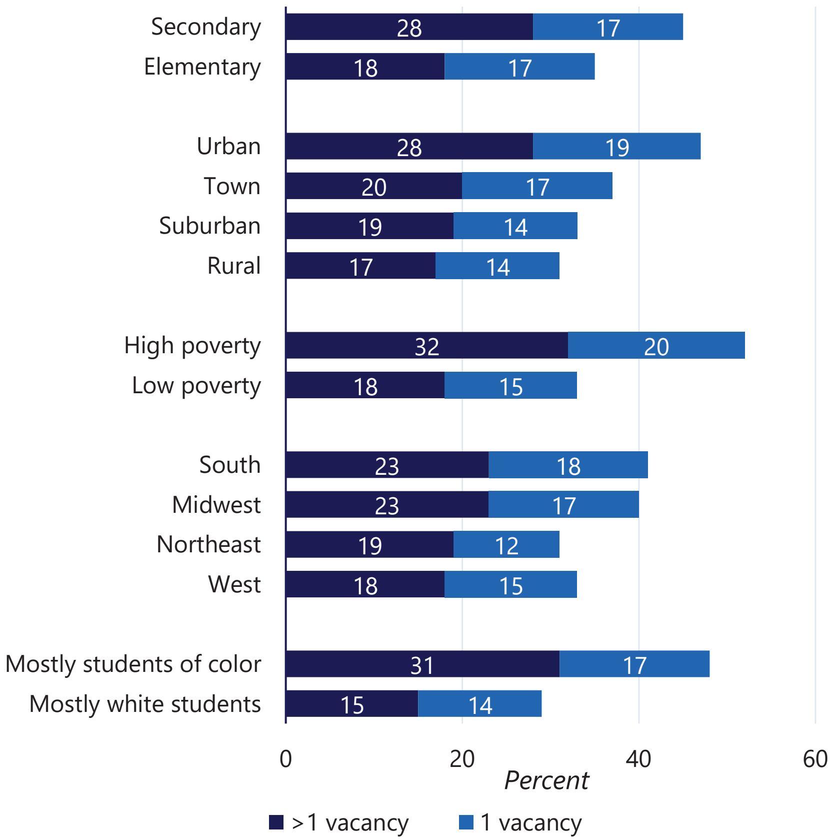
declined by 26 percent.[5] Encouragingly, other data suggest that new teacher supply may be beginning to recover with a 4.7 percent increase in the annual number of bachelor's and master's education degree completers between 2019 and 2022 (NCES 2024b). At the same time, a delayed post-pandemic increase in teacher turnover adds further upward pressure on teacher demand (Barnum 2023).

State-by-state estimates suggest that one in eight K-12 public school teaching positions are either vacant or staffed by underqualified teachers (e.g., those with emergency credentials or out-of-field teachers) (Tan, Arellano, and Patrick 2024). Two months into the 2023–2024 school year, 37 percent of schools had a least one unfilled teaching vacancy. Data from the nationally representative School Pulse Panel revealed that 79 percent

[5] The trend shown in figure 7-14 is nearly identical when scaling licensures by the number of public school students.

Figure 7-15. Percent of Schools with Teacher Vacancies After the Start of the School Year



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Sources: National Center for Education Statistics School Pulse Panel; CEA calculations.
Note: Vacancies include all teaching positions. Data come from the October 2023 survey. Schools are classified as having mostly students of color if the non-white share of the student population is over 75 percent. Schools with a non-white share of 25 percent or less are classified as having mostly white students.
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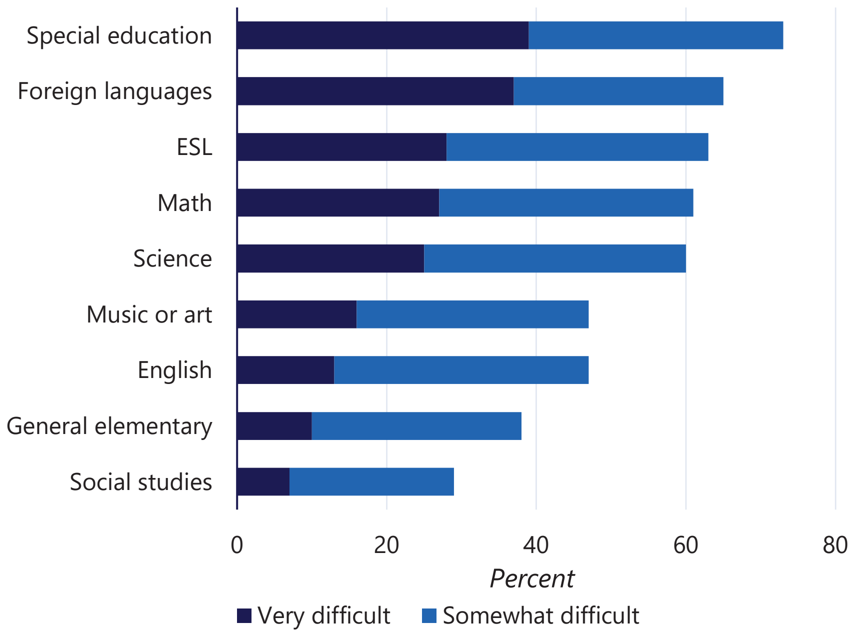
of public school leaders reported they experienced difficulty filling at least one teaching position in August 2023. This figure dropped to 74 percent in August 2024, suggesting some degree of easing in the tight teacher labor market (NCES 2024c). Although some staff turnover is expected and healthy, failing to fill vacancies by the start of the school year has direct negative effects on student academic achievement (Papay and Kraft 2016).

While the broad national trends in teacher supply are concerning, understanding the localized nature of the teacher labor market is central to addressing negative pressures on overall supply. In practice, the market functions as a collection of hundreds of localized markets for K-12 teachers in specific subjects, districts, and schools (Edwards et al. 2024; Goldhaber, Falken, and Theobald 2023). Teachers also have preferences about where they live and the working conditions of the schools in which they teach, causing many schools in disadvantaged neighborhoods to struggle to attract qualified teachers. As figure 7-15 illustrates, recent staffing difficulties are concentrated in urban schools, high-poverty schools, and school districts predominantly serving students of color.[6] Considerable variation also exists in the difficulty of staffing certain positions, with school leaders reporting more acute challenges filling vacancies in special education, English as a second language, foreign languages, and STEM subjects (see figure 7-16).

Figure 7-16. Percent of Schools With Difficulty Filling Teacher Vacancies, by Subject



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Sources: National Center for Education Statistics School Pulse Panel; CEA calculations.
Note: Data come from the August 2024 survey. Sample is restricted to schools with vacancies. ESL stands for English as a second language.
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[6] This measure does not account for differences in school size which, all else equal, is positively correlated with the probability a school has one or more vacancies and could be confounded with other school characteristics (Edwards et al. 2024).

While it is possible that post-pandemic enrollment declines in some public schools may help ease the pressure in these teacher labor markets (Goulas 2024), it will not address the underlying challenge of recruiting talented future educators or allocating teachers efficiently across subjects and geographic areas.

Causes of Staffing Challenges

While teachers enter the profession for myriad reasons, compensation must remain competitive with other occupations for similarly-skilled workers to attract and retain effective teachers. The CEA estimates that mean real weekly wages paid to college-educated workers who were not K-12 teachers rose by 15.4 percent between 2000 and 2023 as worker productivity also rose, in part due to technological innovation in other sectors of the economy (Pardue 2024). This large increase in average weekly earnings for other college-educated workers appears to be driven by rising wages in the upper part of the earnings distribution, as median weekly real wages rose only 1.5 percent during this period. Wages for elementary and secondary school teachers did not keep pace, with mean weekly real wages rising by only 4.3 percent and median weekly real wages falling by 4.8 percent.[7] An implication of this dynamic is that to avoid teacher shortages, wages (and therefore total education costs) must increase over time for reasons unrelated to productivity gains in the education sector (Baumol 1967).[8]

The CEA examines how teachers' relative wages have changed over time compared to workers of similar ages and degrees by estimating Mincer earnings models, which compare wages across occupations in each year between 2000 and 2023, after accounting for age and educational attainment. The analysis builds on studies of the average teacher wage penalty (Allegretto 2024) by using unconditional quantile regressions to estimate differences in relative wages at the bottom and top of the earnings distribution.[9] Results shown in figure 7-17 reveal that the average wage gap is driven by a negative wage premium (i.e., wage penalty) concentrated in the middle (50th percentile) and upper (75th percentile) portions of the salary distribution. The size of the wage penalty at the median of the distribution increased from 8.9 percent in 2000 to 20.6 percent in 2023. The teacher wage penalty in the upper range of the wage distribution is even larger and has increased from 35.4 percent to 52.2 percent over this same period.

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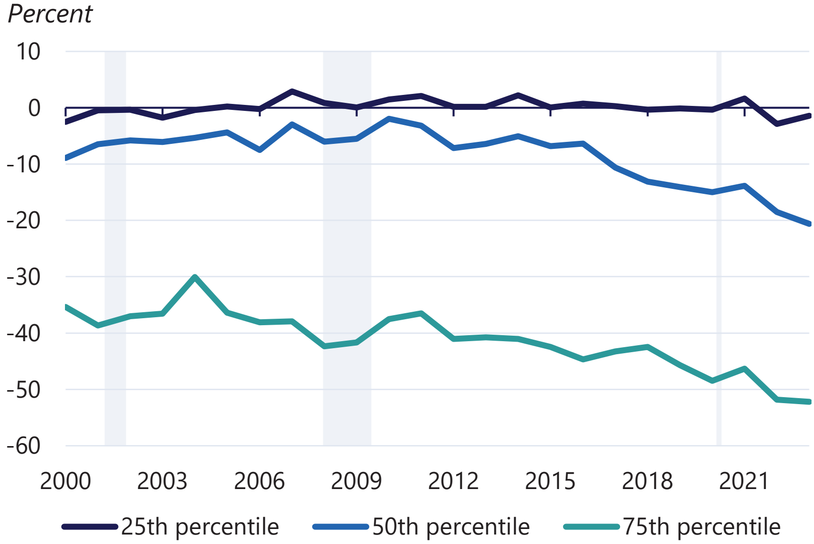
[7] Sample includes both public and private school teachers.

[8] Baumol (1967) points out that in certain sectors of the economy like teaching, productivity gains are less forthcoming than in others, such as manufacturing. The differences are inherent to the sector or "product." Doubling class sizes, for example, may appear to boost measured productivity, but not if learning suffers.

[9] The CEA's focus on weekly relative wages serves to alleviate concerns about salary comparisons based on hourly wages, given differences in hours worked across occupations.

Figure 7-17. Teacher Wage Disparity by Wage Percentiles



Council of Economic Advisers

Sources: Current Population Survey accessed via IPUMS; CEA calculations.
Note: Gray bars indicate recessions. Sample is restricted to full-time workers, age 18-64. Wage disparity is estimated by fitting unconditional quantile regressions of a Mincerian wage model, which controls for age (quadratic) and education levels (indicators). Wages are computed using the Economic Policy Institute definition of weekly pay and do not include benefits. Pre-K and kindergarten teachers are excluded, but both private and public elementary and secondary teachers are included.
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These overall patterns illustrate the differential effects of the compressed wage ranges for teachers, which are worsened by the fact that wage growth outside of teaching has been concentrated at the upper end of the earnings distribution during the last two decades (Gould and Kandra 2022). Although the analyses here focus exclusively on wages, similar analyses find that incorporating benefits only partially offsets these wage penalties, with large gaps in total compensation remaining (Allegretto 2024).

Both overall teacher supply and the characteristics of who decides to enter and remain in the profession are shaped by the lower average wages and constrained earnings distribution for teachers (Hoxby and Leigh 2004; Chingos and West 2012). Although some individuals forgo higher potential earnings to serve as teachers because they see it as a calling, relying on altruism and individual passion for pedagogy is an insufficient labor force strategy. Research documents how the teaching profession becomes less attractive to potential entrants during periods of stronger economic growth when there exist more outside options for higher paying jobs (Nagler, Piopiunik, and West 2020). For example, Brummet et al. (2024) find that wages among former teachers who exit the profession are far more variable than those who stay in the profession, with more than a quarter of those exiting earning more outside of teaching. Among CTE teachers, research shows that those with career experience in growth industries such as health services, information technology, and STEM fields are more likely to exit the profession and have higher average earnings outside of teaching (Kistler, Dougherty, and Woods 2024).

A second obstacle is the rising cost of undergraduate degrees relative to the stagnant real wages for K-12 teachers, which has dramatically lowered the value proposition of paying for college to become a teacher (NCES 2023). Currently, 36.6 percent of public school teachers have outstanding student loan debt (Learning Policy Institute 2024). The CEA finds that the average cost of a four-year degree relative to average real weekly salaries increased by 35.5 percent for K-12 teachers between 2000 and 2023, while increasing only 17.5 percent and 6.1 percent for college-educated workers in nursing and accounting.

Large-scale layoffs in the K-12 education sector during economic downturns can have prolonged negative consequences on the teacher labor market. Given the large share of district budgets dedicated to salaries and benefits and the sensitivity of state funding to fluctuations in income and sales tax revenue, districts have few options to reduce their budgets without conducting layoffs. The size of the K-12 education sector contracted by more than 300,000 positions in the wake of the Great Recession, with an estimated 120,000 teachers losing their jobs (Evans, Schwab, and Wagner 2019; Griffith 2020). These job losses are particularly harmful for recruiting new entrants into the profession given that many districts conduct layoffs based on inverse seniority, meaning the newest hires are first to lose their positions, regardless of performance (Kraft and Bleiberg 2022). The COVID-19 recession caused large-scale layoffs among primarily school-based operational staff who were not needed during the time period when schools transitioned to remote learning (Gould 2020).

Finally, non-monetary benefits enjoyed by teachers, such as professional autonomy, family-friendly work schedules, and job security, are not as compelling as they once were. Although teachers enjoy holiday vacations and summers off, they report working nine hours more per week on average (53 vs. 44) and are twice as likely to say they experience frequent job-related stress and burnout than other college-educated full-time workers (Doan, Steiner, and Pandey 2024). National surveys suggest teacher autonomy and authority over instructional decisions declined in the last decade as test scores dropped and reformers looked to more directly manage instructional content and practices (Kraft and Lyon 2024). Teachers' work also does not allow them the flexibility to work remotely or on a hybrid schedule. The in-school work requirement amounts to a tax on teachers' wages, given that workers report valuing flexible work arrangements—now enjoyed by over 36 percent of college-educated workers (see chapter 2 of this volume)—at 5 percent to 8 percent of their pay (Aksoy et al. 2022; Davis 2024; Mas and Pallais 2017). New laws in some states allowing schools to sanction or dismiss teachers who teach concepts deemed divisive, such as topics related to racism and sexual orientation, also likely undercut teachers' sense of professional autonomy and job security (Woo et al. 2023).

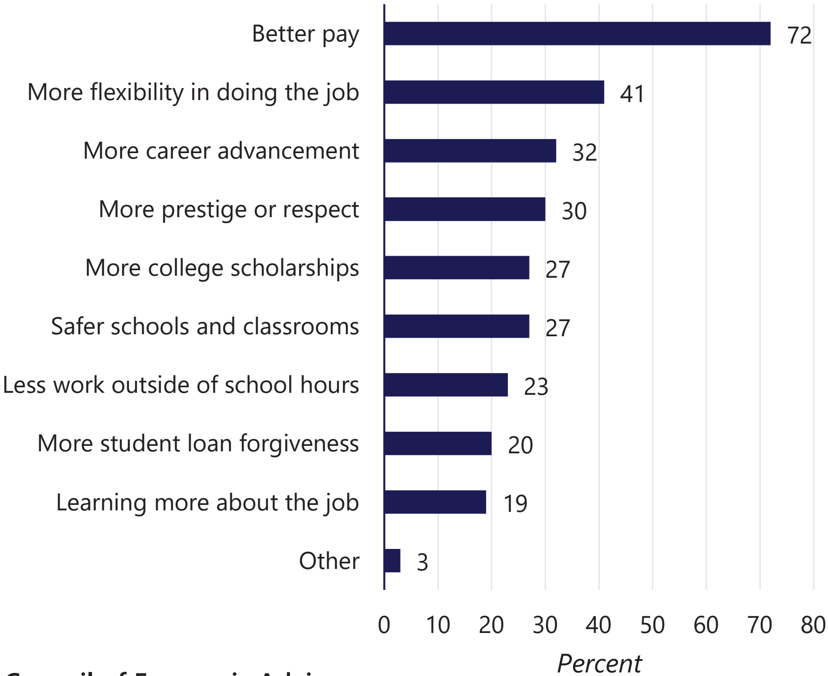
Policies to Attract and Retain Qualified Educators

The need for policies aimed at ensuring the United States has well-prepared and supported educators in all classrooms is growing. Efforts to improve labor quality and productivity in the K-12 education sector must attend to both designing the profession to attract the next generation of teachers and maximizing the potential of the current workforce. Data collected during national administrations of the ACT test in 2017–2018 provide a window into how policymakers might make the teaching profession more attractive to young people as they develop career interests (Croft, Guffy, and Vitale 2018). Among the reasons cited by high school test takers who said they were "potentially" interested in teaching, 72 percent indicated better pay would increase their interest (see figure 7-18). This suggests that market wages are often not high enough to attract potentially interested students to the profession.

The teaching profession is at a double disadvantage because of both low wages and perceptions among college students that teachers' salaries are lower than they actually are (Christian, Ronfeldt, and Zafar 2024). At least 13 states have taken steps to increase teacher pay substantially in recent years by raising minimum starting salaries and/or elevating wages across the profession (Arkansas, Delaware, Hawaii, Iowa, Maryland, Missouri, Nevada, New Mexico, Ohio, Oklahoma, South Carolina, South Dakota, and Utah), and evidence suggests these efforts can help attract people to the profession (Hendricks 2015; Hough and Loeb 2013). In figure 7-19, a CEA analysis shows that across an 18-year period between 2001 and 2019 (the last year before pandemic-associated disruptions), states where public school teachers' relative wages increased also saw meaningful increases in the number of new state licensures to teach in K-12 public schools, on average.[10] Model-based estimates with state and year fixed effects, although imprecise, suggest a $100 increase in weekly wages (roughly equivalent to

[10] The CEA estimates relative wages by comparing the weekly median earnings of public elementary and secondary school teachers to other non-teacher college-educated workers.

Figure 7-18. Factors Potentially Increasing High Schoolers' Interest in K-12 Teaching



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Source: ACT Research and Policy.
Note: Sample is restricted to students who indicated potential interest in teaching. Figure displays top three reasons that would increase respondents' interest in becoming a K-12 teacher. Data are from 2018.
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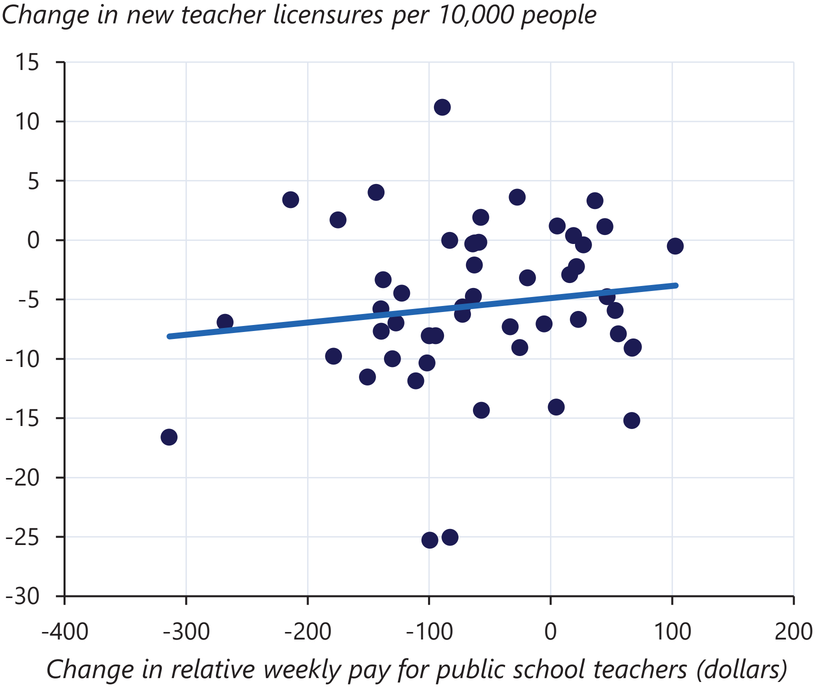
a $5,200 annual salary raise) increases the number of new licensures by 2.0 percent (p=0.16).[11]

The Federal Government has an important role to play in catalyzing efforts to raise teacher pay to be more competitive with market wages on average, as well as to create opportunities for more pronounced wage growth in the profession. Edwards et al. (2024) find that the rate at which wages increase in the first 10 years of the career strongly predicts teacher retention.

There also remain important opportunities to better leverage compensation as a tool to address localized shortages and retain high performers with opportunities for career advancement. The Federal Government could encourage innovative compensation approaches, including differentiated pay programs for educators who teach in hard-to-staff subjects and schools. Federal funds could also be used to promote efforts to develop career ladders, where teachers would have opportunities to earn promotions based

[11] The model applies cluster robust standard errors at the state level.

Figure 7-19. Changes in Licensures and Public School Teacher Pay, by State



Council of Economic Advisers

Sources: Current Population Survey accessed via IPUMS; Title II of the Higher Education Act; American Community Survey accessed via IPUMS; CEA calculations.

Note: Relative pay is calculated as the difference between public school teacher weekly pay and weekly pay for all non-teacher, college-educated workers using the Economic Policy Institute definition of weekly wages. Total new teacher licensures are adjusted by the working age population for the end year of the academic year period. The change in both licensures and relative wages are calculated as the difference between the 2018 and 2019 average and the 2001 and 2002 average.

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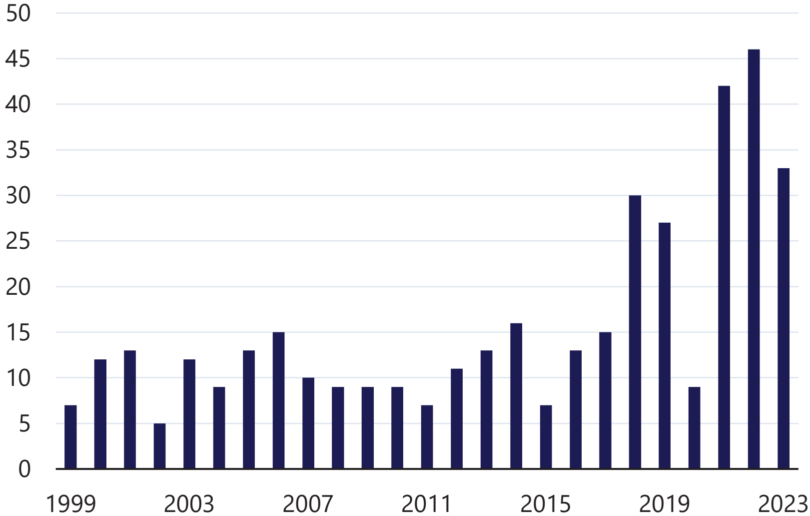
on their performance. Such a system would better leverage the expertise of excellent teachers by having them spend part of their day serving as instructional coaches, curriculum developers, or new teacher mentors. Teacher career ladders offer a way to address the third most cited factor by ACT test takers that would increase their interest in teaching: "More opportunities for career advancement" (Croft, Guffy, and Vitale 2018). Such an approach stands in contrast to more common supplemental stipends and merit-pay programs based on annual performance measures, which fail to provide a clear signal to potential educators about their earning potential (Chiang et al. 2017).

Meaningful differences in staffing challenges across schools and regions also point to the importance of removing barriers to professional mobility and investing in place-based teacher training. One such barrier is the lack of transferability of state teaching licensures in many contexts (Evans, Francies, and McDole 2020). The Federal Government could both help subsidize membership costs for states to join the Interstate Teacher Mobility Compact and use its convening power to encourage state leaders to streamline the licensure reciprocity process and reduce barriers to licensure portability and employment (Teacher Compact n.d.). Reducing barriers for transferring teaching licensures across states via expanded reciprocity could help increase the mobility of teacher labor supply (Goldhaber et al. 2015).

Research suggests that Grow Your Own teacher preparation programs supporting paraprofessionals and other community members to earn a bachelor's degree and teacher's license can increase the local supply of educators (Hashim and Laski 2024; Blazar et al. 2024). Saunders et al. (2024) find that teacher residency programs that provide an extended period of supervised professional practice increase teacher retention. The Administration has invested in these promising pathways and other programs to support growth in new teacher labor supply through expanded funding for the Teacher Quality Partnership Grant, IDEA Part D, and the Hawkins Program (White House 2024b). Under the Administration, the registered apprenticeship programs for K-12 teachers, which share many traits with Grow Your Own and residency programs, have been extended to 47 states and territories. Allowing candidates to earn pay and benefits while working toward their degree and/or teacher's license can significantly increase pathways into the education sector, reduce or eliminate the cost of becoming a teacher, and provide future educators with valuable classroom experience. Expanding student-teaching placements in hard-to-staff schools can also increase new teachers' openness to working in these settings and provide them with valuable training to succeed (Goldhaber et al. 2022).

Reducing the private cost of teacher preparation through expanded federal grants and loan forgiveness programs provide a direct lever for policymakers to shape new teacher supply and quality. As shown in figure 7-18, 27 percent of high school students potentially interested in teaching indicated that college scholarships were a top factor that could increase their willingness to become teachers; 20 percent cited loan forgiveness. The Public Service Loan Forgiveness (PSLF) program allows for outstanding federal student loan balances to be forgiven for public service workers who have completed 10 years of full-time service and made qualifying monthly payments on their loans for 120 months (Federal Student Aid 2024). As a result of significant procedural fixes the Administration made to the program, the number of public servants with debt approved for discharge increased from less than 7,000 prior to the Administration to more than 1 million in October

Figure 7-20. Instances of Gunfire on K-12 School Campuses During School Hours



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Sources: *The Washington Post*; CEA calculations.

Note: Data do not include instances of gunfire that occur after school hours, unintentional firing that does not cause injury, or shootings on college campuses.

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2024 (CEA 2024c). Research also shows that students are more likely to enter public service when financial aid is packaged as a conditional grant rather than a forgivable loan (Field 2009). Continuing efforts to increase funding for programs like the Teacher Education Assistance for College and Higher Education (TEACH) Grant Program and the Noyce Teacher Scholarship Program, which provide tuition scholarships in exchange for teaching in high-need fields and schools, would be a strategic investment in the next generation of educators (Turner 2021; NSF n.d.).

The ACT survey results also point to the critical importance of reducing gun violence in schools and their surrounding communities. Frequent school shootings are a uniquely American phenomenon (World Population Review 2024). As shown in figure 7-20, conservative estimates suggest there have been at least 415 school shootings, 30 of which were mass shootings, since the event at Columbine High School in 1999 (Cox et al. 2024). In addition to having immediate and long-term negative effects on exposed students (Beland and Kim 2016; Rossin-Slater et al. 2020; Deb and Gangaram 2023; Cabral et al. 2024; Levine and McKnight 2024), the traumatic events lead to increased turnover among teachers and school staff (Cabral et al. 2024). Shootings have increased markedly since the 2017–2018 school year, when 27 percent of students potentially interested in teaching indicated that safer schools and classrooms would increase their interest in the profession (figure 7-18). The Administration has taken a range of actions to reduce gun violence overall and in schools, such as creating the Stronger Connections grant program which provides $1 billion in funding to support safer schools and more inclusive learning environments, establishing the Office of Gun Violence Prevention and the Emerging Firearms Threats Task Force, issuing executive orders to increase safe gun storage, and enhancing background checks for firearm buyers under the age of 21 (Department of Education 2024c; White House 2024c).

Policies to Maximize Educators' Potential

Efforts to attract skilled workers to the teaching profession are most effective when they are paired with policies and programs designed to maximize teachers' potential. Research shows that teacher-school match quality is an important component of educators' overall effectiveness and that teacher effectiveness differs across settings and student populations (Jackson 2013; Delgado 2023). Districts can support principals to successfully navigate the teacher hiring process with early and information-rich practices and by providing them with autonomy over who they hire (Liu and Johnson 2006; James, Kraft, and Papay 2023). This is made possible when districts and school leaders have the flexibility to publicly post vacant positions at the beginning of the hiring cycle and hire the candidate best suited for the position regardless of seniority.

Schools can support teachers' professional growth on the job through professional development, such as high-quality induction and mentoring programs (Ronfeldt and McQueen 2017), teacher coaching (Kraft, Blazar, and Hogan 2018), and peer observation and feedback (Papay et al. 2020; Burgess, Rawal, and Taylor 2021). Finally, school leaders can work to develop cultures and climates that promote teachers' professional growth and retention (Bryk et al. 2010; Kraft and Papay 2014), as well as students' academic success (Kraft, Marinell, and Yee 2016; Porter et al. 2023). The U.S. Federal Government can support these efforts through expanded funding of Title II, Part A and competitive grant programs.

Capital Inputs

A growing body of research documents how the condition of school infrastructure affects teacher and student outcomes (Biasi, Lafortune, and Schönholzer 2024; Jackson and Mackevicius 2024). Approximately one half of school districts participating in a recent U.S. Government Accountability Office (GAO) survey reported that they needed to replace or repair their capital infrastructure, such as heating, ventilation, air conditioning, or plumbing

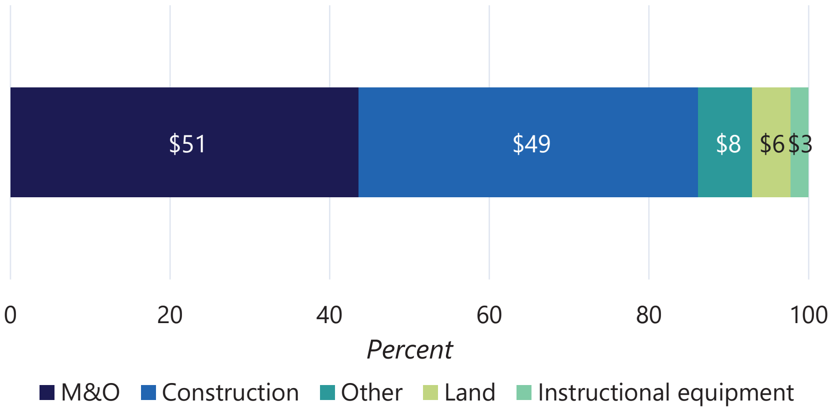
(GAO 2020). Investments to modernize school buildings have considerable benefits (Neilson and Zimmerman 2014) and will become increasingly important as the adverse effects of climate change place increasing pressure on K-12 infrastructure (Will and Lieberman 2023).

Lead abatement and air conditioning improvements are two concrete and urgent interventions with proven benefits for federal policymakers to target. In the 12 states with available testing data, 44 percent of schools had one or more water samples with a significant concentration of lead (Cradock et al. 2019). Children can also be exposed to lead during recess via the surface of playground equipment (Almansour et al. 2019). Any level of lead is dangerous for children and can lead to long-term cognitive impairment and increased levels of aggression and agitation (American Academy of Pediatrics 2024). Lead-hazard control grants issued by the U.S. Department of Housing and Urban Development have been shown to reduce lead poisoning, and each 1 percentage-point drop in lead poisoning yields test score gains of 0.04 standard deviations in math and 0.08 standard deviations in reading, roughly equivalent to a 1.5 percentile increase in math and a 3 percentile increase in reading (Sorensen et al. 2019). The Administration took action to reduce these risks by allocating $3 billion in funding to identify and replace lead pipes in May 2024 (EPA 2024a) and issuing a final rule in October 2024 requiring lead pipes that carry drinking water to be replaced within 10 years (EPA 2024b).

Approximately one third of schools reported needing to replace or repair their heating, ventilation, and air conditioning (HVAC) system in the GAO survey (GAO 2020). As the number of school days with temperatures above 80 degrees increases due to climate change, areas that were cool year-round prior to 1970 (when nearly 40 percent of school buildings were built) now need air conditioning to create a tolerable learning environment (Phillips and Penney 2024). Research shows that a 1-degree hotter school year causes a 1 percent decrease in learning that year without air conditioning (Park et al. 2020), with increasingly common extreme heat having even larger effects (EPA 2024c). Air conditioning systems can also improve ventilation, lowering the risk of transmission of respiratory illnesses, such as COVID-19, and filtering pollutants, such as dust, smoke, and mold (CDC 2024; Bottrell 2019; Howard et al. 2021). Poorly maintained air conditioning systems can become home to mold, increasing incidences of asthma (Jenkins Environmental n.d.). Biasi, Lafortune, and Schönholzer (2024) find that investments in air conditioning yield test score increases of 0.2 standard deviations, or 7.4 percentiles. Encouragingly, nearly one half of school districts surveyed by the Center for Green Schools said they planned to use ESSER III funds (i.e., ESSER funds allocated by the ARP) to upgrade their HVAC systems (Sauter and Heming 2022).

Figure 7-21. School Facilities Improvement Spending, by Category

Billions of dollars



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Sources: National Center for Education Statistics; Common Core of Data (CCD); CEA calculations.

Note: School facilities improvement spending includes all categories of capital spending as designated by the CCD, as well as maintenance and operations (M&O), which is categorized as support spending. Data are from the 2021–2022 academic year.

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Addressing Capital Funding Inequities

On average, districts allocated 86 percent of their facilities improvement budget on construction costs and maintenance and operations in 2022 (see figure 7-21). Over half of all school districts fund capital infrastructure projects primarily through local taxes, especially property taxes. For high-poverty school districts, which have limited property tax revenue from which to draw, state support is crucial for financing capital projects (GAO 2020). However, 14 states do not provide capital funding to school districts, and in those that do, state funding rarely makes up the difference: High-poverty districts (defined as those with greater than 65 percent economically disadvantaged students) spend 37 percent less per school on capital investments than low-poverty districts (Filardo 2021). As a result, students from low-income backgrounds are less likely to attend schools in buildings that are in good shape and less likely to attend schools in districts with a high amount of capital outlay than students from relatively more affluent backgrounds (Blagg, Terrones, and Nelson 2023). Accordingly, hot school days disproportionately affect students of color, who are more likely to attend high-poverty schools that lack the proper air conditioning and ventilation systems (Park et al. 2020).

Hallmark investments by the Administration, such as ARP funds and the Bipartisan Infrastructure Law, are examples of how the U.S. Federal Government can strengthen schooling infrastructure to the benefit of students. Local education agency administrators reported that they planned to use $26 billion of ESSER III funds to improve school facilities and operations in 2024 (DiMarco and Jordan 2022). The Renew America's Schools Program, launched by the U.S. Department of Energy in 2022, with a subsequent round of funding announced in 2024, has made $500 million available to school districts to improve energy infrastructure (DOE 2024), enabling schools to sustainably invest in air conditioning. Additionally, the Administration announced in May 2024 that it will fund 3,400 new clean school buses, a $900 million investment, via the Clean School Bus Rebate Program (EPA 2024d).

Technology Inputs

Recent technological advancements, such as computer-adaptive learning programs (CAL) and generative artificial intelligence, present both opportunities and challenges for the U.S. K-12 education system. Given the historical resilience of the traditional classroom model during past periods of major technological innovations (Reich 2020), the CEA is skeptical of prognostications that the new technologies will imminently replace teachers or brick-and-mortar schools. Teaching involves multiple complex tasks, such as lesson planning, providing direct instruction, identifying individual student challenges, differentiating instruction to students' individual needs, and managing classroom behavior (Holmstrom and Milgrom 1991). Human relationships and social interactions play a central role in the learning process. However, CAL and AI-powered tools hold considerable potential for augmenting teacher productivity and student learning.

Jackson and Makarin (2018) illustrate how the potential benefits of education technology depend on (i) the effectiveness of the new tool, (ii) the time savings it provides teachers, and (iii) the ease of adoption and use. The framework makes clear that education technologies are most likely to be effective when they perform sufficiently well to be a productive replacement for teachers' task-specific work,[12] allow teachers to focus on other productive tasks for which they have a comparative advantage, and are easy

[12] Research outside the education sector affirms that AI boosts productivity by roughly 20 percent to 25 percent for particular tasks in a range of white-collar jobs, including software development (Cui et al. 2024), professional writing for office jobs (Noy and Zhang 2023), customer service (Brynjolfsson, Li, and Raymond 2023), and tasks in management consulting (Dell'Acqua et al. 2023). In all cases, the gains are heterogeneous and most pronounced for workers who otherwise would have been less productive than their peers.

to use. It also implies that new technologies will not be a panacea, as their value depends on the skillset of each individual (likely being most helpful for the otherwise least effective teachers) and the degree to which students and teachers are able to use it with fidelity.

Teachers report using AI most frequently for individual tasks, such as customizing instruction through AI-enhanced CAL programs and generating instructional materials (Diliberti et al. 2024). Taylor (2018) finds that the integration of computer-aided instructional software designed to provide individualized instruction improves student achievement in less-effective teachers' classrooms but may reduce student performance in higher-performing teachers' classrooms. Similarly, Jackson and Makarin (2018) find that providing teachers with high-quality online off-the-shelf lesson plans improves outcomes overall, with the largest gains among the weakest teachers. Research on CAL programs finds substantial impacts in some settings (Escueta et al. 2020), but also that many teachers and students do not use the tools for the recommended amount of time (Holt 2024; Oreopoulos et al. 2024). Without implementation support and equal access to the internet and digital devices, new technology may remain on the periphery of teaching and learning and even exacerbate existing inequities in K-12 schools.

AI-powered tutoring programs and tutor assistance programs may also become productivity-enhancing complements to teachers and tutors. One study shows that CAL programs can be effectively integrated into high-dosage tutoring models, allowing programs to double student-tutor ratios while largely sustaining their effectiveness (Bhatt et al. 2024). Large language models can be trained on transcripts from expert human tutors to enhance their ability to diagnose student errors and identify productive remediation techniques, such as guided questioning (Wang et al. 2024a). A randomized control trial of Tutor CoPilot, which provides real-time guidance to tutors, found that the technology improved student performance on mini-assessments given at the end of each session and had the largest benefits for lower-rated and less-experienced tutors (Wang et al. 2024b). Still, open questions remain about the benefits of AI-powered tutoring for students' long-run skill development. One study found that an AI tutor using Open-AI's ChatGPT-4 improved student performance in high school math, but that students in the treatment group performed worse relative to control students when they no longer had access to the AI tutor (Bastani et al. 2024).

Arguably, the potential benefits of AI in education will be in providing tools available to teachers and students, each for specific tasks, to complement people-centric teaching and learning, rather than as an all-in-one technology. Training for teachers on how to deploy technology from a wide-ranging AI toolkit will be essential for success (aiEDU 2024). Federal policy can help facilitate the creation of such a toolkit, and the Institute of Education Sciences can fund research on which tools are most effective in specific contexts and for specific purposes (Institute of Education Sciences n.d.).

The Federal Government's Role in Agenda Setting

While the U.S. Federal Government accounts for a small share of all public school funding, it has considerable influence on public education through laws, regulations, and agenda setting. For example, the No Child Left Behind Act (NCLB)—the 2001 reauthorization of ESEA—required annual testing in all states to identify schools that failed to make "adequate yearly progress" overall and among specific student subgroups (National Center for Education Evaluation 2008). The law linked test-based performance measures to sanctions and rewards, led to rapid advancements in data collection infrastructure, heightened attention on student achievement gaps, and set new standards for being considered a highly-qualified teacher. Research finds that NCLB improved academic achievement for students in general and for students from low-income backgrounds in particular (Dee and Jacob 2011; Reback, Rockoff, and Schwartz 2014). The Every Student Succeeds Act—the 2015 ESEA reauthorization—maintained test-based accountability but granted increased autonomy to states regarding school improvement and accountability systems (Department of Education 2024d). It also included requirements to provide more information to parents and expanded the set of metrics that are used in accountability to include graduation rates as well as the option to use suspensions, absenteeism, teacher qualifications, resource equity, and other metrics. School districts around the country now measure student wellbeing and school climate, disseminate this information to parents, and use it to inform policy decisions.

The Federal Government also plays a key leadership role in shaping policies through targeted grants and investments. The Administration's investments in K-12 education, particularly through ARP funding, sparked a rapid recovery of K-12 public education jobs to pre-pandemic levels, supported critical academic acceleration efforts, increased Title I aid, and made pursuing a teaching career more affordable through reforms to the TEACH grant and PSLF (Department of Education 2021b). Enhanced federal funding for the Perkins Act has helped to accelerate the much-needed expansion of CTE in public high schools. CTE prepares students with the skills necessary for high-demand sectors of the economy. Additionally, rigorous evaluations show that CTE academies and programs have positive effects on students' academic achievement and attainment and substantially increase graduates' earnings in the labor market (Page 2012; Dougherty 2018; Hemelt, Lenard, and Paeplow 2019; Bonilla 2020; Brunner, Dougherty, and Ross 2023).

The Administration successfully launched the National Partnership for Student Success, a nationwide effort led by the U.S. Department of

Education, AmeriCorps, and Johns Hopkins University that successfully recruited, trained, supported, and engaged an additional 320,000 people to serve as tutors, mentors, and student-success coaches in just two years (Balfanz and Byrnes 2024). The BSCA championed by the Administration made historic investments in school-based mental health services and school safety. The Administration has also targeted competitive federal grant programs to activities intended to increase student attendance and engagement and improve student achievement, held convenings of policymakers, and provided guidance on best practices (such as home visits, tracking real-time attendance data, and promoting full-service community schools) (Department of Education 2024e; White House 2024d). Thus, federal leadership can influence policy and make meaningful and impactful change.

Conclusion

The K-12 education system has long been and continues to be the primary public investment the United States makes in the human capital of its people. Elementary and secondary education prepares students with the foundational knowledge and skills they need to thrive in higher education and the labor market, as well as to realize their intellectual and academic potential. The work of educators and schools is fundamental to the U.S. economy and provides large returns on the investments made by both individuals and the government at every level.

Ensuring that the United States benefits from a world-class K-12 education system and keeps pace with the rapidly evolving landscape of the future of work remains imperative. Meeting the challenge will require schools to be fully staffed with quality educators; provide healthy, safe, inclusive, and modern learning environments; and leverage technological advancements in productive ways. Perhaps the greatest opportunity to improve the productivity of K-12 education is to attract and retain the best and brightest to serve as educators through subsidies for higher education, competitive market wages, differentiated career pathways, and supportive working conditions. Modernizing the capital infrastructure of schools, especially those in disrepair or with outdated systems, will enhance both teaching and learning. New approaches to integrating CAL and generative AI into the education system to complement teachers' work holds promise but will require thoughtful development and experimentation to ensure these technologies serve as productivity-enhancing tools that build core knowledge and skills while keeping human interactions at the center of education.

The Federal Government will have a central role in supporting the continued strength of—and innovation in—K-12 education, as well as ensuring that all students enjoy equitable access to the full benefits of high-quality schooling. This will include ongoing direct financial investments in K-12 schools to ensure more equitable funding and insure against fiscal shortfalls during economic downturns. It will also involve catalyzing research and development and experimentation in the sector through grants to practitioners and researchers. Efforts to improve the analytic capacity of districts and state education departments, as well as to collect detailed and real-time data on teacher labor markets and student outcomes, will help inform ongoing efforts for targeted improvements. These investments will pay dividends for current and future generations, with broad-based benefits to economic growth for the United States as a whole.

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Chapter 1

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Chapter 2

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Appendix A

Report to the President on the Activities of the Council of Economic Advisers during 2024

Letter of Transmittal

Council of Economic Advisers
Thursday, January 9, 2025

Mr. President:

The Council of Economic Advisers herewith submits its 2025 *Annual Report* in accordance with the Employment Act of 1946, as amended by the Full Employment and Balanced Growth Act of 1978.

Sincerely yours,

Jared Bernstein
Member

Heather Boushey
Member

C. Kirabo Jackson
Member

Council Members and Their Dates of Service

Name	Position	Oath of office date	Separation date
Edwin G. Nourse	Chairman	August 9, 1946	November 1, 1949
Leon H. Keyserling	Vice Chairman	August 9, 1946	
	Acting Chairman	November 2, 1949	
	Chairman	May 10, 1950	January 20, 1953
John D. Clark	Member	August 9, 1946	
	Vice Chairman	May 10, 1950	February 11, 1953
Roy Blough	Member	June 29, 1950	August 20, 1952
Robert C. Turner	Member	September 8, 1952	January 20, 1953
Arthur F. Burns	Chairman	March 19, 1953	December 1, 1956
Neil H. Jacoby	Member	September 15, 1953	February 9, 1955
Walter W. Stewart	Member	December 2, 1953	April 29, 1955
Raymond J. Saulnier	Member	April 4, 1955	
	Chairman	December 3, 1956	January 20, 1961
Joseph S. Davis	Member	May 2, 1955	October 31, 1958
Paul W. McCracken	Member	December 3, 1956	January 31, 1959
Karl Brandt	Member	November 1, 1958	January 20, 1961
Henry C. Wallich	Member	May 7, 1959	January 20, 1961
Walter W. Heller	Chairman	January 29, 1961	November 15, 1964
James Tobin	Member	January 29, 1961	July 31, 1962
Kermit Gordon	Member	January 29, 1961	December 27, 1962
Gardner Ackley	Member	August 3, 1962	
	Chairman	November 16, 1964	February 15, 1968
John P. Lewis	Member	May 17, 1963	August 31, 1964
Otto Eckstein	Member	September 2, 1964	February 1, 1966
Arthur M. Okun	Member	November 16, 1964	
	Chairman	February 15, 1968	January 20, 1969
James S. Duesenberry	Member	February 2, 1966	June 30, 1968
Merton J. Peck	Member	February 15, 1968	January 20, 1969
Warren L. Smith	Member	July 1, 1968	January 20, 1969
Paul W. McCracken	Chairman	February 4, 1969	December 31, 1971
Hendrik S. Houthakker	Member	February 4, 1969	July 15, 1971
Herbert Stein	Member	February 4, 1969	
	Chairman	January 1, 1972	August 31, 1974
Ezra Solomon	Member	September 9, 1971	March 26, 1973
Marina v.N. Whitman	Member	March 13, 1972	August 15, 1973
Gary L. Seevers	Member	July 23, 1973	April 15, 1975
William J. Fellner	Member	October 31, 1973	February 25, 1975
Alan Greenspan	Chairman	September 4, 1974	January 20, 1977
Paul W. MacAvoy	Member	June 13, 1975	November 15, 1976
Burton G. Malkiel	Member	July 22, 1975	January 20, 1977
Charles L. Schultze	Chairman	January 22, 1977	January 20, 1981
William D. Nordhaus	Member	March 18, 1977	February 4, 1979
Lyle E. Gramley	Member	March 18, 1977	May 27, 1980
George C. Eads	Member	June 6, 1979	January 20, 1981
Stephen M. Goldfeld	Member	August 20, 1980	January 20, 1981
Murray L. Weidenbaum	Chairman	February 27, 1981	August 25, 1982
William A. Niskanen	Member	June 12, 1981	March 30, 1985
Jerry L. Jordan	Member	July 14, 1981	July 31, 1982

Council Members and Their Dates of Service

Name	Position	Oath of office date	Separation date
Martin Feldstein	Chairman	October 14, 1982	July 10, 1984
William Poole	Member	December 10, 1982	January 20, 1985
Beryl W. Sprinkel	Chairman	April 18, 1985	January 20, 1989
Thomas Gale Moore	Member	July 1, 1985	May 1, 1989
Michael L. Mussa	Member	August 18, 1986	September 19, 1988
Michael J. Boskin	Chairman	February 2, 1989	January 12, 1993
John B. Taylor	Member	June 9, 1989	August 2, 1991
Richard L. Schmalensee	Member	October 3, 1989	June 21, 1991
David F. Bradford	Member	November 13, 1991	January 20, 1993
Paul Wonnacott	Member	November 13, 1991	January 20, 1993
Laura D'Andrea Tyson	Chair	February 5, 1993	April 22, 1995
Alan S. Blinder	Member	July 27, 1993	June 26, 1994
Joseph E. Stiglitz	Member	July 27, 1993	
	Chairman	June 28, 1995	February 10, 1997
Martin N. Baily	Member	June 30, 1995	August 30, 1996
Alicia H. Munnell	Member	January 29, 1996	August 1, 1997
Janet L. Yellen	Chair	February 18, 1997	August 3, 1999
Jeffrey A. Frankel	Member	April 23, 1997	March 2, 1999
Rebecca M. Blank	Member	October 22, 1998	July 9, 1999
Martin N. Baily	Chairman	August 12, 1999	January 19, 2001
Robert Z. Lawrence	Member	August 12, 1999	January 12, 2001
Kathryn L. Shaw	Member	May 31, 2000	January 19, 2001
R. Glenn Hubbard	Chairman	May 11, 2001	February 28, 2003
Mark B. McClellan	Member	July 25, 2001	November 13, 2002
Randall S. Kroszner	Member	November 30, 2001	July 1, 2003
N. Gregory Mankiw	Chairman	May 29, 2003	February 18, 2005
Kristin J. Forbes	Member	November 21, 2003	June 3, 2005
Harvey S. Rosen	Member	November 21, 2003	
	Chairman	February 23, 2005	June 10, 2005
Ben S. Bernanke	Chairman	June 21, 2005	January 31, 2006
Katherine Baicker	Member	November 18, 2005	July 11, 2007
Matthew J. Slaughter	Member	November 18, 2005	March 1, 2007
Edward P. Lazear	Chairman	February 27, 2006	January 20, 2009
Donald B. Marron	Member	July 17, 2008	January 20, 2009
Christina D. Romer	Chair	January 29, 2009	September 3, 2010
Austan D. Goolsbee	Member	March 11, 2009	
	Chairman	September 10, 2010	August 5, 2011
Cecilia Elena Rouse	Member	March 11, 2009	February 28, 2011
Katharine G. Abraham	Member	April 19, 2011	April 19, 2013
Carl Shapiro	Member	April 19, 2011	May 4, 2012
Alan B. Krueger	Chairman	November 7, 2011	August 2, 2013
James H. Stock	Member	February 7, 2013	May 19, 2014
Jason Furman	Chairman	August 4, 2013	January 20, 2017
Betsey Stevenson	Member	August 6, 2013	August 7, 2015
Maurice Obstfeld	Member	July 21, 2014	August 28, 2015
Sandra E. Black	Member	August 10, 2015	January 20, 2017
Jay C. Shambaugh	Member	August 31, 2015	January 20, 2017

Council Members and Their Dates of Service

Name	Position	Oath of office date	Separation date
Kevin A. Hassett	Chairman	September 13, 2017	June 30, 2019
Richard V. Burkhauser	Member	September 28, 2017	May 18, 2019
Tomas J. Philipson	Member	August 31, 2017	
	Acting Chairman	July 1, 2019	
	Vice Chairman	July 24, 2019	June 22, 2020
Tyler B. Goodspeed	Member	May 22, 2019	
	Acting Chairman	June 23, 2020	
	Vice Chairman	June 23, 2020	January 6, 2021
Cecilia Elena Rouse	Chair	March 2, 2021	April 1, 2023
Jared Bernstein	Member	January 20, 2021	
	Chair	June 13, 2023	January 20, 2025
Heather Boushey	Member	January 20, 2021	January 20, 2025
C. Kirabo Jackson	Member	August 28, 2023	October 11, 2024

★★★★★★

Report to the President on the Activities of the Council of Economic Advisers during 2024

Established by the Employment Act of 1946, the Council of Economic Advisers is charged with advising the President on economic policy based on data, research, and evidence. The Council is composed of three members: a Chair, who is appointed by the President with the advice and consent of the Senate; and two Members, who are appointed by the President. Along with a team of economists, they analyze and interpret economic developments and formulate and recommend economic policies that advance the interests of the American people.

The Chair of the Council

Jared Bernstein was confirmed by the Senate on June 13, 2023, as the 31st Chair of the Council of Economic Advisers. In this role, he serves as President Biden's Chief Economist and as a Member of the Cabinet. Before his appointment as Chair, Dr. Bernstein served as a CEA Member from the beginning of the Biden-Harris Administration.

Chair Bernstein has held a variety of posts in economic policy and research. In policy, he was Chief Economist and Economic Adviser to then–Vice President Biden from 2009 to 2011 and served as Deputy Chief Economist at the Department of Labor during the Clinton Administration. In research, Dr. Bernstein was a Senior Fellow at the Center on Budget and Policy Priorities from 2011 to 2020 and spent 16 years in senior roles at the Economic Policy Institute. An expert on labor markets and macroeconomics, Dr. Bernstein has focused his research on income inequality, mobility, employment and earnings, international trade, and the living standards of the middle class. He received a BA from the Manhattan School of Music, an MA from the Hunter School of Social Work, and an MA and PhD from Columbia University.

The Members of the Council

Heather Boushey was appointed to the Council by the President on January 20, 2021. Before assuming this position, Boushey cofounded the Washington Center for Equitable Growth in 2013, which she led until stepping down in 2020 to join the Biden-Harris Administration. She previously served as Chief Economist for Secretary of State Hillary Clinton's 2016 transition team and as an economist at the Center for American Progress, the Joint Economic Committee of the U.S. Congress, the Center for Economic and Policy Research, and the Economic Policy Institute. She received a BA from Hampshire College and a PhD in economics from the New School for Social Research.

C. Kirabo Jackson was appointed to the Council by the President on August 28, 2023 and served as member through October 11, 2024. Dr. Jackson is the Abraham Harris Professor of Human Development and Social Policy, a Professor of Economics, and a Faculty Fellow at the Institute for Policy Research at Northwestern University. Jackson is also on leave as editor-in-chief for the American Economic Journal: Economic Policy. Dr. Jackson's research focuses on the economics of education, labor economics, and social policy issues. He received a BA from Yale University, an MA from Harvard University, and a PhD in economics from Harvard University.

Areas of Activity

A central function of the Council is to advise the President on all economic issues and developments, including preparing frequent memos for the President, the Vice President, and White House senior staff on key economic data releases and policy issues. The Council works closely with officials at various government entities—including the National Economic Council, the Domestic Policy Council, the Office of Management and Budget, and Administrative Agencies—to engage in discussions on numerous policy matters. The Council, the Department of the Treasury, and the Office of Management and Budget are responsible for producing the economic forecasts that underlie the Administration's Budget proposals. Finally, the Council is a leading participant in the Organisation for Economic Co-operation and Development (OECD), historically chairing the Economic Policy Committee and participating in OECD working meetings. The Council produces economic analysis that is presented across blog posts, issue briefs, white papers, and public speeches. Under Chair Bernstein's leadership, the CEA has increased the frequency of its external publications, with a particular focus on the analysis and interpretation of economic data releases.

Blog Posts

- "A Strong Year for the Labor Market," a blog recapping jobs, labor supply, and wage growth trends in 2023 (January 2024).
- "[Previous Month] CPI Report," a series of blog posts analyzing monthly inflation as measured by the Consumer Price Index (January, March, June, July, August, September, October 2024).
- "New Business Surge: Unveiling the Business Application Boom through an Analysis of Administrative Data," a blog analyzing the surge in new business applications in recent years and its potential impacts on job creation and the economy (January 2024).
- "The Labor Market Recovery Has Been Strong Across the Country," a blog about the labor market recovery since the 2020 recession, which documents the equitable recovery across States (January 2024).
- "Record Marketplace Coverage in 2024: A Banner Year for Coverage," a blog outlining how actions taken by the Biden-Harris Administration have contributed to increased Medicaid and ACA Marketplace enrollment and helped to increase rates of insurance coverage (January 2024).
- "[Previous Quarter] Real GDP Report," a series of blogs analyzing the quarterly release of real GDP data and what it represents for the macroeconomy (January, April, July 2024).
- "[Previous Month] Employment Report," a series of blogs analyzing monthly payroll data and summarizing its implications for the economy (February, April, May, June, July, August, September, October 2024).
- "Empowering the IRS: Understanding the Full Potential of the Inflation Reduction Act's Historic Investment in the Internal Revenue Service," a blog summarizing and providing context for the Treasury Department report analyzing the effect of the IRA on tax revenue (February 2024).
- "U.S. Semiconductor Jobs are Making a Comeback," a blog about how the CHIPS and Science Act has spurred growth in the semiconductor field and will continue to do so in the future (March 2024).
- "An Update on Non-Housing Services Inflation," a blog examining recent trends in the prices of non-housing services and how they might affect inflation as a whole (March 2024).
- "Real-World Examples of the Benefits of SAVE," a blog recapping some of the benefits that Saving on a Valuable Education (SAVE) program offers to borrowers (March 2024).

- “[Previous Month] PCE Report,” a series of blogs analyzing the monthly inflation as measured by overall and core Personal Consumption Expenditure price indices (March, May, August 2024).
- “The Next Phase of Electricity Decarbonization? Planned Power Capacity is Nearly All Zero-Carbon,” a blog describing how policies by the Biden-Harris Administration have helped to increase battery and renewable capacity (April 2024).
- “Seven Facts About the Economics of Child Care,” a blog about structural market issues within the childcare industry and the impacts of affordable, high-quality care for various family outcomes (April 2024).
- “The Importance of Central Bank Independence,” a blog about why central bank independence is critical to maintaining price stability (May 2024).
- “Investing in Places Historically Left Behind: Foreign Direct Investment in U.S. Clean Energy Manufacturing,” a blog on how the Administration’s strategic investments in infrastructure, clean energy, and semiconductors attracted further investment by domestic and foreign private investors (June 2024).
- “What Drives the U.S. Services Trade Surplus? Growth in Digitally-Enabled Services Exports,” a blog reviewing how digitally-enabled services drive the U.S. services trade surplus (June 2024).
- “Update: Grocery Price Inflation Has Cooled Substantially,” a blog looking into the recent cooling of grocery inflation (June 2024).
- “Federal Relief Funds Contributed to Academic Recovery Across the Country,” a blog summarizing recent research on COVID-19 learning loss and potential impacts of the American Rescue Plan’s ESSER funding on student outcomes (July 2024).
- “Tariffs as a Major Revenue Source: Implications for Distribution and Growth,” a blog about why policy proposals that would replace income taxes with tariffs would reduce government revenues and pose serious equity concerns (July 2024).
- “Reforming Permitting Requirements to Lower the Cost of Building New Housing and Increase Housing Affordability,” a blog on the various policies implemented by the Biden-Harris Administration to shorten the permitting process and reduce other barriers to housing affordability (August 2024).
- “The 2023 Income, Poverty, and Health Insurance Reports: Strong household income gains, lower official poverty, uninsured rate near record low,” a blog summarizing the key findings of the U.S. Census Bureau’s annual reports on poverty, income, and health insurance (September 2024).

- “Revisions Show US Economy Grew Faster, 2021–23, Boosting Real Incomes,” a blog explaining the Bureau of Economic Analysis’ revisions to the National Income and Product Accounts, and in particular, measures of GDP growth (September 2024).
- “Beating the Forecasts: How the US Economy Defied Expectations,” a blog describing how the US economy has far exceeded even the most optimistic Blue Chip forecasts from 2022 (September 2024).
- “Lower Rates are Good for Business,” a blog describing how lower interest rates and recent rule changes from the Small Business Administration may benefit small businesses (September 2024).
- “Making Public Service Loan Forgiveness Work for Borrowers and the American People,” a blog about how policy changes to the Public Service Loan Forgiveness Program implemented by the Biden-Harris Administration have helped 1 million public service workers discharge outstanding federal student loans (October 2024).
- “When the Signal Gets Jammed, Look To the Trend,” a blog analyzing the October jobs report in the context of broader labor market trends (November 2024).
- “Expanded Financial Assistance Allows Families to Save Money and Upgrade Health Insurance,” a blog on how the enhanced premium tax credits for ACA coverage—set to expire in 2025—have lowered the cost of health insurance for consumers and increased the quality of their coverage (November 2024).
- “All Aboard the ApprenticeSHIP: Assessing the Changing Face of Registered Apprenticeships,” a blog about the expansion and diversification of Registered Apprenticeship programs under this Administration and the impact of these programs on labor market opportunities (November 2024).
- “Some Lessons From 47 (!!) Jobs Reports,” a blog reviewing key insights into the U.S. job market over the past 4 years, including the importance of strong labor supply and historically-low unemployment (December 2024).
- “December CPI Blog: Updating our Housing Model,” a blog examining trends in housing inflation and describing CEA’s updated housing model (December 2024).
- “Setting the Record Straight: Benchmarking the Biden Years,” a blog reviewing accomplishments across key economic indicators (December 2024).

Issue Briefs, Speeches, and White Papers

- “The Benefits of SAVE,” an issue brief about how the SAVE Program could benefit eligible students through long-term debt relief (February 2024).
- “Valuing the Future: Revision to the Social Discount Rate Means Appropriately Assessing Benefits and Costs,” an issue brief highlighting the economic importance of the social discount rate in regulatory benefit-cost analysis (February 2024).
- “The Price Isn’t Right: How Junk Fees Cost Consumers and Undermine Competition,” an issue brief explaining how junk fees can erode consumer welfare and undermine competition (March 2024).
- “Remarks by CEA Chair Jared Bernstein at the Council on Foreign Relations,” a speech about the Biden-Harris Administration’s trade policy agenda (April 2024).
- “The Economics of Administration Action on Student Debt,” an issue brief summarizing key details of the Administration’s policy changes to promote student debt relief and income-driven repayment for eligible students (April 2024).
- “Assessing Methods to Integrate the Physical Risks and Transition Risks and Opportunities of Climate Change into the President’s Macroeconomic Forecast,” a white paper presenting a step-by-step methodology for quantifying climate-related costs into a macroeconomic forecasting model (April 2024).
- “Remarks by CEA Chair Jared Bernstein at the Economic Club of New York,” a speech describing the Biden-Harris Administration’s approach to correcting market failures through economic policy (April 2024).
- “The Signal and Noise in UI Claims,” an issue brief explaining why unemployment insurance is an important gauge for labor market strength (May 2024).
- “Recent Labor Market Conditions for Black Workers,” an issue brief about how the strong labor market has led to historically strong outcomes for Black Americans (May 2024).
- “The Economics of HBCUs,” an issue brief on the importance of HBCUs in fostering economic mobility (May 2024).
- “Remarks by CEA Chair Jared Bernstein at the Anti-Monopoly Summit,” a speech focusing on how the Biden-Harris Administration has promoted competition in various markets (May 2024).
- “A First-Principles Look at Historically Low U.S. Fertility and its Macroeconomic Implications,” an issue brief highlighting potential fiscal

and socioeconomic implications of declining fertility and an aging population in the U.S. (May 2024).

- “Remarks by CEA Chair Jared Bernstein at the 2024 China – US Symposium,” a speech about the evolution of U.S. trade policy in response to a changing geopolitical landscape (June 2024).
- “Remarks by CEA Chair Jared Bernstein at the Communications Workers of America Legislative-Political Conference,” a speech about the steps the Biden-Harris Administration has taken to support worker’s rights (June 2024).
- “Impacts of the Expiration of Federal Child Care Stabilization Funding and the Mitigating Effects of State-Level Stopgap Funding,” an issue brief extending previous CEA analysis on the effects of ARP funds on child care prices, maternal labor supply, and access to care (June 2024).
- “Racial Discrimination in Contemporary America,” an issue brief summarizing recent evidence about the prevalence of racial discrimination that is observed in data on neighborhood quality, wealth accumulation, employment, and wages (July 2024).
- “Potential Labor Market Impacts of Artificial Intelligence: An Empirical Analysis,” a white paper extending the CEA’s chapter in the 2024 Economic Report of the President about labor market impacts of AI (July 2024).
- “Remarks by CEA Chair Jared Bernstein at the HUD Insurance Summit,” a speech about current housing supply challenges in the U.S. and the Biden-Harris Administration’s policy proposals to address them (July 2024).
- “Inflation’s (Almost) Roundtrip: What Happened, How People Experienced It, and What Have we Learned?,” a speech about the rise and fall of inflation in the post-Pandemic era and its impact on workers (July 2024).
- “Economic Security of Older Women,” an issue brief on the unique economic challenges that older women face (September 2024).
- “Child Care is Infrastructure: Evidence from Universal Pre-K,” an issue brief on the potential impacts of universal pre-K on maternal employment rates and economic activity (September 2024).
- “Statement by CEA Chair Jared Bernstein,” a speech congratulating the Nobel Prize in Economics winners Daron Acemoglu, Simon Johnson, and James Robinson (October 2024).
- “GDP Issue Brief,” an issue brief analyzing GDP growth over the past 4 years, reflecting the Administration’s strong and above-expectations record on economic growth, investment, and consumer spending (October 2024).

Public Information

The Economic Report of the President, together with the Annual Report of the Council of Economic Advisers, is an important vehicle for presenting the Administration's domestic and international economic policies. It is available for purchase through the Government Publishing Office and is viewable at no cost at www.gpo.gov/erp. All the Council's written materials noted above, including this Report, can be found at www.whitehouse.gov/cea. All links provided in this Report are active as of the date of publication.

The Staff of the Council of Economic Advisers

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Asha Reddy Patt	Labor, International, Healthcare
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Griffin Roy Young	Macroeconomics, Public Finance

Special Adviser

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Madeleine Phillips . . . . Statistical Office Associate

Administrative Office

Megan Packer . . . . Administrative Officer

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ERP Production

Shea Gibbs . . . . Editor
Michael Sarinsky . . . . Editor
Molly Opinsky . . . . Project Manager
Asha Reddy Patt . . . . Project Manager

Appendix B

Statistical Tables Relating to Income, Employment, and Production

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General Notes

Detail in these tables may not add to totals due to rounding.

Because of the formula used for calculating real gross domestic product (GDP), the chained (2017) dollar estimates for the detailed components do not add to the chained-dollar value of GDP or to any intermediate aggregate. The Department of Commerce (Bureau of Economic Analysis) no longer publishes chained-dollar estimates prior to 2007, except for selected series.

Because of the method used for seasonal adjustment, the sum or average of seasonally adjusted monthly values generally will not equal annual totals based on unadjusted values.

Unless otherwise noted, all dollar figures are in current dollars.

Symbols used:

- *p* Preliminary.
- ... Not available (also, not applicable).
- NSA Not seasonally adjusted.

Data in these tables reflect revisions made by source agencies through December 11, 2024.

Excel versions of these tables are available at www.gpo.gov/erp.

TABLE B–1. Percent changes in real gross domestic product, 1973–2024

[Percent change, fourth quarter over fourth quarter; quarterly changes at seasonally adjusted annual rates]

Year or quarter	Gross domestic product	Personal consumption expenditures: Total	Personal consumption expenditures: Goods	Personal consumption expenditures: Services	Gross private domestic investment: Total	Fixed investment: Total	Nonresidential: Total	Nonresidential: Structures	Nonresidential: Equipment	Nonresidential: Intellectual property products	Residential	Change in private inventories
1973	4.0	1.8	0.4	3.2	10.2	3.5	10.6	7.9	13.5	5.1	–10.5	
1974	–1.9	–1.6	–5.6	2.4	–10.4	–9.9	–3.9	–6.4	–3.7	1.6	–24.6	
1975	2.6	5.1	6.1	4.1	–9.8	–2.6	–5.9	–8.1	–6.7	2.8	7.8	
1976	4.3	5.4	6.4	4.5	15.2	12.1	7.8	3.8	9.0	11.8	23.8	
1977	5.0	4.2	4.9	3.7	14.9	12.1	11.9	5.7	17.2	4.8	12.6	
1978	6.7	4.0	3.5	4.4	14.3	13.1	16.0	21.7	14.5	10.3	6.8	
1979	1.3	1.7	.3	2.9	–3.4	1.1	5.5	8.8	2.7	9.4	–9.1	
1980	.0	.0	–2.5	2.2	–7.2	–4.8	–.9	2.7	–4.4	4.7	–15.3	
1981	1.3	.1	–.2	.3	6.7	1.5	9.0	14.1	4.6	12.1	–22.0	
1982	–1.4	3.5	3.6	3.4	–17.3	–8.0	–9.5	–13.5	–10.0	3.4	–1.7	
1983	7.9	6.6	8.3	5.3	31.3	18.3	10.4	–3.9	19.9	13.0	49.7	
1984	5.6	4.3	5.3	3.6	14.2	11.3	13.9	15.7	13.4	12.6	3.7	
1985	4.2	4.8	4.6	5.0	1.9	3.7	3.2	3.3	1.7	7.7	5.2	
1986	2.9	4.4	6.5	3.0	–4.1	.6	–3.2	–14.3	.8	5.4	11.8	
1987	4.5	2.8	.4	4.5	9.8	1.5	2.2	4.9	.1	4.2	–.5	
1988	3.8	4.6	4.5	4.7	–.5	3.7	5.1	–3.3	8.2	9.8	.1	
1989	2.7	2.4	1.8	2.7	.7	1.5	4.5	3.3	2.5	11.3	–6.5	
1990	.6	.8	–1.6	2.3	–6.5	–4.2	–.9	–3.2	–2.7	6.2	–13.6	
1991	1.2	.9	–.8	2.0	2.1	–1.9	–3.4	–12.8	–3.2	7.2	2.9	
1992	4.4	4.9	5.3	4.7	7.7	8.7	7.1	1.0	11.3	4.8	13.6	
1993	2.6	3.3	4.4	2.7	7.6	8.4	7.6	.2	13.1	2.9	10.6	
1994	4.1	3.8	5.5	2.8	11.5	6.6	8.5	1.6	12.5	5.8	1.6	
1995	2.2	2.8	2.3	3.0	.8	5.5	7.4	4.7	8.1	8.3	.1	
1996	4.4	3.4	4.8	2.7	11.2	9.9	11.3	10.9	11.1	12.1	5.6	
1997	4.5	4.5	5.3	4.0	11.4	8.3	9.7	4.4	10.7	12.4	4.0	
1998	4.9	5.6	8.1	4.3	9.7	11.5	11.6	4.3	14.8	11.5	11.3	
1999	4.8	5.2	6.6	4.5	8.5	7.2	8.4	–.1	9.5	13.3	3.5	
2000	2.9	4.3	4.0	4.5	4.4	5.9	8.5	10.8	8.5	6.6	–1.5	
2001	.2	2.5	4.9	1.3	–11.1	–4.7	–6.8	–10.6	–7.7	–2.1	2.0	
2002	2.0	2.0	1.7	2.1	4.4	–1.5	–5.1	–15.7	–3.7	.9	8.1	
2003	4.3	3.8	6.6	2.3	8.7	8.6	6.8	1.9	9.6	5.8	12.7	
2004	3.4	3.8	4.3	3.6	8.0	6.5	6.5	.3	9.8	5.7	6.6	
2005	3.0	2.8	3.0	2.7	6.1	5.8	6.1	1.5	8.7	5.1	5.2	
2006	2.6	3.2	4.6	2.5	–1.4	.0	8.1	9.0	7.1	9.3	–15.2	
2007	2.1	2.0	1.8	2.0	–2.0	–1.1	7.3	17.7	3.9	4.0	–21.2	
2008	–2.5	–1.5	–6.8	1.2	–15.3	–11.1	–7.0	–.9	–15.9	.9	–24.7	
2009	.1	–.2	.6	–.6	–9.0	–10.5	–10.3	–27.1	–8.4	3.8	–11.5	
2010	2.8	2.8	4.3	2.1	12.0	6.2	9.0	–3.4	22.6	1.6	–5.7	
2011	1.5	1.0	.9	1.0	10.5	9.2	10.1	9.0	12.7	7.2	5.3	
2012	1.6	1.5	2.4	1.1	3.9	7.3	5.7	4.1	7.8	3.7	15.4	
2013	3.0	2.2	3.9	1.4	10.6	6.6	6.4	6.4	6.7	6.1	7.5	
2014	2.7	3.5	5.3	2.6	5.8	7.8	7.7	9.6	6.4	8.2	8.1	
2015	2.1	2.6	4.0	1.9	3.5	2.6	.9	–5.6	2.0	4.3	9.7	
2016	2.2	2.5	3.7	1.9	2.3	3.5	3.3	3.7	–.9	9.0	4.5	
2017	3.0	3.1	5.4	2.0	4.9	5.5	5.6	–.4	7.5	7.2	5.1	
2018	2.1	2.0	2.1	2.0	4.7	3.3	5.6	3.5	3.3	9.9	–4.1	
2019	3.4	2.8	3.8	2.4	1.2	2.9	3.1	5.9	–2.2	7.8	2.3	
2020	–1.0	–.8	8.6	–5.1	2.5	1.1	–3.3	–13.8	–3.5	3.3	16.6	
2021	5.7	7.7	6.3	8.4	8.1	3.8	4.9	–1.2	1.0	12.3	.6	
2022	1.3	1.6	–1.5	3.2	–.5	1.6	8.5	9.7	6.1	10.3	–16.4	
2023	3.2	3.0	3.4	2.8	2.2	4.4	5.0	9.7	3.1	4.1	2.5	
2021: I	5.6	9.5	17.9	5.4	–2.4	9.4	9.6	8.8	5.3	14.3	8.7	
II	6.4	14.1	14.4	13.9	–6.4	5.5	8.9	.6	8.7	13.8	–3.7	
III	3.5	3.1	–9.6	10.4	16.3	–2.1	–1.8	–3.8	–10.6	8.6	–3.4	
IV	7.4	4.4	4.6	4.3	28.3	2.9	3.4	–9.5	1.5	12.4	1.2	
2022: I	–1.0	1.0	–1.7	2.4	7.4	8.5	13.6	10.9	16.4	12.6	–4.5	
II	.3	2.6	–1.5	4.7	–8.5	2.0	7.3	8.8	1.1	12.7	–11.6	
III	2.7	1.5	–2.3	3.5	–5.7	–1.8	7.7	9.2	6.6	8.0	–25.2	
IV	3.4	1.2	–.7	2.2	5.8	–1.9	5.7	9.8	1.1	7.9	–22.8	
2023: I	2.8	4.9	7.4	3.8	–8.9	3.1	5.3	14.9	.9	4.5	–4.3	
II	2.4	1.0	–.3	1.6	8.0	8.6	9.9	16.4	12.5	3.9	4.5	
III	4.4	2.5	3.5	2.1	10.1	2.6	1.1	1.7	–1.1	2.8	7.7	
IV	3.2	3.5	3.4	3.5	.7	3.5	3.8	6.5	.7	5.2	2.5	
2024: I	1.6	1.9	–1.2	3.4	3.6	6.5	4.5	6.3	.3	7.5	13.7	
II	3.0	2.8	3.0	2.7	8.3	2.3	3.9	.2	9.8	.7	–2.8	
III p	2.8	3.5	5.6	2.6	1.1	1.7	3.8	–4.7	10.6	2.5	–5.0	

See next page for continuation of table.

Table B–1. Percent changes in real gross domestic product, 1973–2024—*Continued*

[Percent change, fourth quarter over fourth quarter; quarterly changes at seasonally adjusted annual rates]

Year or quarter	Net exports of goods and services: Net exports	Net exports of goods and services: Exports	Net exports of goods and services: Imports	Government consumption expenditures and gross investment: Total	Federal: Total	Federal: National defense	Federal: Non-defense	State and local	Final sales of domestic product	Gross domestic pur-chases [1]	Final sales to private domestic pur-chasers [2]	Gross domestic income (GDI) [3]	Average of GDP and GDI
1973	....	18.4	–0.5	–0.3	–3.6	–5.0	–0.3	2.9	2.8	2.9	2.2	3.8	3.9
1974	....	3.1	–1.0	3.0	3.7	1.2	9.5	2.4	–1.7	–2.3	–3.5	–2.9	–2.4
1975	....	1.5	–5.6	3.0	.8	.5	1.4	4.9	3.9	2.0	3.4	2.7	2.6
1976	....	4.3	19.2	–1.3	–1.0	–2.1	1.3	–1.6	3.8	5.4	6.7	3.8	4.1
1977	....	–1.4	5.7	1.9	2.3	.1	6.8	1.7	4.5	5.6	5.9	6.0	5.5
1978	....	18.8	9.9	4.4	3.5	2.9	4.8	5.2	6.4	6.0	6.1	5.4	6.0
1979	....	10.5	.9	.9	1.2	2.4	–1.1	.7	2.2	.5	1.5	.8	1.0
1980	....	3.9	–9.3	.3	4.0	3.7	4.6	–2.9	.5	–1.4	–1.2	1.3	.6
1981	....	.7	6.2	2.5	6.0	7.9	2.0	–.7	.3	1.8	.4	1.2	1.2
1982	....	–12.2	–3.9	2.6	4.5	7.3	–1.6	.8	.4	–.7	.8	–1.2	–1.3
1983	....	5.5	24.6	1.9	2.7	6.5	–6.6	1.1	6.0	9.5	9.1	6.6	7.3
1984	....	9.1	18.9	6.3	7.1	5.6	11.5	5.4	5.0	6.5	5.9	6.7	6.1
1985	....	1.5	5.6	6.1	6.7	8.2	2.8	5.5	4.6	4.5	4.6	3.4	3.8
1986	....	10.6	7.9	4.7	5.3	4.7	6.8	4.1	3.9	2.9	3.5	2.7	2.8
1987	....	12.8	6.3	3.0	3.6	5.3	–1.0	2.4	3.0	4.1	2.5	5.5	5.0
1988	....	14.0	3.8	1.4	–1.4	–.8	–3.0	4.1	4.6	3.0	4.4	4.7	4.2
1989	....	10.2	2.6	2.5	.5	–1.3	5.8	4.3	2.9	2.1	2.2	1.0	1.9
1990	....	7.4	–.2	2.6	1.5	.0	5.4	3.6	1.0	–.1	–.3	1.0	.8
1991	....	9.2	5.7	.0	–2.3	–4.9	4.3	1.9	.5	.9	.3	.7	.9
1992	....	4.5	6.5	1.3	1.6	–.4	6.2	1.1	4.5	4.6	5.6	3.9	4.1
1993	....	4.4	9.9	–.7	–4.5	–5.4	–2.5	2.2	2.7	3.2	4.3	3.0	2.8
1994	....	10.8	12.2	.0	–4.2	–6.7	1.1	3.1	3.3	4.3	4.4	4.3	4.2
1995	....	9.4	4.8	–.6	–4.8	–5.0	–4.3	2.2	3.0	1.8	3.3	2.9	2.6
1996	....	10.1	11.1	2.6	1.1	.3	2.6	3.6	4.2	4.6	4.8	4.8	4.6
1997	....	8.3	14.2	1.7	.2	–.8	1.9	2.7	3.9	5.2	5.3	5.5	5.0
1998	....	2.6	11.0	2.8	–.3	–2.4	3.3	4.6	5.2	5.9	6.9	4.9	4.9
1999	....	6.2	12.4	3.9	3.3	3.8	2.4	4.2	4.6	5.6	5.7	4.4	4.6
2000	....	6.0	11.1	.5	–1.9	–3.3	.4	1.8	3.2	3.7	4.7	3.6	3.3
2001	....	–12.2	–7.6	4.9	5.5	4.7	6.8	4.6	1.5	.4	.9	–.4	–.1
2002	....	4.0	9.6	3.8	8.1	8.1	8.2	1.5	.9	2.7	1.3	3.2	2.6
2003	....	7.2	5.9	1.8	6.6	9.0	2.6	–.8	4.3	4.2	4.8	2.7	3.5
2004	....	7.2	10.9	.8	2.6	2.8	2.3	–.2	3.1	4.0	4.4	3.8	3.6
2005	....	7.4	6.1	.8	1.8	1.8	1.9	.2	2.9	3.0	3.4	4.1	3.6
2006	....	9.9	4.0	1.9	2.4	3.1	1.3	1.6	2.9	2.1	2.5	2.6	2.6
2007	....	9.2	1.6	2.3	3.6	3.9	3.1	1.5	2.3	1.3	1.3	–.3	.9
2008	....	–2.0	–5.4	2.6	6.4	7.4	4.5	.3	–1.8	–3.1	–3.5	–2.6	–2.6
2009	....	1.3	–5.2	3.1	6.2	4.9	8.9	1.0	–.2	–.8	–2.1	.6	.4
2010	....	10.4	11.3	–1.5	1.8	1.3	2.7	–3.7	2.0	3.1	3.4	3.3	3.0
2011	....	4.8	3.3	–3.4	–3.6	–3.6	–3.5	–3.2	1.3	1.4	2.4	2.0	1.8
2012	....	2.9	.5	–2.1	–2.6	–4.7	1.2	–1.7	2.0	1.2	2.6	2.8	2.2
2013	....	5.2	2.9	–2.3	–6.0	–6.4	–5.4	.2	2.4	2.7	3.1	1.3	2.1
2014	....	2.4	6.5	.3	–1.0	–3.4	2.8	1.1	3.0	3.3	4.3	4.1	3.4
2015	....	–1.5	3.3	2.6	1.4	–.2	3.8	3.3	2.0	2.7	2.6	1.4	1.8
2016	....	1.4	2.2	1.5	.2	–.5	1.2	2.2	2.4	2.3	2.7	1.3	1.7
2017	....	6.1	5.8	1.0	1.4	2.1	.4	.8	3.1	3.0	3.6	3.0	3.0
2018	....	.3	3.0	1.9	3.5	4.5	2.1	.9	1.9	2.5	2.3	2.8	2.4
2019	....	1.1	–1.8	4.8	4.0	4.3	3.5	5.3	3.7	2.9	2.9	2.6	3.0
2020	....	–9.9	.0	1.3	5.1	4.2	6.4	–1.0	–1.3	.1	–.4	.1	–.5
2021	....	7.0	11.4	–.3	.7	–4.8	8.8	–.9	5.0	6.4	6.9	5.1	5.4
2022	....	5.0	2.0	.5	–1.0	–1.4	–.5	1.4	1.7	1.0	1.6	1.0	1.1
2023	....	2.0	1.2	4.3	2.1	2.7	1.2	5.7	3.6	3.1	3.3	2.9	3.1
2021: I	....	.3	8.3	5.2	17.2	–7.9	63.0	–1.6	7.8	6.5	9.5	4.2	4.9
II	....	3.2	8.3	–4.2	–8.0	–2.8	–14.3	–1.8	8.7	7.0	12.3	5.3	5.9
III	....	.9	8.6	–1.5	–7.5	–4.6	–11.3	2.3	.4	4.4	2.0	4.4	3.9
IV	....	25.5	20.8	–.3	3.1	–3.7	13.0	–2.3	3.2	7.4	4.1	6.4	6.9
2022: I	....	–4.6	13.4	–3.4	–8.5	–11.2	–5.0	–.1	–.9	1.4	2.5	1.7	.3
II	....	12.7	5.9	–1.5	–3.3	2.0	–9.7	–.4	2.3	–.2	2.4	–.3	.0
III	....	14.5	–5.4	1.6	–.4	–2.9	2.9	2.7	3.5	.2	.8	3.9	3.3
IV	....	–1.1	–4.5	5.4	9.0	7.6	10.8	3.4	1.9	2.7	.6	–1.4	1.0
2023: I	....	2.0	–.8	5.1	4.6	4.9	4.3	5.3	5.1	2.4	4.6	1.7	2.3
II	....	–4.8	–3.1	2.9	–1.1	.8	–3.5	5.4	2.6	2.5	2.5	2.1	2.3
III	....	4.9	4.7	5.7	5.3	6.7	3.4	5.9	3.0	4.4	2.6	2.7	3.5
IV	....	6.2	4.2	3.6	–.3	–1.3	.9	6.1	3.7	3.0	3.5	5.1	4.1
2024: I	....	1.9	6.1	1.8	–.4	–2.5	2.6	3.1	2.1	2.2	2.9	3.0	2.3
II	....	1.0	7.6	3.1	4.3	6.4	1.5	2.3	1.9	3.8	2.7	2.0	2.5
III p	....	7.5	10.2	5.0	8.9	13.9	2.5	2.7	3.0	3.3	3.2	2.2	2.5

[1] Gross domestic product (GDP) less exports of goods and services plus imports of goods and services.
[2] Personal consumption expenditures plus gross private fixed investment.
[3] Gross domestic income is deflated by the implicit price deflator for GDP.

Note: Percent changes based on unrounded GDP quantity indexes.

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

Table B–2. Contributions to percent change in real gross domestic product, 1973–2024

[Percentage points, except as noted; annual average to annual average, quarterly data at seasonally adjusted annual rates]

Year or quarter	Gross domestic product (percent change)	Personal consumption expenditures			Gross private domestic investment							
						Fixed investment						Change in private inventories
							Nonresidential				Residential	
		Total	Goods	Services	Total	Total	Total	Structures	Equipment	Intellectual property products		
1973	5.6	2.97	1.52	1.45	1.95	1.47	1.51	0.30	1.12	0.08	–0.04	0.48
1974	–.5	–.50	–1.08	.58	–1.24	–.98	.10	–.08	.14	.05	–1.08	–.26
1975	–.2	1.36	.20	1.16	–2.91	–1.68	–1.13	–.42	–.73	.01	–.54	–1.24
1976	5.4	3.41	2.03	1.38	2.91	1.54	.66	.09	.39	.18	.88	1.37
1977	4.6	2.59	1.26	1.33	2.47	2.23	1.26	.15	1.01	.11	.97	.24
1978	5.5	2.68	1.19	1.49	2.22	2.10	1.72	.52	1.08	.12	.38	.12
1979	3.2	1.44	.45	.99	.72	1.11	1.34	.51	.62	.20	–.22	–.40
1980	–.3	–.19	–.72	.53	–2.07	–1.18	.00	.26	–.35	.09	–1.19	–.89
1981	2.5	.85	.33	.52	1.64	.50	.87	.39	.28	.21	–.37	1.13
1982	–1.8	.88	.19	.69	–2.46	–1.16	–.43	–.09	–.47	.12	–.72	–1.31
1983	4.6	3.51	1.69	1.82	1.60	1.32	–.06	–.56	.32	.17	1.38	.28
1984	7.2	3.30	1.91	1.39	4.73	2.83	2.18	.58	1.29	.30	.65	1.90
1985	4.2	3.20	1.38	1.83	–.01	1.02	.91	.31	.39	.21	.11	–1.03
1986	3.5	2.58	1.45	1.13	.03	.34	–.24	–.49	.08	.17	.58	–.31
1987	3.5	2.14	.47	1.67	.53	.11	.01	–.11	.03	.10	.10	.41
1988	4.2	2.65	.96	1.69	.45	.59	.63	.02	.43	.18	–.05	–.13
1989	3.7	1.86	.64	1.21	.72	.55	.71	.07	.35	.29	–.16	.17
1990	1.9	1.28	.16	1.12	–.45	–.25	.14	.05	–.14	.22	–.38	–.21
1991	–.1	.12	–.49	.61	–1.09	–.84	–.48	–.38	–.28	.18	–.35	–.26
1992	3.5	2.36	.76	1.60	1.11	.83	.33	–.18	.34	.17	.49	.28
1993	2.7	2.24	.99	1.26	1.24	1.17	.84	–.01	.73	.12	.32	.07
1994	4.0	2.51	1.26	1.26	1.90	1.29	.91	.05	.75	.11	.38	.61
1995	2.7	1.91	.71	1.20	.55	.99	1.15	.16	.78	.20	–.15	–.44
1996	3.8	2.26	1.06	1.20	1.49	1.48	1.13	.15	.65	.33	.35	.02
1997	4.4	2.45	1.12	1.33	2.01	1.49	1.38	.21	.76	.41	.11	.52
1998	4.5	3.42	1.54	1.88	1.76	1.82	1.44	.16	.91	.37	.38	–.07
1999	4.8	3.49	1.83	1.66	1.62	1.65	1.36	.01	.89	.45	.29	–.03
2000	4.1	3.29	1.23	2.06	1.31	1.34	1.31	.24	.71	.36	.03	–.03
2001	1.0	1.63	.72	.92	–1.11	–.27	–.31	–.04	–.31	.04	.04	–.84
2002	1.7	1.70	.92	.78	–.16	–.64	–.94	–.56	–.35	–.03	.29	.49
2003	2.8	2.13	1.15	.98	.76	.77	.30	–.09	.26	.14	.47	–.02
2004	3.8	2.54	1.21	1.34	1.64	1.23	.67	.00	.49	.18	.57	.40
2005	3.5	2.38	.98	1.40	1.26	1.33	.92	.06	.60	.26	.41	–.07
2006	2.8	1.95	.87	1.08	.60	.50	1.00	.22	.57	.21	–.50	.10
2007	2.0	1.63	.65	.98	–.49	–.24	.89	.42	.25	.23	–1.13	–.25
2008	.1	.10	–.71	.81	–1.52	–1.05	.08	.23	–.29	.14	–1.14	–.47
2009	–2.6	–.88	–.70	–.18	–3.49	–2.69	–1.95	–.71	–1.21	–.02	–.74	–.80
2010	2.7	1.31	.62	.68	1.84	.44	.52	–.50	.91	.11	–.08	1.40
2011	1.6	1.16	.49	.68	.95	1.00	1.00	.08	.69	.24	.00	–.05
2012	2.3	.94	.48	.46	1.65	1.48	1.16	.35	.62	.20	.31	.17
2013	2.1	1.18	.76	.42	1.19	.96	.61	.03	.33	.25	.34	.24
2014	2.5	1.91	.96	.95	1.09	1.20	1.07	.33	.48	.26	.13	–.11
2015	2.9	2.27	1.08	1.19	1.08	.78	.44	.01	.24	.20	.34	.30
2016	1.8	1.65	.78	.87	–.02	.50	.25	–.10	–.05	.40	.25	–.52
2017	2.5	1.79	.88	.90	.77	.77	.61	.08	.22	.31	.16	.00
2018	3.0	1.86	.84	1.01	1.02	.90	.93	.17	.35	.41	–.03	.12
2019	2.6	1.45	.65	.80	.57	.49	.52	.07	.06	.39	–.04	.08
2020	–2.2	–1.70	.97	–2.66	–.82	–.34	–.64	–.29	–.58	.22	.30	–.48
2021	6.1	5.83	2.50	3.33	1.54	1.28	.80	–.08	.34	.53	.48	.26
2022	2.5	2.06	–.14	2.20	1.07	.48	.90	.10	.22	.58	–.42	.59
2023	2.9	1.72	.42	1.30	.02	.43	.81	.32	.18	.31	–.37	–.41
2021: I	5.6	6.10	3.80	2.30	–.28	1.65	1.25	.21	.31	.72	.40	–1.93
II	6.4	9.04	3.19	5.85	–1.01	.99	1.17	.01	.46	.70	–.18	–2.00
III	3.5	2.11	–2.38	4.48	2.73	–.38	–.21	–.11	–.54	.44	–.17	3.10
IV	7.4	3.00	1.05	1.95	4.68	.53	.47	–.26	.10	.63	.06	4.14
2022: I	–1.0	.64	–.41	1.05	1.34	1.44	1.66	.28	.75	.63	–.22	–.10
II	.3	1.71	–.37	2.09	–1.67	.35	.94	.24	.05	.65	–.59	–2.01
III	2.7	1.02	–.54	1.55	–1.05	–.33	1.01	.26	.33	.42	–1.34	–.72
IV	3.4	.81	–.15	.96	1.08	–.36	.76	.28	.05	.42	–1.12	1.44
2023: I	2.8	3.27	1.59	1.67	–1.63	.53	.71	.43	.04	.24	–.18	–2.16
II	2.4	.65	–.08	.73	1.42	1.48	1.30	.49	.61	.21	.17	–.06
III	4.4	1.72	.76	.96	1.80	.45	.16	.06	–.05	.15	.30	1.34
IV	3.2	2.33	.73	1.60	.16	.62	.52	.20	.04	.28	.10	–.47
2024: I	1.6	1.30	–.25	1.55	.64	1.14	.61	.20	.02	.40	.53	–.49
II	3.0	1.90	.63	1.27	1.47	.42	.53	.01	.49	.04	–.11	1.05
III p	2.8	2.37	1.17	1.20	.21	.31	.52	–.15	.53	.14	–.21	–.11

See next page for continuation of table.

Table B–2. Contributions to percent change in real gross domestic product, 1973–2024—*Continued*

[Percentage points, except as noted; annual average to annual average, quarterly data at seasonally adjusted annual rates]

Year or quarter	Net exports of goods and services							Government consumption expenditures and gross investment					Final sales of domestic product
	Net exports	Exports			Imports			Total	Federal			State and local	
		Total	Goods	Services	Total	Goods	Services		Total	National defense	Non-defense		
1973	0.80	1.08	1.05	0.02	–0.28	–0.33	0.05	–0.07	–0.39	–0.40	0.01	0.32	5.16
1974	.73	.56	.49	.08	.17	.17	.00	.47	.06	–.07	.14	.41	–.28
1975	.86	–.05	–.14	.09	.91	.85	.06	.49	.05	–.07	.13	.43	1.03
1976	–1.05	.36	.34	.02	–1.41	–1.31	–.10	.12	.01	–.04	.06	.10	4.01
1977	–.70	.19	.12	.07	–.89	–.82	–.07	.26	.21	.06	.15	.05	4.38
1978	.05	.80	.64	.17	–.76	–.66	–.10	.60	.23	.04	.19	.37	5.42
1979	.64	.80	.69	.11	–.16	–.13	–.02	.36	.20	.15	.05	.16	3.56
1980	1.64	.95	.88	.07	.69	.66	.03	.36	.38	.22	.16	–.02	.63
1981	–.15	.12	–.05	.17	–.26	–.18	–.09	.20	.43	.40	.03	–.23	1.41
1982	–.59	–.71	–.63	–.08	.12	.20	–.08	.37	.35	.47	–.11	.01	–.50
1983	–1.32	–.22	–.21	.00	–1.10	–.98	–.12	.79	.65	.51	.14	.14	4.31
1984	–1.54	.61	.41	.20	–2.16	–1.78	–.38	.74	.33	.38	–.04	.41	5.34
1985	–.39	.24	.20	.05	–.63	–.50	–.13	1.37	.78	.62	.16	.59	5.20
1986	–.29	.53	.27	.25	–.82	–.80	–.02	1.14	.61	.52	.09	.53	3.77
1987	.17	.77	.62	.15	–.60	–.39	–.21	.62	.38	.38	.01	.24	3.04
1988	.81	1.23	.99	.24	–.41	–.35	–.07	.26	–.15	–.04	–.12	.42	4.31
1989	.51	.97	.72	.26	–.46	–.37	–.09	.58	.15	–.02	.18	.43	3.50
1990	.40	.78	.56	.22	–.37	–.25	–.13	.65	.20	.02	.18	.45	2.09
1991	.62	.61	.45	.16	.01	–.04	.05	.25	.01	–.06	.07	.24	.15
1992	–.04	.66	.52	.14	–.70	–.76	.05	.10	–.15	–.31	.16	.25	3.24
1993	–.56	.31	.22	.09	–.87	–.82	–.05	–.17	–.32	–.32	.00	.15	2.68
1994	–.41	.84	.65	.19	–1.25	–1.15	–.10	.02	–.31	–.28	–.02	.32	3.41
1995	.12	1.02	.83	.19	–.90	–.84	–.06	.10	–.21	–.21	.00	.31	3.13
1996	–.15	.86	.68	.18	–1.01	–.91	–.10	.18	–.09	–.08	–.01	.27	3.76
1997	–.31	1.26	1.10	.16	–1.57	–1.40	–.17	.30	–.06	–.13	.07	.36	3.92
1998	–1.14	.26	.17	.08	–1.39	–1.18	–.21	.44	–.06	–.09	.03	.50	4.55
1999	–.90	.52	.32	.20	–1.42	–1.31	–.11	.59	.12	.06	.06	.47	4.82
2000	–.85	.86	.72	.13	–1.71	–1.45	–.26	.33	.02	–.04	.06	.31	4.11
2001	–.24	–.59	–.49	–.10	.35	.39	–.04	.67	.24	.13	.12	.43	1.80
2002	–.67	–.19	–.24	.05	–.48	–.41	–.07	.83	.47	.30	.18	.35	1.21
2003	–.49	.19	.19	.01	–.68	–.67	–.01	.40	.45	.35	.10	–.06	2.81
2004	–.63	.88	.58	.30	–1.51	–1.28	–.22	.30	.31	.26	.05	–.02	3.45
2005	–.30	.67	.52	.15	–.98	–.88	–.09	.14	.15	.11	.04	.00	3.55
2006	–.06	.95	.71	.24	–1.01	–.81	–.20	.30	.17	.07	.10	.13	2.68
2007	.52	.94	.53	.41	–.42	–.27	–.15	.34	.14	.13	.01	.20	2.26
2008	1.04	.67	.48	.19	.37	.47	–.10	.49	.46	.33	.14	.03	.58
2009	1.07	–1.00	–1.00	.00	2.07	2.10	–.03	.72	.48	.29	.20	.24	–1.78
2010	–.43	1.40	1.13	.28	–1.83	–1.73	–.10	–.02	.34	.16	.18	–.36	1.30
2011	.12	.90	.65	.26	–.79	–.74	–.05	–.67	–.23	–.12	–.12	–.44	1.61
2012	.12	.54	.37	.17	–.42	–.38	–.04	–.42	–.16	–.18	.02	–.26	2.12
2013	.20	.41	.27	.13	–.20	–.28	.07	–.46	–.43	–.33	–.10	–.03	1.88
2014	–.31	.52	.41	.12	–.84	–.75	–.09	–.16	–.18	–.18	.00	.02	2.64
2015	–.77	.04	–.03	.07	–.81	–.74	–.07	.37	.00	–.09	.09	.36	2.65
2016	–.16	.06	.05	.01	–.22	–.14	–.08	.35	.04	–.02	.06	.31	2.34
2017	–.20	.49	.32	.17	–.69	–.53	–.16	.10	.03	.04	–.01	.07	2.46
2018	–.26	.35	.34	.01	–.60	–.62	.02	.35	.22	.13	.09	.12	2.85
2019	–.11	.07	.01	.05	–.18	–.06	–.11	.68	.25	.21	.04	.43	2.50
2020	–.24	–1.52	–.75	–.77	1.28	.67	.60	.60	.41	.12	.30	.18	–1.69
2021	–1.26	.67	.54	.14	–1.93	–1.58	–.35	–.05	.13	–.04	.17	–.18	5.80
2022	–.42	.82	.45	.38	–1.24	–.81	–.43	–.20	–.22	–.15	–.07	.02	1.92
2023	.49	.31	.17	.14	.17	.22	–.05	.66	.19	.12	.07	.47	3.30
2021: I	–1.14	.00	–.10	.10	–1.14	–.94	–.20	.95	1.14	–.33	1.47	–.19	7.56
II	–.82	.33	.09	.24	–1.15	–.64	–.51	–.78	–.58	–.11	–.47	–.20	8.43
III	–1.10	.09	–.19	.29	–1.19	–.12	–1.07	–.28	–.53	–.18	–.35	.26	.35
IV	–.22	2.54	1.87	.67	–2.77	–2.38	–.39	–.04	.21	–.14	.35	–.25	3.27
2022: I	–2.40	–.51	–.74	.23	–1.90	–1.60	–.29	–.60	–.58	–.43	–.15	–.01	–.92
II	.50	1.40	.84	.56	–.90	–.40	–.50	–.27	–.22	.07	–.29	–.05	2.29
III	2.50	1.63	1.53	.09	.87	1.08	–.21	.26	–.04	–.11	.07	.29	3.44
IV	.56	–.12	–.43	.31	.68	.48	.21	.90	.54	.26	.28	.36	1.91
2023: I	.33	.23	.39	–.17	.10	–.04	.14	.84	.28	.17	.11	.56	4.96
II	–.11	–.54	–.86	.31	.44	.57	–.13	.48	–.08	.03	–.11	.56	2.51
III	–.10	.53	.53	.00	–.63	–.56	–.07	.94	.33	.24	.09	.62	3.01
IV	.09	.66	.37	.29	–.57	–.19	–.38	.61	–.02	–.05	.02	.63	3.66
2024: I	–.61	.21	–.02	.23	–.82	–.69	–.13	.30	–.02	–.09	.07	.32	2.12
II	–.90	.12	.07	.05	–1.01	–.90	–.12	.52	.27	.23	.04	.25	1.93
III p	–.57	.79	.70	.09	–1.37	–1.14	–.23	.83	.55	.48	.07	.28	2.94

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

TABLE B–3. Gross domestic product, 2008–2024

[Quarterly data at seasonally adjusted annual rates]

Year or quarter	Gross domestic product	Personal consumption expenditures: Total	Personal consumption expenditures: Goods	Personal consumption expenditures: Services	Gross private domestic investment: Total	Fixed investment: Total	Nonresidential: Total	Nonresidential: Structures	Nonresidential: Equipment	Nonresidential: Intellectual property products	Residential	Change in private inventories
	Billions of dollars											
2008	14,769.9	10,050.1	3,363.2	6,686.9	2,477.6	2,506.9	1,990.9	571.1	845.4	574.4	516.0	–29.2
2009	14,478.1	9,891.2	3,180.0	6,711.2	1,929.7	2,080.4	1,690.4	455.8	670.3	564.4	390.0	–150.8
2010	15,049.0	10,260.3	3,317.8	6,942.4	2,165.5	2,111.6	1,735.0	379.8	777.0	578.2	376.6	53.9
2011	15,599.7	10,698.9	3,518.1	7,180.7	2,332.6	2,286.3	1,907.5	404.5	881.3	621.7	378.8	46.3
2012	16,254.0	11,047.4	3,637.7	7,409.6	2,621.8	2,550.5	2,118.5	479.4	983.4	655.7	432.0	71.2
2013	16,880.7	11,388.2	3,742.2	7,646.1	2,838.3	2,732.9	2,221.3	491.5	1,035.3	694.6	511.5	105.5
2014	17,608.1	11,874.5	3,886.6	7,987.9	3,074.0	2,989.2	2,425.2	574.6	1,109.1	741.5	564.0	84.8
2015	18,295.0	12,297.4	3,955.1	8,342.3	3,288.5	3,148.4	2,507.5	584.5	1,144.1	778.9	640.9	140.1
2016	18,804.9	12,726.8	4,033.0	8,693.8	3,278.3	3,239.2	2,529.0	566.2	1,119.8	843.0	710.2	39.1
2017	19,612.1	13,290.6	4,212.2	9,078.4	3,467.7	3,435.0	2,661.1	594.9	1,160.0	906.2	773.9	32.7
2018	20,656.5	13,934.4	4,414.2	9,520.2	3,724.8	3,668.4	2,856.5	636.6	1,227.6	992.2	811.9	56.4
2019	21,540.0	14,437.5	4,532.8	9,904.7	3,893.7	3,820.8	2,993.7	677.9	1,240.9	1,074.9	827.1	73.0
2020	21,354.1	14,225.7	4,706.7	9,519.0	3,755.0	3,791.1	2,870.5	624.7	1,109.5	1,136.3	920.6	–36.1
2021	23,681.2	16,113.9	5,500.4	10,613.6	4,223.8	4,211.6	3,079.1	628.3	1,188.6	1,262.1	1,132.5	12.2
2022	26,006.9	17,690.8	5,939.1	11,751.8	4,821.2	4,671.6	3,492.8	756.1	1,317.7	1,419.0	1,178.8	149.6
2023	27,720.7	18,822.8	6,123.9	12,698.9	4,984.8	4,943.1	3,831.6	884.1	1,425.8	1,521.7	1,111.5	41.7
2021: I	22,656.8	15,259.4	5,248.9	10,010.5	4,045.5	4,086.7	3,000.2	612.6	1,180.8	1,206.9	1,086.5	–41.2
II	23,368.9	16,016.3	5,543.6	10,472.7	4,017.6	4,182.2	3,067.3	622.7	1,196.7	1,247.9	1,114.9	–164.6
III	23,922.0	16,363.9	5,501.8	10,862.0	4,232.8	4,231.0	3,085.9	630.1	1,178.6	1,277.2	1,145.1	1.8
IV	24,777.0	16,816.1	5,707.1	11,109.1	4,599.2	4,346.4	3,162.9	647.9	1,198.4	1,316.7	1,183.5	252.8
2022: I	25,215.5	17,175.1	5,846.1	11,329.0	4,784.8	4,539.9	3,319.5	691.2	1,267.9	1,360.3	1,220.4	244.9
II	25,805.8	17,603.8	5,971.1	11,632.7	4,786.5	4,669.6	3,443.8	735.4	1,298.8	1,409.6	1,225.8	117.0
III	26,272.0	17,876.2	5,973.0	11,903.3	4,801.6	4,727.8	3,564.0	781.7	1,340.4	1,441.8	1,163.9	73.8
IV	26,734.3	18,108.3	5,966.2	12,142.1	4,911.9	4,749.0	3,643.9	816.1	1,363.6	1,464.2	1,105.1	162.9
2023: I	27,164.4	18,506.2	6,084.8	12,421.4	4,847.2	4,826.3	3,742.3	857.6	1,390.1	1,494.6	1,084.0	20.9
II	27,453.8	18,685.7	6,088.1	12,597.6	4,925.7	4,925.7	3,833.7	888.7	1,432.1	1,512.9	1,091.9	.0
III	27,967.7	18,929.0	6,147.9	12,781.1	5,063.4	4,974.2	3,848.8	884.1	1,437.2	1,527.4	1,125.3	89.2
IV	28,297.0	19,170.2	6,174.8	12,995.4	5,102.8	5,046.1	3,901.5	905.8	1,443.9	1,551.7	1,144.7	56.7
2024: I	28,624.1	19,424.8	6,148.9	13,275.9	5,159.9	5,138.5	3,957.8	914.9	1,458.8	1,584.1	1,180.7	21.4
II	29,016.7	19,682.7	6,204.6	13,478.1	5,297.8	5,201.1	4,018.5	916.0	1,499.7	1,602.7	1,182.6	96.8
III p	29,354.3	19,928.2	6,264.3	13,663.9	5,347.7	5,263.7	4,084.0	906.3	1,547.2	1,630.6	1,179.6	84.0
	Billions of chained (2017) dollars											
2008	16,781.5	11,270.7	3,312.7	7,981.2	2,564.3	2,620.6	2,008.3	666.0	799.7	573.7	623.0	–32.3
2009	16,349.1	11,123.6	3,209.4	7,948.6	2,025.3	2,201.6	1,716.4	541.4	630.2	570.8	487.9	–170.3
2010	16,789.8	11,335.6	3,300.2	8,065.3	2,309.0	2,269.9	1,794.3	454.8	757.8	586.4	472.8	54.4
2011	17,052.4	11,528.5	3,372.3	8,183.9	2,463.1	2,432.5	1,951.3	469.0	859.6	622.9	472.2	44.4
2012	17,442.8	11,686.1	3,444.2	8,265.3	2,735.3	2,678.0	2,137.1	531.5	953.9	653.8	533.3	69.2
2013	17,812.2	11,889.9	3,562.3	8,341.9	2,938.7	2,842.0	2,238.6	537.3	1,006.5	695.0	601.1	103.5
2014	18,261.7	12,226.4	3,717.7	8,516.3	3,129.0	3,052.6	2,421.1	597.2	1,086.0	739.1	626.8	85.1
2015	18,799.6	12,638.8	3,902.5	8,738.9	3,323.4	3,193.6	2,498.9	598.2	1,127.2	774.0	693.2	133.6
2016	19,141.7	12,949.0	4,044.7	8,904.9	3,320.2	3,286.9	2,544.8	579.7	1,117.5	847.6	742.2	33.4
2017	19,612.1	13,290.6	4,212.2	9,078.4	3,467.7	3,435.0	2,661.1	594.9	1,160.0	906.2	773.9	32.7
2018	20,193.9	13,654.9	4,378.7	9,276.6	3,668.1	3,611.7	2,844.3	629.2	1,228.6	986.5	768.5	54.3
2019	20,715.7	13,948.1	4,513.6	9,436.2	3,784.0	3,710.9	2,952.2	644.0	1,241.1	1,067.0	761.6	72.4
2020	20,267.6	13,594.7	4,723.0	8,891.6	3,612.1	3,639.0	2,815.5	585.0	1,115.6	1,115.1	820.1	–29.6
2021	21,494.8	14,787.2	5,258.6	9,557.9	3,929.2	3,902.9	2,985.2	569.6	1,190.3	1,228.9	909.4	11.6
2022	22,034.8	15,236.2	5,226.3	10,031.7	4,164.3	4,007.5	3,192.9	590.3	1,242.2	1,367.1	831.6	119.1
2023	22,671.1	15,621.7	5,323.7	10,318.7	4,169.2	4,103.9	3,384.5	654.3	1,285.2	1,445.9	762.7	33.1
2021: I	21,058.4	14,328.6	5,177.5	9,184.6	3,840.2	3,867.1	2,937.9	575.3	1,187.2	1,178.0	919.1	–22.0
II	21,389.0	14,809.1	5,354.9	9,488.8	3,777.7	3,919.5	3,001.4	576.1	1,212.1	1,216.7	910.5	–141.0
III	21,571.4	14,924.3	5,221.4	9,727.3	3,923.2	3,898.5	2,988.2	570.5	1,178.7	1,242.0	902.6	9.5
IV	21,960.4	15,086.9	5,280.7	9,831.0	4,175.7	3,926.4	3,013.3	556.5	1,183.2	1,279.0	905.3	200.1
2022: I	21,903.9	15,123.4	5,258.4	9,888.6	4,250.7	4,006.8	3,110.7	571.1	1,228.9	1,317.3	894.9	195.8
II	21,919.2	15,219.9	5,238.3	10,004.0	4,156.8	4,026.4	3,165.9	583.3	1,232.2	1,357.2	867.8	86.7
III	22,066.8	15,277.6	5,208.5	10,090.2	4,096.0	4,008.2	3,225.1	596.3	1,252.1	1,383.6	807.1	58.8
IV	22,249.5	15,324.0	5,200.0	10,144.1	4,153.8	3,988.7	3,270.0	610.4	1,255.5	1,410.2	756.5	135.1
2023: I	22,403.4	15,510.2	5,293.5	10,238.1	4,058.1	4,018.8	3,312.8	631.9	1,258.2	1,425.8	748.2	20.6
II	22,539.4	15,548.5	5,288.9	10,279.7	4,136.6	4,103.0	3,391.6	656.3	1,295.7	1,439.6	756.4	–.2
III	22,780.9	15,646.7	5,334.1	10,333.3	4,237.3	4,128.9	3,400.9	659.2	1,292.3	1,449.7	770.6	67.2
IV	22,960.6	15,781.4	5,378.5	10,423.6	4,244.8	4,164.9	3,432.9	669.7	1,294.6	1,468.3	775.5	44.6
2024: I	23,053.5	15,856.9	5,362.8	10,511.3	4,282.5	4,231.4	3,471.0	679.9	1,295.7	1,495.0	800.8	17.7
II	23,223.9	15,967.3	5,402.1	10,582.7	4,369.2	4,255.7	3,504.1	680.2	1,326.5	1,497.7	795.2	71.7
III p	23,386.7	16,106.4	5,476.0	10,650.9	4,380.8	4,274.0	3,536.8	672.0	1,360.4	1,507.1	785.1	64.1

See next page for continuation of table.

TABLE B–3. Gross domestic product, 2008–2024—*Continued*

[Quarterly data at seasonally adjusted annual rates]

Year or quarter	Net exports of goods and services: Net exports	Net exports of goods and services: Exports	Net exports of goods and services: Imports	Government consumption expenditures and gross investment: Total	Federal: Total	Federal: National defense	Federal: Non-defense	State and local	Final sales of domestic product	Gross domestic pur-chases [1]	Final sales to private domestic pur-chasers [2]	Gross domestic income (GDI) [3]	Average of GDP and GDI
							Billions of dollars						
2008	–740.9	1,835.3	2,576.2	2,983.0	1,152.0	750.3	401.6	1,831.1	14,799.1	15,510.7	12,556.9	14,578.7	14,674.3
2009	–419.2	1,582.8	2,001.9	3,076.3	1,220.8	787.6	433.2	1,855.6	14,628.8	14,897.2	11,971.7	14,286.3	14,382.2
2010	–532.3	1,857.2	2,389.6	3,155.6	1,300.2	828.0	472.2	1,855.4	14,995.1	15,581.3	12,371.8	14,979.5	15,014.2
2011	–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	12,985.2	15,624.0	15,611.9
2012	–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	13,597.9	16,407.6	16,330.8
2013	–478.5	2,287.9	2,766.4	3,132.6	1,227.4	764.3	463.1	1,905.2	16,775.2	17,359.1	14,121.1	16,910.5	16,895.6
2014	–508.9	2,378.5	2,887.4	3,168.6	1,217.1	744.1	473.0	1,951.5	17,523.3	18,117.0	14,863.6	17,749.1	17,678.6
2015	–524.3	2,270.6	2,794.9	3,233.4	1,222.8	730.4	492.4	2,010.6	18,154.9	18,819.3	15,445.8	18,388.0	18,341.5
2016	–503.3	2,235.6	2,738.8	3,303.0	1,237.4	729.4	507.9	2,065.7	18,765.8	19,308.2	15,966.1	18,752.0	18,778.5
2017	–543.3	2,388.3	2,931.6	3,397.1	1,266.1	748.3	517.8	2,131.1	19,579.4	20,155.4	16,725.6	19,544.2	19,578.2
2018	–593.1	2,538.1	3,131.2	3,590.4	1,346.3	795.1	551.2	2,244.1	20,600.1	21,249.6	17,602.8	20,593.1	20,624.8
2019	–577.3	2,539.4	3,116.7	3,786.0	1,419.5	849.5	570.0	2,366.5	21,467.0	22,117.3	18,258.3	21,482.9	21,511.5
2020	–626.2	2,151.1	2,777.3	3,999.6	1,523.0	885.0	638.1	2,476.6	21,390.2	21,980.3	18,016.7	21,246.5	21,300.3
2021	–860.0	2,555.4	3,415.5	4,203.5	1,603.2	908.7	694.5	2,600.3	23,669.0	24,541.2	20,325.5	23,679.6	23,680.4
2022	–958.9	3,017.4	3,976.3	4,453.8	1,641.0	930.0	711.0	2,812.7	25,857.2	26,965.8	22,362.4	26,082.5	26,044.7
2023	–797.3	3,052.5	3,849.8	4,710.5	1,762.6	1,002.1	760.5	2,947.9	27,679.0	28,518.1	23,765.8	27,476.1	27,598.4
2021: I	–795.8	2,381.2	3,177.0	4,147.6	1,613.4	905.0	708.4	2,534.2	22,698.0	23,452.6	19,346.1	22,686.6	22,671.7
II	–835.1	2,505.0	3,340.1	4,170.0	1,597.4	909.1	688.3	2,572.6	23,533.5	24,203.9	20,198.5	23,338.9	23,353.9
III	–888.7	2,570.1	3,458.8	4,214.0	1,585.0	908.8	676.2	2,629.0	23,920.2	24,810.7	20,594.9	23,947.7	23,934.8
IV	–920.6	2,765.4	3,686.0	4,282.3	1,616.9	911.7	705.2	2,665.4	24,524.2	25,697.6	21,162.5	24,745.2	24,761.1
2022: I	–1,077.0	2,848.7	3,925.7	4,332.6	1,606.5	903.7	702.8	2,726.1	24,970.6	26,292.5	21,715.0	25,355.2	25,285.4
II	–1,022.1	3,071.6	4,093.7	4,437.6	1,622.1	928.8	693.3	2,815.5	25,688.8	26,827.9	22,273.3	25,912.7	25,859.2
III	–885.9	3,102.6	3,988.4	4,480.1	1,641.4	930.8	710.6	2,838.7	26,198.2	27,157.9	22,604.0	26,454.7	26,363.3
IV	–850.7	3,046.7	3,897.4	4,564.8	1,694.2	956.9	737.3	2,870.6	26,571.4	27,585.0	22,857.3	26,607.4	26,670.8
2023: I	–813.6	3,060.6	3,874.2	4,624.6	1,731.6	976.9	754.7	2,893.0	27,143.5	27,978.0	23,332.5	26,964.5	27,064.4
II	–803.5	2,995.5	3,799.0	4,645.9	1,741.8	989.4	752.4	2,904.1	27,453.8	28,257.3	23,611.4	27,229.3	27,341.6
III	–781.1	3,062.0	3,843.1	4,756.4	1,780.9	1,016.6	764.3	2,975.5	27,878.5	28,748.8	23,903.2	27,627.9	27,797.8
IV	–791.2	3,091.7	3,882.9	4,815.2	1,796.2	1,025.4	770.8	3,019.0	28,240.3	29,088.1	24,216.3	28,082.7	28,189.8
2024: I	–841.6	3,125.4	3,967.0	4,881.0	1,810.3	1,028.4	781.9	3,070.7	28,602.7	29,465.6	24,563.3	28,499.2	28,561.6
II	–906.9	3,154.3	4,061.2	4,943.0	1,842.2	1,051.5	790.7	3,100.9	28,919.9	29,923.6	24,883.8	28,821.9	28,919.3
III p	–954.1	3,204.1	4,158.3	5,032.6	1,893.4	1,091.3	802.1	3,139.2	29,270.3	30,308.4	25,191.8	29,114.0	29,234.2
							Billions of chained (2017) dollars						
2008	–478.8	1,846.6	2,325.4	3,420.1	1,287.2	824.6	461.2	2,136.8	16,841.4	17,268.4	13,906.8	16,564.3	16,672.9
2009	–338.7	1,693.1	2,031.8	3,542.7	1,367.4	871.7	494.3	2,177.9	16,542.9	16,664.4	13,319.2	16,132.6	16,240.9
2010	–388.0	1,907.3	2,295.3	3,539.7	1,422.6	897.3	524.1	2,117.0	16,755.0	17,169.9	13,600.3	16,712.3	16,751.0
2011	–361.6	2,044.2	2,405.8	3,426.9	1,384.2	878.1	504.9	2,042.3	17,025.8	17,409.2	13,957.7	17,079.0	17,065.7
2012	–338.4	2,126.3	2,464.7	3,356.0	1,357.9	848.2	508.8	1,997.7	17,387.5	17,773.1	14,362.5	17,607.6	17,525.2
2013	–304.3	2,190.3	2,494.6	3,275.6	1,283.9	792.4	491.0	1,991.8	17,715.9	18,102.6	14,730.8	17,843.6	17,827.9
2014	–347.6	2,275.8	2,623.4	3,247.3	1,251.9	760.4	491.3	1,995.3	18,185.6	18,602.0	15,278.6	18,407.9	18,334.8
2015	–476.5	2,283.1	2,759.5	3,313.6	1,252.7	744.9	507.8	2,060.8	18,669.0	19,276.0	15,832.3	18,895.2	18,847.4
2016	–505.8	2,293.9	2,799.7	3,378.5	1,260.0	741.1	518.8	2,118.5	19,108.4	19,647.5	16,235.9	19,087.8	19,114.7
2017	–543.3	2,388.3	2,931.6	3,397.1	1,266.1	748.3	517.8	2,131.1	19,579.4	20,155.4	16,725.6	19,544.2	19,578.2
2018	–593.5	2,456.4	3,050.0	3,465.0	1,309.9	774.6	535.3	2,155.2	20,137.6	20,787.5	17,266.5	20,131.9	20,162.9
2019	–616.3	2,469.5	3,085.9	3,600.4	1,360.3	816.3	544.1	2,240.2	20,642.8	21,332.6	17,658.8	20,660.8	20,688.2
2020	–663.4	2,145.3	2,808.8	3,721.8	1,445.5	840.5	605.0	2,277.2	20,293.6	20,933.4	17,233.4	20,165.4	20,216.5
2021	–936.6	2,284.3	3,220.8	3,711.4	1,472.0	831.9	640.1	2,241.8	21,468.5	22,423.4	18,690.1	21,493.4	21,494.1
2022	–1,041.7	2,455.9	3,497.6	3,669.9	1,424.3	799.3	625.1	2,245.8	21,881.0	23,058.6	19,243.7	22,098.9	22,066.8
2023	–932.8	2,523.8	3,456.6	3,811.8	1,466.1	825.2	640.9	2,345.1	22,606.6	23,593.1	19,725.6	22,471.0	22,571.1
2021: I	–866.8	2,235.4	3,102.2	3,749.4	1,506.7	843.3	663.5	2,246.1	21,083.9	21,918.8	18,195.1	21,086.0	21,072.2
II	–911.5	2,253.2	3,164.7	3,709.2	1,475.7	837.3	638.4	2,236.1	21,526.7	22,294.1	18,728.5	21,361.5	21,375.3
III	–972.0	2,258.3	3,230.2	3,694.9	1,447.2	827.5	619.6	2,249.0	21,546.8	22,536.7	18,823.1	21,594.6	21,583.0
IV	–996.0	2,390.3	3,386.3	3,692.2	1,458.4	819.6	638.8	2,236.0	21,716.6	22,944.1	19,013.7	21,932.2	21,946.3
2022: I	–1,132.1	2,362.2	3,494.3	3,660.9	1,426.3	795.7	630.8	2,235.3	21,665.5	23,022.1	19,130.3	22,025.2	21,964.5
II	–1,111.2	2,433.7	3,545.0	3,647.2	1,414.4	799.5	614.9	2,232.9	21,791.6	23,011.3	19,246.4	22,010.0	21,964.6
III	–978.2	2,517.5	3,495.7	3,661.3	1,412.9	793.6	619.3	2,248.0	21,980.3	23,023.4	19,285.8	22,220.2	22,143.5
IV	–945.3	2,510.3	3,455.5	3,710.1	1,443.6	808.3	635.5	2,266.9	22,086.4	23,177.6	19,312.5	22,143.8	22,196.7
2023: I	–926.0	2,522.5	3,448.5	3,756.4	1,460.0	818.0	642.2	2,296.6	22,364.1	23,315.3	19,528.8	22,238.6	22,321.0
II	–929.6	2,491.6	3,421.3	3,783.7	1,456.0	819.6	636.4	2,327.1	22,505.9	23,459.3	19,651.5	22,355.1	22,447.3
III	–938.9	2,521.5	3,460.4	3,836.3	1,474.8	833.0	641.8	2,360.8	22,674.5	23,710.4	19,775.6	22,504.2	22,642.5
IV	–936.7	2,559.6	3,496.3	3,870.7	1,473.5	830.3	643.2	2,395.9	22,881.9	23,887.4	19,946.4	22,786.7	22,873.7
2024: I	–977.0	2,571.8	3,548.7	3,887.7	1,472.2	825.0	647.3	2,414.0	23,003.2	24,017.2	20,088.1	22,953.0	23,003.3
II	–1,035.7	2,578.4	3,614.0	3,917.0	1,487.8	838.0	649.8	2,427.9	23,113.1	24,242.6	20,222.9	23,068.0	23,145.9
III p	–1,077.6	2,625.4	3,702.9	3,964.7	1,519.9	865.7	653.9	2,443.9	23,282.2	24,441.7	20,380.4	23,195.3	23,291.0

[1] Gross domestic product (GDP) less exports of goods and services plus imports of goods and services.
[2] Personal consumption expenditures plus gross private fixed investment.
[3] For chained dollar measures, gross domestic income is deflated by the implicit price deflator for GDP.

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

Table B–4. Percentage shares of gross domestic product, 1973–2024

[Percent of nominal GDP]

Year or quarter	Gross domestic product (percent)	Personal consumption expenditures			Gross private domestic investment							
		Total	Goods	Services	Total	Fixed investment						Change in private inventories
						Total	Nonresidential				Residential	
							Total	Structures	Equipment	Intellectual property products		
1973	100.0	59.6	29.2	30.4	18.7	17.6	12.1	3.9	6.7	1.6	5.5	1.1
1974	100.0	60.2	29.2	31.0	17.8	16.9	12.4	4.0	6.8	1.7	4.5	.9
1975	100.0	61.2	29.2	32.0	15.3	15.6	11.7	3.6	6.4	1.7	4.0	–.4
1976	100.0	61.3	29.2	32.1	17.3	16.3	11.7	3.5	6.5	1.7	4.6	.9
1977	100.0	61.2	28.8	32.4	19.1	18.0	12.4	3.6	7.1	1.7	5.5	1.1
1978	100.0	60.5	28.2	32.3	20.3	19.2	13.4	4.0	7.7	1.7	5.9	1.1
1979	100.0	60.3	28.1	32.3	20.5	19.9	14.2	4.5	7.9	1.8	5.6	.7
1980	100.0	61.3	28.0	33.3	18.6	18.8	14.2	4.8	7.6	1.9	4.5	–.2
1981	100.0	60.3	27.1	33.2	19.7	18.8	14.7	5.2	7.5	2.0	4.0	.9
1982	100.0	61.9	26.9	35.0	17.4	17.8	14.5	5.3	7.0	2.2	3.3	–.4
1983	100.0	62.8	26.8	36.0	17.5	17.7	13.3	4.2	6.8	2.2	4.4	–.2
1984	100.0	61.7	26.3	35.4	20.3	18.7	14.0	4.4	7.2	2.4	4.7	1.6
1985	100.0	62.5	26.2	36.3	19.1	18.6	14.0	4.5	7.1	2.4	4.6	.5
1986	100.0	63.0	26.1	36.9	18.5	18.4	13.3	3.9	6.9	2.5	5.1	.1
1987	100.0	63.4	25.9	37.5	18.4	17.8	12.7	3.6	6.6	2.5	5.1	.6
1988	100.0	63.6	25.5	38.1	17.9	17.5	12.6	3.5	6.6	2.5	4.9	.4
1989	100.0	63.4	25.2	38.2	17.7	17.2	12.7	3.4	6.6	2.7	4.5	.5
1990	100.0	63.9	25.0	38.9	16.7	16.4	12.4	3.4	6.2	2.8	4.0	.2
1991	100.0	64.0	24.3	39.7	15.3	15.3	11.8	3.0	5.9	2.9	3.6	.0
1992	100.0	64.4	24.0	40.4	15.5	15.3	11.4	2.6	5.9	2.9	3.9	.3
1993	100.0	64.9	23.9	41.0	16.1	15.8	11.7	2.6	6.2	2.9	4.2	.3
1994	100.0	64.8	24.0	40.8	17.2	16.4	11.9	2.6	6.5	2.8	4.4	.9
1995	100.0	65.0	23.8	41.2	17.2	16.8	12.6	2.7	6.9	3.0	4.2	.4
1996	100.0	65.0	23.8	41.2	17.7	17.4	12.9	2.8	7.0	3.1	4.4	.4
1997	100.0	64.5	23.4	41.2	18.6	17.8	13.4	2.9	7.1	3.4	4.4	.8
1998	100.0	64.9	23.3	41.6	19.2	18.5	13.8	3.0	7.3	3.5	4.6	.7
1999	100.0	65.2	23.7	41.5	19.6	19.0	14.2	3.0	7.4	3.8	4.8	.6
2000	100.0	66.0	23.9	42.1	19.9	19.4	14.6	3.1	7.5	4.0	4.7	.5
2001	100.0	66.8	23.9	43.0	18.3	18.6	13.8	3.2	6.7	3.9	4.8	–.4
2002	100.0	67.2	23.8	43.5	17.7	17.5	12.4	2.6	6.0	3.7	5.1	.2
2003	100.0	67.6	23.8	43.8	17.7	17.6	12.0	2.5	5.9	3.7	5.6	.1
2004	100.0	67.4	23.8	43.6	18.7	18.1	12.0	2.5	5.9	3.6	6.1	.5
2005	100.0	67.3	23.6	43.6	19.4	19.0	12.4	2.7	6.1	3.6	6.6	.4
2006	100.0	67.2	23.4	43.7	19.6	19.1	13.0	3.1	6.2	3.7	6.1	.5
2007	100.0	67.3	23.3	44.1	18.5	18.2	13.5	3.5	6.2	3.8	4.8	.2
2008	100.0	68.0	22.8	45.3	16.8	17.0	13.5	3.9	5.7	3.9	3.5	–.2
2009	100.0	68.3	22.0	46.4	13.3	14.4	11.7	3.1	4.6	3.9	2.7	–1.0
2010	100.0	68.2	22.0	46.1	14.4	14.0	11.5	2.5	5.2	3.8	2.5	.4
2011	100.0	68.6	22.6	46.0	15.0	14.7	12.2	2.6	5.6	4.0	2.4	.3
2012	100.0	68.0	22.4	45.6	16.1	15.7	13.0	2.9	6.1	4.0	2.7	.4
2013	100.0	67.5	22.2	45.3	16.8	16.2	13.2	2.9	6.1	4.1	3.0	.6
2014	100.0	67.4	22.1	45.4	17.5	17.0	13.8	3.3	6.3	4.2	3.2	.5
2015	100.0	67.2	21.6	45.6	18.0	17.2	13.7	3.2	6.3	4.3	3.5	.8
2016	100.0	67.7	21.4	46.2	17.4	17.2	13.4	3.0	6.0	4.5	3.8	.2
2017	100.0	67.8	21.5	46.3	17.7	17.5	13.6	3.0	5.9	4.6	3.9	.2
2018	100.0	67.5	21.4	46.1	18.0	17.8	13.8	3.1	5.9	4.8	3.9	.3
2019	100.0	67.0	21.0	46.0	18.1	17.7	13.9	3.1	5.8	5.0	3.8	.3
2020	100.0	66.6	22.0	44.6	17.6	17.8	13.4	2.9	5.2	5.3	4.3	–.2
2021	100.0	68.0	23.2	44.8	17.8	17.8	13.0	2.7	5.0	5.3	4.8	.1
2022	100.0	68.0	22.8	45.2	18.5	18.0	13.4	2.9	5.1	5.5	4.5	.6
2023	100.0	67.9	22.1	45.8	18.0	17.8	13.8	3.2	5.1	5.5	4.0	.2
2021: I	100.0	67.4	23.2	44.2	17.9	18.0	13.2	2.7	5.2	5.3	4.8	–.2
II	100.0	68.5	23.7	44.8	17.2	17.9	13.1	2.7	5.1	5.3	4.8	–.7
III	100.0	68.4	23.0	45.4	17.7	17.7	12.9	2.6	4.9	5.3	4.8	.0
IV	100.0	67.9	23.0	44.8	18.6	17.5	12.8	2.6	4.8	5.3	4.8	1.0
2022: I	100.0	68.1	23.2	44.9	19.0	18.0	13.2	2.7	5.0	5.4	4.8	1.0
II	100.0	68.2	23.1	45.1	18.5	18.1	13.3	2.8	5.0	5.5	4.8	.5
III	100.0	68.0	22.7	45.3	18.3	18.0	13.6	3.0	5.1	5.5	4.4	.3
IV	100.0	67.7	22.3	45.4	18.4	17.8	13.6	3.1	5.1	5.5	4.1	.6
2023: I	100.0	68.1	22.4	45.7	17.8	17.8	13.8	3.2	5.1	5.5	4.0	.1
II	100.0	68.1	22.2	45.9	17.9	17.9	14.0	3.2	5.2	5.5	4.0	.0
III	100.0	67.7	22.0	45.7	18.1	17.8	13.8	3.2	5.1	5.5	4.0	.3
IV	100.0	67.7	21.8	45.9	18.0	17.8	13.8	3.2	5.1	5.5	4.0	.2
2024: I	100.0	67.9	21.5	46.4	18.0	18.0	13.8	3.2	5.1	5.5	4.1	.1
II	100.0	67.8	21.4	46.4	18.3	17.9	13.8	3.2	5.2	5.5	4.1	.3
III [p]	100.0	67.9	21.3	46.5	18.2	17.9	13.9	3.1	5.3	5.6	4.0	.3

See next page for continuation of table.

TABLE B–4. Percentage shares of gross domestic product, 1973–2024—*Continued*

[Percent of nominal GDP]

Year or quarter	Net exports of goods and services							Government consumption expenditures and gross investment				
	Net exports	Exports			Imports			Total	Federal			State and local
		Total	Goods	Services	Total	Goods	Services		Total	National defense	Non-defense	
1973	0.3	6.7	5.3	1.4	6.4	5.0	1.4	21.4	10.3	7.2	3.1	11.1
1974	–.1	8.2	6.7	1.5	8.2	6.8	1.5	22.1	10.3	7.1	3.2	11.8
1975	.9	8.2	6.7	1.6	7.3	5.9	1.4	22.6	10.3	7.0	3.3	12.3
1976	–.1	8.0	6.5	1.5	8.1	6.7	1.4	21.6	9.9	6.7	3.2	11.7
1977	–1.1	7.7	6.2	1.5	8.8	7.3	1.4	20.9	9.6	6.5	3.2	11.2
1978	–1.1	7.9	6.4	1.6	9.0	7.5	1.5	20.3	9.3	6.2	3.1	10.9
1979	–.9	8.8	7.1	1.6	9.6	8.1	1.5	20.0	9.2	6.1	3.0	10.8
1980	–.5	9.8	8.1	1.8	10.3	8.7	1.6	20.6	9.6	6.4	3.2	11.0
1981	–.4	9.5	7.6	1.9	9.9	8.4	1.6	20.4	9.8	6.7	3.1	10.6
1982	–.6	8.5	6.7	1.8	9.1	7.5	1.6	21.3	10.4	7.3	3.1	10.9
1983	–1.4	7.6	5.9	1.7	9.0	7.5	1.5	21.1	10.5	7.5	3.0	10.6
1984	–2.5	7.5	5.7	1.8	10.0	8.3	1.7	20.5	10.2	7.4	2.8	10.3
1985	–2.6	7.0	5.2	1.7	9.6	7.9	1.7	21.0	10.4	7.6	2.8	10.5
1986	–2.9	7.0	5.1	2.0	9.9	8.1	1.8	21.3	10.5	7.7	2.8	10.8
1987	–3.0	7.5	5.5	2.0	10.5	8.5	1.9	21.2	10.4	7.7	2.7	10.9
1988	–2.1	8.5	6.3	2.1	10.6	8.6	1.9	20.6	9.8	7.3	2.5	10.8
1989	–1.5	8.9	6.6	2.3	10.5	8.6	1.9	20.4	9.5	6.9	2.5	11.0
1990	–1.3	9.3	6.8	2.5	10.6	8.5	2.0	20.8	9.4	6.8	2.6	11.3
1991	–.5	9.7	7.0	2.7	10.1	8.1	2.0	21.1	9.5	6.7	2.7	11.6
1992	–.5	9.7	7.0	2.7	10.2	8.4	1.9	20.6	9.0	6.2	2.8	11.6
1993	–1.0	9.5	6.8	2.7	10.5	8.6	1.9	19.9	8.5	5.7	2.7	11.4
1994	–1.3	9.9	7.1	2.8	11.2	9.3	1.9	19.2	7.9	5.2	2.6	11.4
1995	–1.2	10.6	7.8	2.9	11.8	9.9	1.9	19.0	7.5	4.9	2.6	11.4
1996	–1.2	10.7	7.8	3.0	11.9	10.0	1.9	18.5	7.2	4.7	2.5	11.3
1997	–1.2	11.1	8.2	3.0	12.3	10.3	2.0	18.0	6.8	4.3	2.5	11.2
1998	–1.8	10.5	7.6	2.9	12.3	10.3	2.0	17.8	6.5	4.1	2.4	11.3
1999	–2.7	10.3	7.4	2.9	13.0	10.9	2.1	17.9	6.3	4.0	2.4	11.5
2000	–3.7	10.7	7.8	2.9	14.4	12.2	2.2	17.8	6.2	3.8	2.3	11.6
2001	–3.6	9.7	7.0	2.7	13.3	11.1	2.1	18.4	6.3	3.9	2.4	12.1
2002	–4.0	9.1	6.5	2.7	13.2	11.0	2.2	19.1	6.8	4.2	2.6	12.3
2003	–4.6	9.0	6.4	2.6	13.6	11.3	2.3	19.3	7.2	4.5	2.7	12.1
2004	–5.2	9.6	6.8	2.9	14.8	12.4	2.4	19.1	7.3	4.7	2.6	11.8
2005	–5.7	10.0	7.1	2.9	15.7	13.2	2.4	19.0	7.3	4.7	2.6	11.7
2006	–5.7	10.6	7.6	3.1	16.3	13.8	2.6	19.0	7.2	4.6	2.6	11.7
2007	–5.1	11.5	8.0	3.5	16.5	13.8	2.7	19.3	7.3	4.7	2.6	12.0
2008	–5.0	12.4	8.7	3.7	17.4	14.5	2.9	20.2	7.8	5.1	2.7	12.4
2009	–2.9	10.9	7.3	3.6	13.8	11.0	2.9	21.2	8.4	5.4	3.0	12.8
2010	–3.5	12.3	8.5	3.9	15.9	12.9	2.9	21.0	8.6	5.5	3.1	12.3
2011	–3.7	13.6	9.4	4.2	17.3	14.3	3.0	20.2	8.3	5.3	3.0	11.8
2012	–3.4	13.6	9.4	4.2	17.0	14.1	2.9	19.3	7.9	5.0	2.9	11.4
2013	–2.8	13.6	9.3	4.3	16.4	13.6	2.8	18.6	7.3	4.5	2.7	11.3
2014	–2.9	13.5	9.2	4.3	16.4	13.6	2.8	18.0	6.9	4.2	2.7	11.1
2015	–2.9	12.4	8.2	4.2	15.3	12.5	2.8	17.7	6.7	4.0	2.7	11.0
2016	–2.7	11.9	7.7	4.2	14.6	11.8	2.8	17.6	6.6	3.9	2.7	11.0
2017	–2.8	12.2	7.9	4.3	14.9	12.1	2.9	17.3	6.5	3.8	2.6	10.9
2018	–2.9	12.3	8.1	4.2	15.2	12.4	2.8	17.4	6.5	3.8	2.7	10.9
2019	–2.7	11.8	7.6	4.2	14.5	11.7	2.8	17.6	6.6	3.9	2.6	11.0
2020	–2.9	10.1	6.7	3.4	13.0	10.8	2.2	18.7	7.1	4.1	3.0	11.6
2021	–3.6	10.8	7.4	3.4	14.4	12.0	2.4	17.8	6.8	3.8	2.9	11.0
2022	–3.7	11.6	7.9	3.7	15.3	12.5	2.8	17.1	6.3	3.6	2.7	10.8
2023	–2.9	11.0	7.3	3.7	13.9	11.2	2.7	17.0	6.4	3.6	2.7	10.6
2021: I	–3.5	10.5	7.2	3.4	14.0	11.8	2.2	18.3	7.1	4.0	3.1	11.2
II	–3.6	10.7	7.4	3.4	14.3	12.0	2.3	17.8	6.8	3.9	2.9	11.0
III	–3.7	10.7	7.3	3.4	14.5	11.9	2.6	17.6	6.6	3.8	2.8	11.0
IV	–3.7	11.2	7.7	3.5	14.9	12.3	2.6	17.3	6.5	3.7	2.8	10.8
2022: I	–4.3	11.3	7.7	3.6	15.6	12.9	2.7	17.2	6.4	3.6	2.8	10.8
II	–4.0	11.9	8.2	3.7	15.9	13.1	2.8	17.2	6.3	3.6	2.7	10.9
III	–3.4	11.8	8.1	3.7	15.2	12.4	2.8	17.1	6.2	3.5	2.7	10.8
IV	–3.2	11.4	7.7	3.7	14.6	11.8	2.8	17.1	6.3	3.6	2.8	10.7
2023: I	–3.0	11.3	7.6	3.7	14.3	11.5	2.7	17.0	6.4	3.6	2.8	10.6
II	–2.9	10.9	7.2	3.7	13.8	11.1	2.7	16.9	6.3	3.6	2.7	10.6
III	–2.8	10.9	7.2	3.7	13.7	11.1	2.7	17.0	6.4	3.6	2.7	10.6
IV	–2.8	10.9	7.2	3.7	13.7	11.0	2.7	17.0	6.3	3.6	2.7	10.7
2024: I	–2.9	10.9	7.1	3.8	13.9	11.1	2.8	17.1	6.3	3.6	2.7	10.7
II	–3.1	10.9	7.1	3.8	14.0	11.2	2.8	17.0	6.3	3.6	2.7	10.7
III ^{p}	–3.3	10.9	7.1	3.8	14.2	11.3	2.8	17.1	6.4	3.7	2.7	10.7

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

Table B–5. Chain-type price indexes for gross domestic product, 1973–2024

[Index numbers, 2017=100, except as noted; quarterly data seasonally adjusted]

Year or quarter	Gross domestic product	Personal consumption expenditures			Gross private domestic investment						
						Fixed investment					
							Nonresidential				
		Total	Goods	Services	Total	Total	Total	Structures	Equipment	Intellectual property products	Residential
1973	23.340	22.455	37.970	16.389	32.770	31.635	40.595	13.393	67.811	42.618	15.854
1974	25.434	24.793	42.709	17.778	36.038	34.764	44.542	15.244	72.897	46.596	17.492
1975	27.796	26.860	46.159	19.302	40.356	38.984	50.410	17.065	84.000	50.336	19.109
1976	29.327	28.333	47.966	20.641	42.587	41.233	53.187	17.901	89.157	52.561	20.347
1977	31.148	30.176	50.526	22.203	45.725	44.397	56.710	19.454	94.635	54.868	22.425
1978	33.339	32.276	53.626	23.910	49.431	48.111	60.502	21.332	99.891	57.725	25.179
1979	36.104	35.143	58.698	25.915	53.867	52.434	65.368	23.811	106.353	61.562	28.023
1980	39.375	38.928	65.271	28.610	58.908	57.325	71.138	26.024	115.715	66.316	31.045
1981	43.092	42.415	70.120	31.541	64.404	62.589	77.902	29.603	124.182	71.265	33.557
1982	45.756	44.771	72.031	34.017	67.817	66.105	82.329	31.939	129.288	75.312	35.356
1983	47.545	46.676	73.331	36.106	68.025	66.357	82.193	31.125	129.659	78.125	36.193
1984	49.262	48.439	74.718	37.985	68.758	67.004	82.453	31.397	128.600	80.315	37.265
1985	50.820	50.128	75.917	39.843	69.609	67.980	83.305	32.144	128.600	81.651	38.289
1986	51.850	51.219	75.562	41.480	71.174	69.644	84.766	32.760	131.183	82.286	39.978
1987	53.126	52.802	77.992	42.726	72.656	71.061	85.734	33.286	132.038	83.761	41.707
1988	55.002	54.865	80.048	44.769	74.483	73.044	87.893	34.698	133.864	86.381	43.159
1989	57.159	57.261	83.128	46.880	76.382	74.928	89.937	36.057	136.423	87.494	44.570
1990	59.307	59.775	86.532	49.029	77.978	76.565	91.867	37.222	139.212	88.404	45.597
1991	61.303	61.774	88.647	50.946	79.300	77.906	93.606	37.896	141.570	90.535	46.190
1992	62.701	63.420	89.717	52.758	79.300	77.949	93.300	37.905	141.355	89.634	46.759
1993	64.189	65.000	90.496	54.582	80.240	78.886	93.500	39.016	139.703	90.261	48.663
1994	65.557	66.356	91.417	56.066	81.437	80.099	94.238	40.394	139.454	90.732	50.424
1995	66.933	67.754	92.271	57.632	82.748	81.430	95.176	42.143	137.927	93.406	52.227
1996	68.156	69.203	93.285	59.214	82.700	81.498	94.599	43.214	134.799	93.818	53.348
1997	69.337	70.407	93.177	60.883	82.748	81.640	94.070	44.864	131.083	94.326	54.634
1998	70.102	70.967	91.777	62.172	82.140	81.196	92.594	46.915	125.201	93.868	56.075
1999	71.084	72.001	92.258	63.409	82.218	81.333	91.666	48.357	120.368	95.383	58.176
2000	72.709	73.822	94.089	65.210	83.296	82.486	92.068	50.252	117.751	98.100	60.758
2001	74.385	75.302	94.018	67.292	84.006	83.206	91.698	52.884	114.281	97.969	63.642
2002	75.500	76.291	93.122	69.033	84.281	83.453	91.219	55.089	111.883	96.657	65.218
2003	77.012	77.894	93.003	71.336	84.973	84.183	90.517	57.057	108.990	95.926	68.308
2004	79.069	79.827	94.311	73.528	87.455	86.642	91.409	61.282	108.078	95.613	73.102
2005	81.537	82.127	96.203	75.998	90.993	90.223	93.780	68.841	107.827	96.232	78.338
2006	84.074	84.440	97.494	78.750	94.194	93.428	96.066	77.037	106.758	97.372	82.914
2007	86.352	86.607	98.576	81.388	95.615	94.857	97.621	81.581	106.377	98.571	84.010
2008	87.977	89.170	101.524	83.783	96.400	95.658	99.131	85.751	105.708	100.125	82.828
2009	88.557	88.921	99.084	84.432	95.297	94.494	98.488	84.186	106.354	98.877	79.930
2010	89.618	90.514	100.533	86.077	93.688	93.026	96.695	83.502	102.543	98.593	79.643
2011	91.466	92.804	104.325	87.742	94.598	93.991	97.756	86.244	102.518	99.807	80.236
2012	93.176	94.534	105.620	89.648	95.797	95.241	99.130	90.209	103.088	100.292	81.006
2013	94.786	95.781	105.049	91.659	96.678	96.160	99.229	91.474	102.857	99.948	85.095
2014	96.436	97.121	104.542	93.795	98.331	97.922	100.170	96.213	102.124	100.326	89.986
2015	97.277	97.299	101.350	95.462	98.728	98.582	100.345	97.719	101.498	100.626	92.454
2016	98.208	98.284	99.710	97.629	98.549	98.550	99.380	97.668	100.206	99.453	95.699
2017	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
2018	102.290	102.047	100.811	102.626	101.539	101.568	100.427	101.174	99.921	100.582	105.640
2019	103.981	103.509	100.426	104.965	102.912	102.961	101.406	105.261	99.982	100.736	108.600
2020	105.380	104.641	99.656	107.055	104.063	104.179	101.953	106.789	99.453	101.895	112.260
2021	110.172	108.972	104.597	111.045	107.503	107.909	103.145	110.306	99.862	102.705	124.537
2022	118.041	116.111	113.638	117.146	115.854	116.569	109.391	128.093	106.079	103.797	141.754
2023	122.272	120.491	115.030	123.067	119.552	120.448	113.208	135.121	110.942	105.244	145.736
2021: I	107.645	106.529	101.395	109.022	105.565	105.689	102.121	106.435	99.444	102.460	118.282
II	109.278	108.188	103.536	110.409	106.373	106.711	102.198	108.020	98.720	102.573	122.449
III	110.931	109.681	105.380	111.708	107.978	108.537	103.279	110.377	99.993	102.833	126.817
IV	112.836	111.491	108.077	113.040	110.098	110.701	104.982	116.394	101.290	102.953	130.601
2022: I	115.160	113.585	111.173	114.595	112.687	113.302	106.741	121.105	103.189	103.271	136.158
II	117.760	115.672	113.982	116.300	115.217	115.969	108.815	126.195	105.425	103.868	140.999
III	119.073	117.014	114.669	117.982	117.237	117.947	110.544	131.250	107.073	104.215	143.964
IV	120.173	118.172	114.727	119.707	118.274	119.060	111.464	133.821	108.629	103.834	145.894
2023: I	121.247	119.320	114.946	121.335	119.373	120.094	112.979	135.772	110.488	104.833	144.810
II	121.809	120.182	115.111	122.556	119.065	120.055	113.041	135.408	110.531	105.091	144.359
III	122.785	120.983	115.257	123.696	119.556	120.478	113.169	134.094	111.218	105.368	146.086
IV	123.247	121.480	114.807	124.680	120.214	121.164	113.643	135.210	111.531	105.686	147.689
2024: I	124.168	122.507	114.659	126.309	120.484	121.444	114.020	134.513	112.583	105.962	147.527
II	124.942	123.275	114.857	127.367	121.224	122.220	114.672	134.625	113.057	107.016	148.802
III p	125.528	123.734	114.397	128.296	122.101	123.162	115.466	134.804	113.727	108.197	150.348

See next page for continuation of table.

Table B–5. Chain-type price indexes for gross domestic product, 1973–2024—*Continued*

[Index numbers, 2017=100, except as noted; quarterly data seasonally adjusted]

Year or quarter	Exports and imports of goods and services		Government consumption expenditures and gross investment					Final sales of domestic product	Personal consumption expenditures excluding food and energy	Gross domestic purchases [1]	Percent change [2]			
	Exports	Imports	Total	Federal			State and local				Gross domestic product	Personal consumption expenditures		Gross domestic purchases [1]
				Total	National defense	Non-defense						Total	Excluding food and energy	
1973	37.931	29.738	18.623	22.800	22.543	23.259	15.949	23.184	23.003	23.137	5.5	5.4	3.8	5.7
1974	46.714	42.545	20.412	24.620	24.387	25.013	17.717	25.259	24.825	25.486	9.0	10.4	7.9	10.2
1975	51.491	46.087	22.297	26.785	26.442	27.411	19.421	27.609	26.899	27.815	9.3	8.3	8.4	9.1
1976	53.181	47.475	23.522	28.451	28.170	28.935	20.369	29.140	28.534	29.343	5.5	5.5	6.1	5.5
1977	55.348	51.658	24.977	30.201	30.015	30.477	21.636	30.962	30.369	31.278	6.2	6.5	6.4	6.6
1978	58.715	55.299	26.629	32.239	32.216	32.179	23.042	33.151	32.382	33.501	7.0	7.0	6.6	7.1
1979	65.787	64.761	28.820	34.664	34.765	34.353	25.077	35.899	34.743	36.440	8.3	8.9	7.3	8.8
1980	72.462	80.674	31.802	38.013	38.319	37.286	27.821	39.148	37.936	40.234	9.1	10.8	9.2	10.4
1981	77.828	85.035	34.959	41.563	41.995	40.574	30.731	42.834	41.260	43.945	9.4	9.0	8.8	9.2
1982	78.199	82.173	37.336	44.501	45.155	43.034	32.742	45.508	43.942	46.478	6.2	5.6	6.5	5.8
1983	78.518	79.093	38.781	45.977	46.824	44.065	34.189	47.289	46.191	48.095	3.9	4.3	5.1	3.5
1984	79.252	78.409	40.464	48.003	48.969	45.814	35.650	48.997	48.106	49.722	3.6	3.8	4.1	3.4
1985	76.893	75.834	41.718	49.022	49.794	47.327	37.102	50.578	50.060	51.200	3.2	3.5	4.1	3.0
1986	75.610	75.832	42.418	49.255	49.815	48.109	38.171	51.621	51.788	52.268	2.0	2.2	3.5	2.1
1987	77.280	80.416	43.564	49.597	50.173	48.415	39.953	52.888	53.460	53.747	2.5	3.1	3.2	2.8
1988	81.237	84.264	45.004	51.215	51.745	50.179	41.289	54.784	55.732	55.648	3.5	3.9	4.2	3.5
1989	82.583	86.106	46.723	52.646	53.147	51.695	43.244	56.938	58.045	57.838	3.9	4.4	4.2	3.9
1990	83.048	88.575	48.682	54.272	54.872	53.079	45.465	59.091	60.397	60.127	3.8	4.4	4.1	4.0
1991	83.974	87.837	50.450	56.224	56.601	55.584	47.130	61.086	62.554	62.015	3.4	3.3	3.6	3.1
1992	83.566	87.907	51.978	57.660	58.247	56.548	48.736	62.486	64.456	63.457	2.3	2.7	3.0	2.3
1993	83.704	87.234	53.203	58.918	59.147	58.565	49.950	63.972	66.206	64.890	2.4	2.5	2.7	2.3
1994	84.676	88.053	54.613	60.539	60.696	60.335	51.237	65.343	67.688	66.251	2.1	2.1	2.2	2.1
1995	86.569	90.466	56.163	62.413	62.422	62.496	52.602	66.722	69.163	67.680	2.1	2.1	2.2	2.2
1996	85.419	88.889	57.314	63.455	63.465	63.538	53.809	67.963	70.474	68.857	1.8	2.1	1.9	1.7
1997	83.914	85.800	58.439	64.436	64.350	64.698	55.006	69.162	71.718	69.873	1.7	1.7	1.8	1.5
1998	81.927	81.180	59.433	65.260	65.152	65.560	56.078	69.958	72.630	70.339	1.1	.8	1.3	.7
1999	81.311	81.664	61.422	66.872	66.801	67.112	58.231	70.955	73.583	71.410	1.4	1.5	1.3	1.5
2000	82.873	85.236	64.059	69.115	69.056	69.339	61.030	72.595	74.898	73.265	2.3	2.5	1.8	2.6
2001	82.223	83.031	65.909	70.395	70.365	70.576	63.128	74.272	76.317	74.690	2.3	2.0	1.9	1.9
2002	81.507	82.042	67.610	72.669	72.712	72.735	64.538	75.380	77.593	75.713	1.5	1.3	1.7	1.4
2003	82.800	84.523	70.091	75.849	76.317	75.221	66.646	76.898	78.845	77.355	2.0	2.1	1.6	2.2
2004	85.818	88.553	73.016	78.458	78.965	77.770	69.726	78.952	80.396	79.572	2.7	2.5	2.0	2.9
2005	88.784	93.764	76.726	81.723	82.562	80.461	73.667	81.426	82.158	82.346	3.1	2.9	2.2	3.5
2006	91.604	97.393	80.063	84.327	85.452	82.573	77.406	83.963	84.126	84.997	3.1	2.8	2.4	3.2
2007	95.059	100.794	83.653	86.829	88.071	84.879	81.603	86.244	86.001	87.308	2.7	2.6	2.2	2.7
2008	99.387	110.783	87.213	89.472	90.999	87.023	85.692	87.871	87.688	89.787	1.9	3.0	2.0	2.8
2009	93.484	98.534	86.836	89.279	90.352	87.637	85.201	88.429	88.503	89.397	.7	–.3	.9	–.4
2010	97.378	104.107	89.149	91.394	92.273	90.094	87.642	89.496	89.785	90.734	1.2	1.8	1.4	1.5
2011	103.508	112.040	91.861	93.900	94.979	92.262	90.494	91.352	91.209	92.921	2.1	2.5	1.6	2.4
2012	104.298	112.359	93.460	94.783	95.990	92.927	92.579	93.071	92.897	94.548	1.9	1.9	1.9	1.8
2013	104.457	110.894	95.634	95.597	96.459	94.308	95.654	94.690	94.285	95.908	1.7	1.3	1.5	1.4
2014	104.515	110.067	97.578	97.215	97.850	96.287	97.804	96.358	95.697	97.408	1.7	1.4	1.5	1.6
2015	99.455	101.283	97.581	97.609	98.053	96.968	97.567	97.246	96.874	97.593	.9	.2	1.2	.2
2016	97.457	97.825	97.766	98.205	98.419	97.897	97.505	98.207	98.426	98.241	1.0	1.0	1.6	.7
2017	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	1.8	1.7	1.6	1.8
2018	103.325	102.662	103.619	102.775	102.642	102.968	104.126	102.297	101.897	102.222	2.3	2.0	1.9	2.2
2019	102.829	100.999	105.155	104.352	104.067	104.767	105.638	103.993	103.573	103.680	1.7	1.4	1.6	1.4
2020	100.270	98.881	107.466	105.359	105.287	105.468	108.756	105.404	104.951	105.020	1.3	1.1	1.3	1.3
2021	111.870	106.046	113.258	108.912	109.227	108.503	115.990	110.249	108.705	109.446	4.5	4.1	3.6	4.2
2022	122.863	113.687	121.360	115.218	116.361	113.744	125.246	118.172	114.521	116.959	7.1	6.6	5.4	6.9
2023	120.948	111.375	123.578	120.226	121.432	118.669	125.705	122.438	119.268	120.873	3.6	3.8	4.1	3.3
2021: I	106.645	102.510	110.608	107.069	107.310	106.757	112.819	107.673	106.539	107.054	5.2	4.6	3.4	4.6
II	111.258	105.630	112.411	108.223	108.561	107.784	115.044	109.342	108.083	108.592	6.2	6.4	5.9	5.9
III	113.857	107.144	114.038	109.501	109.811	109.097	116.893	111.035	109.385	110.126	6.2	5.6	4.9	5.8
IV	115.720	108.899	115.974	110.856	111.223	110.374	119.203	112.948	110.811	112.011	7.0	6.8	5.3	7.0
2022: I	120.614	112.376	118.349	112.633	113.574	111.418	121.961	115.272	112.466	114.241	8.5	7.7	6.1	8.2
II	126.218	115.490	121.678	114.685	116.175	112.763	126.102	117.899	113.795	116.606	9.3	7.6	4.8	8.5
III	123.245	114.096	122.369	116.184	117.295	114.753	126.283	119.202	115.247	117.965	4.5	4.7	5.2	4.7
IV	121.372	112.784	123.046	117.371	118.400	116.043	126.640	120.317	116.577	119.024	3.7	4.0	4.7	3.6
2023: I	121.334	112.343	123.120	118.610	119.444	117.532	125.974	121.379	117.931	119.991	3.6	3.9	4.7	3.3
II	120.225	111.040	122.796	119.635	120.725	118.228	124.800	121.992	119.050	120.456	1.9	2.9	3.8	1.6
III	121.441	111.061	123.992	120.759	122.051	119.094	126.041	122.957	119.744	121.266	3.2	2.7	2.4	2.7
IV	120.792	111.058	124.406	121.899	123.507	119.824	126.006	123.423	120.346	121.778	1.5	1.7	2.0	1.7
2024: I	121.530	111.786	125.555	122.967	124.662	120.782	127.205	124.348	121.458	122.691	3.0	3.4	3.7	3.0
II	122.339	112.373	126.199	123.825	125.486	121.682	127.720	125.129	122.296	123.434	2.5	2.5	2.8	2.4
III p	122.047	112.297	126.941	124.578	126.068	122.660	128.455	125.725	122.947	124.015	1.9	1.5	2.1	1.9

[1] Gross domestic product (GDP) less exports of goods and services plus imports of goods and services.
[2] Quarterly percent changes are at annual rates.

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

Table B–6. Gross value added by sector, 1973–2024

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

Year or quarter	Gross domestic product	Business[1]: Total	Business[1]: Nonfarm[1]	Business[1]: Farm	Households and institutions: Total	Households and institutions: Households	Households and institutions: Nonprofit institutions serving households[2]	General government[3]: Total	General government[3]: Federal	General government[3]: State and local	Addendum: Gross housing value added
1973	1,425.4	1,094.0	1,047.2	46.8	124.6	78.5	46.1	206.8	96.4	110.4	101.4
1974	1,545.2	1,182.8	1,138.5	44.2	137.2	85.5	51.7	225.3	102.5	122.8	110.4
1975	1,684.9	1,284.8	1,239.2	45.6	151.6	93.7	58.0	248.4	110.5	138.0	121.3
1976	1,873.4	1,443.3	1,400.2	43.0	164.9	101.7	63.2	265.3	117.3	148.0	130.9
1977	2,081.8	1,616.2	1,572.7	43.5	179.9	110.7	69.2	285.7	125.2	160.6	144.2
1978	2,351.6	1,838.2	1,787.5	50.7	202.1	124.8	77.3	311.3	135.8	175.5	160.2
1979	2,627.3	2,062.8	2,002.7	60.1	226.3	139.5	86.9	338.2	145.4	192.8	177.7
1980	2,857.3	2,225.8	2,174.4	51.4	258.2	158.8	99.3	373.4	159.8	213.5	204.0
1981	3,207.0	2,502.0	2,437.0	65.0	291.6	179.2	112.4	413.5	178.3	235.2	231.6
1982	3,343.8	2,568.6	2,508.2	60.4	323.8	198.2	125.6	451.4	195.7	255.6	258.6
1983	3,634.0	2,801.9	2,757.0	44.9	352.5	213.6	138.9	479.7	207.1	272.6	280.6
1984	4,037.6	3,136.7	3,072.6	64.2	383.8	230.9	152.8	517.1	225.3	291.9	303.1
1985	4,339.0	3,369.6	3,305.9	63.7	411.8	248.2	163.6	557.5	240.0	317.6	333.8
1986	4,579.6	3,539.3	3,479.4	59.9	447.0	268.4	178.6	593.3	250.6	342.7	364.5
1987	4,855.2	3,735.2	3,673.2	62.0	489.5	289.8	199.7	630.4	261.0	369.4	392.1
1988	5,236.4	4,019.3	3,957.9	61.4	539.8	316.4	223.4	677.4	278.5	398.8	424.2
1989	5,641.6	4,326.7	4,252.8	73.9	586.0	341.4	244.6	728.8	292.8	436.1	452.7
1990	5,963.1	4,542.0	4,464.2	77.8	636.3	367.6	268.8	784.9	306.7	478.2	487.0
1991	6,158.1	4,645.0	4,574.7	70.4	677.3	386.6	290.7	835.8	323.5	512.2	515.3
1992	6,520.3	4,920.2	4,840.4	79.9	720.3	407.1	313.2	879.8	329.6	550.2	545.2
1993	6,858.6	5,177.4	5,106.2	71.3	772.8	437.6	335.1	908.3	331.5	576.9	578.4
1994	7,287.2	5,523.7	5,440.1	83.6	824.7	472.7	352.0	938.8	332.6	606.2	619.6
1995	7,639.7	5,795.1	5,726.7	68.4	877.8	506.9	370.9	966.9	333.0	633.9	662.6
1996	8,073.1	6,159.5	6,066.9	92.6	923.2	534.6	388.7	990.3	331.8	658.6	695.0
1997	8,577.6	6,578.8	6,490.6	88.1	975.9	565.7	410.2	1,022.9	333.5	689.3	731.9
1998	9,062.8	6,959.2	6,879.2	80.0	1,040.6	601.6	439.0	1,063.0	336.8	726.2	774.8
1999	9,631.2	7,401.8	7,330.2	71.7	1,111.2	644.0	467.2	1,118.1	345.0	773.1	825.1
2000	10,251.0	7,875.9	7,799.3	76.7	1,190.7	692.3	498.4	1,184.3	360.3	824.0	880.6
2001	10,581.9	8,057.7	7,978.6	79.0	1,271.7	748.9	522.8	1,252.6	370.3	882.3	947.7
2002	10,929.1	8,256.0	8,181.0	75.1	1,344.7	781.6	563.0	1,328.4	397.8	930.6	983.5
2003	11,456.5	8,642.9	8,550.4	92.4	1,408.8	814.1	594.6	1,404.8	434.7	970.1	1,014.8
2004	12,217.2	9,249.3	9,128.4	120.9	1,489.2	862.6	626.6	1,478.7	459.4	1,019.3	1,074.1
2005	13,039.2	9,911.0	9,804.7	106.3	1,572.8	922.3	650.5	1,555.4	488.4	1,067.0	1,149.7
2006	13,815.6	10,524.7	10,426.4	98.3	1,658.9	976.2	682.8	1,631.9	509.9	1,122.1	1,209.4
2007	14,474.2	10,997.8	10,880.0	117.9	1,749.5	1,035.9	713.6	1,726.9	535.7	1,191.2	1,279.3
2008	14,769.9	11,061.8	10,943.0	118.8	1,886.9	1,125.2	761.7	1,821.2	569.1	1,252.1	1,388.7
2009	14,478.1	10,659.6	10,557.1	102.5	1,934.9	1,136.8	798.2	1,883.5	603.0	1,280.5	1,415.5
2010	15,049.0	11,137.8	11,020.8	117.0	1,965.0	1,150.7	814.3	1,946.1	640.0	1,306.1	1,443.9
2011	15,599.7	11,614.9	11,463.7	151.1	2,012.0	1,164.0	848.0	1,972.9	659.8	1,313.1	1,471.0
2012	16,254.0	12,206.4	12,057.7	148.8	2,058.4	1,168.8	889.6	1,989.1	663.7	1,325.5	1,493.6
2013	16,880.7	12,723.8	12,539.3	184.5	2,117.2	1,203.0	914.2	2,039.7	658.6	1,381.1	1,534.5
2014	17,608.1	13,340.5	13,173.5	167.1	2,177.9	1,230.6	947.3	2,089.7	667.9	1,421.8	1,574.4
2015	18,295.0	13,900.9	13,754.7	146.3	2,251.0	1,260.3	990.6	2,143.1	674.6	1,468.5	1,618.6
2016	18,804.9	14,282.7	14,152.4	130.3	2,334.3	1,304.1	1,030.3	2,187.9	686.8	1,501.1	1,675.4
2017	19,612.1	14,941.9	14,803.1	138.7	2,423.2	1,359.3	1,063.9	2,247.0	702.1	1,544.9	1,734.0
2018	20,656.5	15,776.7	15,639.9	136.8	2,539.1	1,423.3	1,115.7	2,340.8	729.7	1,611.0	1,814.9
2019	21,540.0	16,469.3	16,346.7	122.6	2,657.2	1,485.6	1,171.6	2,413.4	751.7	1,661.7	1,908.4
2020	21,354.1	16,075.7	15,956.7	119.0	2,779.8	1,562.2	1,217.6	2,498.6	787.4	1,711.3	1,990.2
2021	23,681.2	18,174.9	17,991.3	183.6	2,911.4	1,644.3	1,267.1	2,594.8	825.9	1,768.9	2,097.4
2022	26,006.9	20,106.2	19,864.3	241.9	3,188.0	1,824.6	1,363.4	2,712.7	871.4	1,841.3	2,323.9
2023	27,720.7	21,398.5	21,176.2	222.3	3,447.3	1,997.7	1,449.5	2,875.0	929.7	1,945.3	2,546.8
2021: I	22,656.8	17,286.6	17,134.9	151.7	2,828.1	1,591.5	1,236.6	2,542.1	810.7	1,731.4	2,030.9
II	23,368.9	17,916.9	17,725.5	191.4	2,876.4	1,628.8	1,247.6	2,575.5	821.9	1,753.7	2,077.0
III	23,922.0	18,362.2	18,162.7	199.5	2,938.2	1,658.4	1,279.8	2,621.6	830.6	1,791.0	2,115.6
IV	24,777.0	19,133.9	18,941.9	192.0	3,003.1	1,698.6	1,304.5	2,640.1	840.7	1,799.5	2,166.1
2022: I	25,215.5	19,478.0	19,262.0	216.0	3,071.3	1,747.5	1,323.8	2,666.2	853.9	1,812.3	2,226.4
II	25,805.8	19,967.1	19,724.3	242.9	3,147.5	1,800.4	1,347.1	2,691.2	864.2	1,826.9	2,291.9
III	26,272.0	20,306.3	20,056.7	249.6	3,237.3	1,852.6	1,384.6	2,728.5	877.4	1,851.1	2,358.9
IV	26,734.3	20,673.3	20,414.2	259.1	3,296.1	1,897.9	1,398.1	2,764.9	890.0	1,874.9	2,418.4
2023: I	27,164.4	20,988.5	20,740.8	247.8	3,362.7	1,947.8	1,414.9	2,813.2	907.7	1,905.5	2,481.7
II	27,453.8	21,190.8	20,963.1	227.7	3,415.1	1,979.3	1,435.8	2,847.9	921.7	1,926.2	2,523.9
III	27,967.7	21,594.7	21,377.4	217.4	3,473.8	2,013.6	1,460.2	2,899.2	938.5	1,960.7	2,567.7
IV	28,297.0	21,819.8	21,623.4	196.4	3,537.5	2,050.3	1,487.2	2,939.6	950.9	1,988.8	2,613.8
2024: I	28,624.1	22,016.0	21,831.4	184.6	3,615.5	2,094.8	1,520.6	2,992.6	967.0	2,025.5	2,666.9
II	29,016.7	22,315.1	22,121.7	193.4	3,668.3	2,129.4	1,538.9	3,033.3	979.2	2,054.1	2,709.5
III [p]	29,354.3	22,564.3	22,369.2	195.1	3,716.8	2,157.4	1,559.4	3,073.3	991.9	2,081.4	2,745.5

[1] Gross domestic business value added equals gross domestic product excluding gross value added of households and institutions and of general government. Nonfarm value added equals gross domestic business value added excluding gross farm value added.

[2] Equals compensation of employees of nonprofit institutions, the rental value of nonresidential fixed assets owned and used by nonprofit institutions serving households, and rental income of persons for tenant-occupied housing owned by nonprofit institutions.

[3] Equals compensation of general government employees plus general government consumption of fixed capital.

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

Table B–7. Real gross value added by sector, 1973–2024

[Billions of chained (2017) dollars; quarterly data at seasonally adjusted annual rates]

Year or quarter	Gross domestic product	Business[1]			Households and institutions			General government[3]			Addendum: Gross housing value added
		Total	Nonfarm[1]	Farm	Total	House-holds	Nonprofit institu-tions serving house-holds[2]	Total	Federal	State and local	
1973	6,106.4	4,093.6	4,072.1	36.6	839.7	494.6	341.5	1,373.1	511.0	848.3	643.1
1974	6,073.4	4,031.2	4,011.2	35.8	873.9	516.7	353.2	1,400.0	511.1	879.2	674.6
1975	6,060.9	3,992.9	3,945.4	42.6	904.3	531.5	369.0	1,421.0	509.4	905.9	696.2
1976	6,387.4	4,262.7	4,227.8	40.7	916.0	538.4	373.8	1,433.1	510.6	917.9	703.1
1977	6,682.8	4,506.8	4,470.2	42.9	923.2	538.3	381.6	1,448.1	512.7	932.2	713.2
1978	7,052.7	4,794.2	4,770.3	40.8	957.8	564.2	389.4	1,475.7	519.5	954.1	738.8
1979	7,276.0	4,964.5	4,932.3	44.5	984.4	575.7	404.9	1,492.2	520.6	971.5	753.1
1980	7,257.3	4,919.7	4,890.7	43.1	1,014.0	592.1	418.2	1,514.4	529.0	985.1	779.7
1981	7,441.5	5,063.2	5,002.0	57.1	1,033.5	598.6	431.7	1,525.1	537.9	984.9	795.0
1982	7,307.3	4,917.8	4,848.9	59.8	1,064.8	606.7	456.5	1,543.2	547.8	991.6	813.5
1983	7,642.3	5,178.5	5,150.1	41.0	1,108.7	630.4	476.9	1,556.5	561.6	987.7	845.0
1984	8,195.3	5,637.8	5,585.3	55.1	1,134.2	642.3	491.0	1,579.4	576.2	993.9	861.2
1985	8,537.0	5,900.7	5,831.8	65.0	1,153.9	656.9	495.5	1,627.1	594.6	1,022.5	896.8
1986	8,832.6	6,115.1	6,051.8	62.5	1,190.0	670.0	519.6	1,670.9	608.9	1,052.3	921.2
1987	9,137.7	6,334.2	6,271.3	63.1	1,234.6	687.0	548.5	1,712.2	628.1	1,073.2	942.6
1988	9,519.4	6,605.5	6,556.6	56.3	1,298.0	715.5	584.6	1,760.2	640.2	1,110.0	973.7
1989	9,869.0	6,858.3	6,796.9	64.4	1,350.7	737.7	616.2	1,803.3	650.0	1,144.2	994.1
1990	10,055.1	6,968.2	6,899.1	69.1	1,394.0	752.0	646.9	1,848.3	661.3	1,178.4	1,014.0
1991	10,044.2	6,925.7	6,856.1	69.3	1,422.6	763.6	664.6	1,867.1	665.0	1,193.9	1,034.7
1992	10,398.0	7,218.9	7,134.5	80.2	1,458.6	780.9	683.8	1,875.1	654.2	1,214.3	1,059.9
1993	10,684.2	7,424.8	7,354.4	71.2	1,533.7	818.8	721.6	1,879.6	643.3	1,231.0	1,097.9
1994	11,114.6	7,782.8	7,693.2	85.9	1,585.5	860.3	730.1	1,881.4	625.5	1,252.5	1,144.8
1995	11,413.0	8,022.0	7,957.5	68.4	1,632.7	890.1	747.0	1,884.2	605.5	1,277.3	1,185.6
1996	11,843.6	8,394.4	8,315.0	79.5	1,665.2	908.3	761.4	1,887.8	591.1	1,297.1	1,206.1
1997	12,370.3	8,835.1	8,744.4	88.6	1,716.4	934.1	787.4	1,902.2	581.4	1,322.7	1,235.1
1998	12,924.9	9,321.2	9,234.3	86.7	1,738.7	958.3	783.9	1,923.0	575.1	1,350.9	1,264.0
1999	13,543.8	9,859.2	9,771.4	88.2	1,779.1	989.0	792.6	1,939.8	570.4	1,373.2	1,299.7
2000	14,096.0	10,301.6	10,198.8	103.0	1,847.6	1,032.8	816.8	1,971.2	573.4	1,402.2	1,344.3
2001	14,230.7	10,363.5	10,266.6	97.2	1,893.5	1,070.7	823.7	2,005.7	575.0	1,435.6	1,386.9
2002	14,472.7	10,540.7	10,439.8	101.1	1,920.8	1,076.3	846.3	2,043.9	585.2	1,463.8	1,385.5
2003	14,877.3	10,873.0	10,763.5	109.7	1,961.9	1,107.7	855.5	2,069.7	601.0	1,473.2	1,409.2
2004	15,449.8	11,350.4	11,228.2	121.5	2,034.1	1,148.5	887.0	2,084.2	609.7	1,478.6	1,459.1
2005	15,988.0	11,796.2	11,667.5	127.9	2,101.3	1,202.8	898.9	2,103.0	617.5	1,489.3	1,528.8
2006	16,433.1	12,182.9	12,056.6	125.1	2,135.6	1,234.6	900.8	2,120.3	622.2	1,502.0	1,558.9
2007	16,762.4	12,441.8	12,330.8	110.3	2,174.4	1,264.1	909.8	2,150.3	630.8	1,523.5	1,589.1
2008	16,781.5	12,332.0	12,221.0	110.1	2,269.8	1,333.7	935.0	2,194.9	654.2	1,543.9	1,672.1
2009	16,349.1	11,882.3	11,754.4	126.8	2,256.0	1,307.7	947.8	2,234.8	686.9	1,549.8	1,655.4
2010	16,789.8	12,264.0	12,139.2	123.3	2,301.5	1,335.3	965.6	2,245.5	710.0	1,536.1	1,700.6
2011	17,052.4	12,507.6	12,389.8	118.0	2,328.3	1,335.3	992.8	2,235.3	716.7	1,518.6	1,710.8
2012	17,442.8	12,911.8	12,803.2	112.4	2,327.9	1,315.4	1,012.5	2,215.2	716.1	1,498.8	1,702.4
2013	17,812.2	13,267.3	13,139.5	126.5	2,351.5	1,330.7	1,020.8	2,201.6	704.6	1,497.0	1,715.7
2014	18,261.7	13,709.7	13,586.7	124.5	2,356.9	1,333.2	1,023.8	2,198.7	699.9	1,498.8	1,719.5
2015	18,799.6	14,222.0	14,087.6	134.8	2,371.9	1,330.9	1,041.0	2,206.4	695.9	1,510.4	1,718.4
2016	19,141.7	14,515.7	14,372.3	143.9	2,397.3	1,341.3	1,056.0	2,228.8	700.1	1,528.7	1,727.4
2017	19,612.1	14,941.9	14,803.1	138.7	2,423.2	1,359.3	1,063.9	2,247.0	702.1	1,544.9	1,734.0
2018	20,193.9	15,456.6	15,312.5	144.1	2,472.1	1,379.5	1,092.6	2,265.6	706.9	1,558.7	1,756.9
2019	20,715.7	15,917.4	15,784.7	131.4	2,505.9	1,393.9	1,112.0	2,293.6	716.3	1,577.3	1,783.9
2020	20,267.6	15,485.2	15,352.9	131.4	2,507.4	1,422.8	1,084.9	2,272.5	738.7	1,534.5	1,807.1
2021	21,494.8	16,661.3	16,517.6	142.9	2,558.4	1,468.3	1,090.8	2,284.3	749.4	1,535.9	1,867.6
2022	22,034.8	17,073.0	16,930.7	142.4	2,654.2	1,550.7	1,105.4	2,316.6	750.4	1,567.0	1,963.6
2023	22,671.1	17,568.7	17,420.3	148.1	2,713.9	1,579.5	1,136.2	2,398.4	760.0	1,639.3	1,999.6
2021: I	21,058.4	16,277.2	16,133.2	143.3	2,524.5	1,436.9	1,087.9	2,264.6	747.2	1,518.6	1,828.7
II	21,389.0	16,573.3	16,431.6	141.1	2,549.8	1,461.5	1,088.9	2,275.2	749.9	1,526.4	1,859.1
III	21,571.4	16,711.8	16,570.1	141.1	2,568.4	1,477.7	1,091.6	2,299.9	750.2	1,550.5	1,879.7
IV	21,960.4	17,082.9	16,935.4	146.3	2,590.8	1,497.1	1,094.9	2,297.5	750.5	1,547.9	1,902.9
2022: I	21,903.9	16,992.9	16,848.8	143.4	2,618.4	1,523.3	1,096.7	2,301.9	751.5	1,551.3	1,932.6
II	21,919.2	16,976.3	16,834.5	141.7	2,646.9	1,547.5	1,101.4	2,304.8	748.6	1,557.0	1,959.4
III	22,066.8	17,084.0	16,943.3	141.5	2,670.7	1,563.2	1,109.5	2,320.8	749.9	1,571.6	1,977.6
IV	22,249.5	17,238.6	17,096.4	143.1	2,680.8	1,568.8	1,114.0	2,339.0	751.7	1,588.0	1,984.6
2023: I	22,403.4	17,344.8	17,201.2	144.3	2,697.8	1,575.1	1,124.5	2,370.1	757.0	1,613.9	1,992.2
II	22,539.4	17,454.4	17,303.1	150.0	2,705.9	1,575.7	1,132.0	2,388.6	758.6	1,630.9	1,995.3
III	22,780.9	17,663.8	17,515.1	148.4	2,717.7	1,579.4	1,140.0	2,409.7	762.1	1,648.5	2,000.4
IV	22,960.6	17,811.8	17,661.6	149.8	2,734.2	1,587.7	1,148.2	2,425.1	762.5	1,663.8	2,010.3
2024: I	23,053.5	17,872.6	17,719.4	152.8	2,749.4	1,593.4	1,157.7	2,441.9	767.1	1,676.0	2,017.8
II	23,223.9	18,017.0	17,852.9	164.1	2,765.5	1,605.9	1,161.3	2,452.1	770.8	1,682.5	2,031.5
III ^{p}	23,386.7	18,160.0	18,005.0	154.8	2,774.9	1,611.3	1,165.4	2,463.4	773.9	1,690.8	2,038.2

[1] Gross domestic business value added equals gross domestic product excluding gross value added of households and institutions and of general government. Nonfarm value added equals gross domestic business value added excluding gross farm value added.

[2] Equals compensation of employees of nonprofit institutions, the rental value of nonresidential fixed assets owned and used by nonprofit institutions serving households, and rental income of persons for tenant-occupied housing owned by nonprofit institutions.

[3] Equals compensation of general government employees plus general government consumption of fixed capital.

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

TABLE B–8. Gross domestic product (GDP) by industry, value added, in current dollars and as a percentage of GDP, 2013–2024

[Billions of dollars; except as noted]

Year	Gross domestic product	Private industries									
		Total private industries	Agriculture, forestry, fishing, and hunting	Mining	Construction	Manufacturing			Utilities	Wholesale trade	Retail trade
						Total manufacturing	Durable goods	Nondurable goods			
	Value added										
2013	16,880.7	14,665.5	215.8	388.2	594.7	1,970.5	1,083.7	886.8	287.6	1,042.7	979.7
2014	17,608.1	15,332.5	200.6	418.1	649.9	2,009.7	1,106.1	903.6	299.3	1,092.1	1,018.2
2015	18,295.0	15,951.0	182.1	262.3	715.3	2,071.1	1,144.5	926.7	300.5	1,148.6	1,081.2
2016	18,804.9	16,413.1	167.5	211.8	776.8	2,035.2	1,139.9	895.4	303.4	1,142.9	1,133.2
2017	19,612.1	17,156.3	176.8	267.3	840.2	2,109.7	1,178.3	931.4	313.7	1,176.1	1,178.9
2018	20,656.5	18,097.8	177.1	313.5	889.1	2,261.8	1,232.5	1,029.3	320.4	1,222.1	1,223.6
2019	21,540.0	18,909.8	164.2	294.0	953.0	2,268.8	1,262.5	1,006.2	331.6	1,296.8	1,277.6
2020	21,354.1	18,641.7	162.9	201.9	957.8	2,149.5	1,200.2	949.3	345.7	1,301.8	1,333.1
2021	23,681.2	20,871.2	228.6	331.9	1,011.7	2,408.8	1,283.5	1,125.3	390.8	1,415.1	1,535.2
2022	26,006.9	23,068.3	290.0	460.6	1,114.3	2,684.5	1,399.7	1,284.8	443.6	1,595.5	1,628.9
2023	27,720.7	24,615.6	274.2	411.8	1,220.6	2,840.4	1,511.9	1,328.5	446.5	1,653.0	1,772.4
2021: I	22,656.8	19,900.7	196.4	279.9	995.0	2,296.3	1,260.9	1,035.4	386.6	1,364.0	1,479.9
II	23,368.9	20,579.8	234.7	309.5	999.5	2,364.9	1,276.5	1,088.4	375.3	1,395.8	1,553.8
III	23,922.0	21,084.4	244.4	340.1	1,007.5	2,412.8	1,266.6	1,146.2	390.9	1,421.3	1,526.0
IV	24,777.0	21,920.0	238.9	398.1	1,044.8	2,561.0	1,330.0	1,231.0	410.3	1,479.3	1,581.0
2022: I	25,215.5	22,326.0	263.3	415.4	1,079.1	2,603.3	1,357.9	1,245.4	395.5	1,550.4	1,581.5
II	25,805.8	22,889.4	289.3	503.6	1,091.2	2,681.2	1,382.3	1,299.0	456.9	1,584.9	1,606.5
III	26,272.0	23,316.5	298.1	488.2	1,117.6	2,686.1	1,410.1	1,276.0	467.8	1,610.2	1,635.8
IV	26,734.3	23,741.5	309.3	435.0	1,169.3	2,767.3	1,448.5	1,318.8	454.3	1,636.7	1,691.6
2023: I	27,164.4	24,121.9	299.4	406.6	1,185.6	2,765.6	1,457.9	1,307.7	454.0	1,640.7	1,728.7
II	27,453.8	24,376.5	280.1	388.1	1,202.4	2,789.3	1,501.0	1,288.3	452.0	1,640.2	1,746.8
III	27,967.7	24,838.1	269.4	424.1	1,231.6	2,891.1	1,532.4	1,358.7	449.8	1,660.4	1,796.3
IV	28,297.0	25,125.9	247.8	428.3	1,262.7	2,915.7	1,556.5	1,359.3	430.2	1,670.8	1,817.8
2024: I	28,624.1	25,397.2	235.4	399.2	1,291.1	2,880.6	1,527.4	1,353.1	435.8	1,684.8	1,818.8
II	29,016.7	25,746.2	243.0	404.4	1,306.4	2,909.5	1,547.8	1,361.7	441.5	1,690.5	1,823.4
	Percent	Industry value added as a percentage of GDP (percent)									
2013	100.0	86.9	1.3	2.3	3.5	11.7	6.4	5.3	1.7	6.2	5.8
2014	100.0	87.1	1.1	2.4	3.7	11.4	6.3	5.1	1.7	6.2	5.8
2015	100.0	87.2	1.0	1.4	3.9	11.3	6.3	5.1	1.6	6.3	5.9
2016	100.0	87.3	.9	1.1	4.1	10.8	6.1	4.8	1.6	6.1	6.0
2017	100.0	87.5	.9	1.4	4.3	10.8	6.0	4.7	1.6	6.0	6.0
2018	100.0	87.6	.9	1.5	4.3	10.9	6.0	5.0	1.6	5.9	5.9
2019	100.0	87.8	.8	1.4	4.4	10.5	5.9	4.7	1.5	6.0	5.9
2020	100.0	87.3	.8	.9	4.5	10.1	5.6	4.4	1.6	6.1	6.2
2021	100.0	88.1	1.0	1.4	4.3	10.2	5.4	4.8	1.7	6.0	6.5
2022	100.0	88.7	1.1	1.8	4.3	10.3	5.4	4.9	1.7	6.1	6.3
2023	100.0	88.8	1.0	1.5	4.4	10.2	5.5	4.8	1.6	6.0	6.4
2021: I	100.0	87.8	.9	1.2	4.4	10.1	5.6	4.6	1.7	6.0	6.5
II	100.0	88.1	1.0	1.3	4.3	10.1	5.5	4.7	1.6	6.0	6.6
III	100.0	88.1	1.0	1.4	4.2	10.1	5.3	4.8	1.6	5.9	6.4
IV	100.0	88.5	1.0	1.6	4.2	10.3	5.4	5.0	1.7	6.0	6.4
2022: I	100.0	88.5	1.0	1.6	4.3	10.3	5.4	4.9	1.6	6.1	6.3
II	100.0	88.7	1.1	2.0	4.2	10.4	5.4	5.0	1.8	6.1	6.2
III	100.0	88.8	1.1	1.9	4.3	10.2	5.4	4.9	1.8	6.1	6.2
IV	100.0	88.8	1.2	1.6	4.4	10.4	5.4	4.9	1.7	6.1	6.3
2023: I	100.0	88.8	1.1	1.5	4.4	10.2	5.4	4.8	1.7	6.0	6.4
II	100.0	88.8	1.0	1.4	4.4	10.2	5.5	4.7	1.6	6.0	6.4
III	100.0	88.8	1.0	1.5	4.4	10.3	5.5	4.9	1.6	5.9	6.4
IV	100.0	88.8	.9	1.5	4.5	10.3	5.5	4.8	1.5	5.9	6.4
2024: I	100.0	88.7	.8	1.4	4.5	10.1	5.3	4.7	1.5	5.9	6.4
II	100.0	88.7	.8	1.4	4.5	10.0	5.3	4.7	1.5	5.8	6.3

[1] Consists of agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing.

[2] Consists of utilities; wholesale trade; retail trade; transportation and warehousing; information; finance, insurance, real estate, rental, and leasing; professional and business services; educational services, health care, and social assistance; arts, entertainment, recreation, accommodation, and food services; and other services, except government.

Note: Data shown in shown in Tables B–8 and B–9 are consistent with the annual revision of the industry accounts released in September 2024. For details see *Survey of Current Business*, October 2024.

See next page for continuation of table.

Table B–8. Gross domestic product (GDP) by industry, value added, in current dollars and as a percentage of GDP, 2013–2024—*Continued*

[Billions of dollars; except as noted]

Year	Private industries—Continued: Transportation and warehousing	Information	Finance, insurance, real estate, rental, and leasing	Professional and business services	Educational services, health care, and social assistance	Arts, entertainment, recreation, accommodation, and food services	Other services, except government	Government	Private goods-producing industries[1]	Private services-producing industries[2]
	Value added									
2013	497.4	835.5	3,368.7	2,021.2	1,450.0	653.1	360.5	2,215.2	3,169.3	11,496.3
2014	533.6	848.8	3,569.9	2,120.1	1,495.0	692.5	384.7	2,275.6	3,278.3	12,054.2
2015	583.9	913.1	3,728.6	2,237.0	1,574.9	748.8	403.5	2,344.0	3,230.9	12,720.1
2016	603.0	974.9	3,894.7	2,305.0	1,657.0	791.8	415.9	2,391.9	3,191.3	13,221.7
2017	635.5	1,010.0	4,033.0	2,433.6	1,716.9	831.2	433.2	2,455.8	3,394.1	13,762.2
2018	677.3	1,041.5	4,258.2	2,589.1	1,792.0	874.6	457.7	2,558.8	3,641.5	14,456.3
2019	710.0	1,142.6	4,458.1	2,728.9	1,884.2	922.2	477.9	2,630.2	3,680.0	15,229.8
2020	638.7	1,181.3	4,628.8	2,726.1	1,870.0	693.4	450.6	2,712.4	3,472.1	15,169.6
2021	775.4	1,310.4	5,003.6	3,064.2	2,004.2	906.7	484.8	2,810.0	3,981.0	16,890.3
2022	916.3	1,367.5	5,417.5	3,381.0	2,151.4	1,067.9	549.3	2,938.6	4,549.4	18,519.0
2023	943.7	1,477.9	5,811.6	3,611.7	2,350.9	1,211.5	589.4	3,105.1	4,746.9	19,868.7
2021: I	697.3	1,263.5	4,825.0	2,929.4	1,963.2	766.3	458.0	2,756.1	3,767.5	16,133.1
II	747.8	1,300.9	4,940.7	3,005.7	1,980.8	891.0	479.3	2,789.1	3,908.6	16,671.1
III	801.4	1,317.7	5,040.7	3,103.5	2,013.8	968.6	495.8	2,837.5	4,004.8	17,079.6
IV	855.3	1,359.3	5,208.2	3,217.9	2,058.8	1,000.9	506.0	2,857.1	4,242.9	17,677.1
2022: I	882.4	1,340.0	5,288.7	3,294.8	2,100.3	1,005.0	526.2	2,889.5	4,361.2	17,964.8
II	910.4	1,354.3	5,364.6	3,340.1	2,117.7	1,050.8	537.9	2,916.4	4,565.3	18,324.0
III	934.5	1,374.4	5,470.2	3,414.6	2,171.4	1,091.5	556.2	2,955.5	4,590.1	18,726.4
IV	937.9	1,401.2	5,546.6	3,474.6	2,216.4	1,124.2	577.1	2,992.8	4,680.8	19,060.6
2023: I	944.7	1,426.8	5,689.6	3,535.9	2,283.6	1,179.8	580.6	3,042.4	4,657.3	19,464.7
II	948.2	1,463.5	5,755.6	3,593.3	2,326.8	1,205.5	584.7	3,077.3	4,659.9	19,716.6
III	936.8	1,504.4	5,859.8	3,630.5	2,370.9	1,224.1	589.0	3,129.6	4,816.2	20,021.9
IV	945.2	1,516.9	5,941.5	3,687.0	2,422.3	1,236.5	603.3	3,171.0	4,854.5	20,271.5
2024: I	951.1	1,536.0	6,042.4	3,761.0	2,480.0	1,267.5	613.6	3,226.9	4,806.3	20,590.9
II	965.0	1,556.7	6,151.7	3,820.4	2,517.3	1,292.5	623.9	3,270.5	4,863.4	20,882.8
	Industry value added as a percentage of GDP (percent)									
2013	2.9	4.9	20.0	12.0	8.6	3.9	2.1	13.1	18.8	68.1
2014	3.0	4.8	20.3	12.0	8.5	3.9	2.2	12.9	18.6	68.5
2015	3.2	5.0	20.4	12.2	8.6	4.1	2.2	12.8	17.7	69.5
2016	3.2	5.2	20.7	12.3	8.8	4.2	2.2	12.7	17.0	70.3
2017	3.2	5.1	20.6	12.4	8.8	4.2	2.2	12.5	17.3	70.2
2018	3.3	5.0	20.6	12.5	8.7	4.2	2.2	12.4	17.6	70.0
2019	3.3	5.3	20.7	12.7	8.7	4.3	2.2	12.2	17.1	70.7
2020	3.0	5.5	21.7	12.8	8.8	3.2	2.1	12.7	16.3	71.0
2021	3.3	5.5	21.1	12.9	8.5	3.8	2.0	11.9	16.8	71.3
2022	3.5	5.3	20.8	13.0	8.3	4.1	2.1	11.3	17.5	71.2
2023	3.4	5.3	21.0	13.0	8.5	4.4	2.1	11.2	17.1	71.7
2021: I	3.1	5.6	21.3	12.9	8.7	3.4	2.0	12.2	16.6	71.2
II	3.2	5.6	21.1	12.9	8.5	3.8	2.1	11.9	16.7	71.3
III	3.4	5.5	21.1	13.0	8.4	4.0	2.1	11.9	16.7	71.4
IV	3.5	5.5	21.0	13.0	8.3	4.0	2.0	11.5	17.1	71.3
2022: I	3.5	5.3	21.0	13.1	8.3	4.0	2.1	11.5	17.3	71.2
II	3.5	5.2	20.8	12.9	8.2	4.1	2.1	11.3	17.7	71.0
III	3.6	5.2	20.8	13.0	8.3	4.2	2.1	11.2	17.5	71.3
IV	3.5	5.2	20.7	13.0	8.3	4.2	2.2	11.2	17.5	71.3
2023: I	3.5	5.3	20.9	13.0	8.4	4.3	2.1	11.2	17.1	71.7
II	3.5	5.3	21.0	13.1	8.5	4.4	2.1	11.2	17.0	71.8
III	3.3	5.4	21.0	13.0	8.5	4.4	2.1	11.2	17.2	71.6
IV	3.3	5.4	21.0	13.0	8.6	4.4	2.1	11.2	17.2	71.6
2024: I	3.3	5.4	21.1	13.1	8.7	4.4	2.1	11.3	16.8	71.9
II	3.3	5.4	21.2	13.2	8.7	4.5	2.2	11.3	16.8	72.0

Note (cont'd): Value added is the contribution of each private industry and of government to GDP. Value added is equal to an industry's gross output minus its intermediate inputs. Current-dollar value added is calculated as the sum of distributions by an industry to its labor and capital, which are derived from the components of gross domestic income.

Value added industry data shown in Tables B–8 and B–9 are based on the 2017 North American Industry Classification System (NAICS).

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

TABLE B–9. Real gross domestic product by industry, value added, and percent changes, 2013–2024

Year	Gross domestic product	Private industries									
		Total private industries	Agriculture, forestry, fishing, and hunting	Mining	Construction	Manufacturing			Utilities	Wholesale trade	Retail trade
						Total manufacturing	Durable goods	Nondurable goods			
	Chain-type quantity indexes for value added (2017=100)										
2013	90.822	89.864	90.722	90.442	83.022	96.229	95.081	97.697	96.905	92.194	82.969
2014	93.115	92.449	89.904	100.047	85.837	97.133	95.920	98.686	93.312	95.876	85.421
2015	95.857	95.558	97.033	106.970	90.977	97.870	96.741	99.316	94.652	100.243	89.904
2016	97.601	97.403	102.656	97.872	95.732	97.138	96.362	98.128	99.951	99.410	95.177
2017	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
2018	102.967	103.238	104.108	103.633	102.801	104.897	104.189	105.774	98.584	100.829	103.490
2019	105.627	106.179	97.534	116.893	105.007	105.456	105.402	105.523	99.620	101.872	106.343
2020	103.342	103.693	98.904	113.913	102.673	100.880	99.552	102.594	105.625	102.497	104.397
2021	109.600	110.775	105.009	103.877	105.640	108.519	107.235	110.221	102.412	101.524	105.027
2022	112.353	113.698	104.981	94.180	99.970	109.538	109.777	109.539	104.221	99.929	100.758
2023	115.597	117.117	108.950	125.813	97.720	109.869	108.834	111.281	109.329	99.383	111.768
2021: I	107.374	108.365	105.263	110.036	106.262	106.544	106.137	107.190	99.514	103.665	110.774
II	109.060	110.226	103.398	104.075	107.637	107.840	107.168	108.846	100.861	102.580	105.810
III	109.990	111.112	103.874	102.578	105.480	107.881	106.035	110.262	103.612	99.142	101.163
IV	111.974	113.399	107.503	98.820	103.180	111.810	109.599	114.585	105.662	100.708	102.360
2022: I	111.685	113.001	105.712	91.011	105.241	110.338	109.840	111.146	105.998	100.196	97.895
II	111.764	113.036	104.139	87.117	101.369	109.071	110.451	107.852	105.210	98.410	98.760
III	112.516	113.877	104.364	93.543	96.825	109.133	109.349	109.147	101.688	99.845	101.046
IV	113.448	114.875	105.708	105.052	96.445	109.608	109.469	110.009	103.988	101.266	105.329
2023: I	114.233	115.663	106.602	113.551	96.065	106.909	107.636	106.324	104.234	100.975	107.763
II	114.926	116.397	110.476	127.219	96.520	108.752	108.789	108.908	116.767	99.224	108.109
III	116.158	117.728	109.089	131.389	98.732	111.154	109.086	113.742	106.112	98.879	113.923
IV	117.074	118.680	109.632	131.094	99.562	112.660	109.823	116.149	110.204	98.453	117.275
2024: I	117.548	119.146	111.142	127.506	101.562	110.786	106.849	115.612	107.606	99.415	119.183
II	118.416	120.111	117.229	125.922	102.847	112.992	108.376	118.651	109.091	99.974	119.016
	Percent change from year earlier; quarterly changes at seasonally adjusted annual rates										
2013	2.1	2.5	10.1	4.1	4.1	3.3	2.4	4.4	–0.7	2.6	4.6
2014	2.5	2.9	–.9	10.6	3.4	.9	.9	1.0	–3.7	4.0	3.0
2015	2.9	3.4	7.9	6.9	6.0	.8	.9	.6	1.4	4.6	5.2
2016	1.8	1.9	5.8	–8.5	5.2	–.7	–.4	–1.2	5.6	–.8	5.9
2017	2.5	2.7	–2.6	2.2	4.5	2.9	3.8	1.9	.0	.6	5.1
2018	3.0	3.2	4.1	3.6	2.8	4.9	4.2	5.8	–1.4	.8	3.5
2019	2.6	2.8	–6.3	12.8	2.1	.5	1.2	–.2	1.1	1.0	2.8
2020	–2.2	–2.3	1.4	–2.5	–2.2	–4.3	–5.6	–2.8	6.0	.6	–1.8
2021	6.1	6.8	6.2	–8.8	2.9	7.6	7.7	7.4	–3.0	–.9	.6
2022	2.5	2.6	.0	–9.3	–5.4	.9	2.4	–.6	1.8	–1.6	–4.1
2023	2.9	3.0	3.8	33.6	–2.3	.3	–.9	1.6	4.9	–.5	10.9
2021: I	5.6	6.4	4.6	–.4	4.2	5.8	8.2	3.1	–16.6	–4.5	16.6
II	6.4	7.0	–6.9	–20.0	5.3	5.0	3.9	6.3	5.5	–4.1	–16.8
III	3.5	3.3	1.9	–5.6	–7.8	.2	–4.2	5.3	11.4	–12.7	–16.4
IV	7.4	8.5	14.7	–13.9	–8.4	15.4	14.1	16.6	8.2	6.5	4.8
2022: I	–1.0	–1.4	–6.5	–28.1	8.2	–5.2	.9	–11.5	1.3	–2.0	–16.3
II	.3	.1	–5.8	–16.0	–13.9	–4.5	2.2	–11.3	–2.9	–6.9	3.6
III	2.7	3.0	.9	32.9	–16.8	.2	–3.9	4.9	–12.7	6.0	9.6
IV	3.4	3.6	5.3	59.1	–1.6	1.8	.4	3.2	9.4	5.8	18.1
2023: I	2.8	2.8	3.4	36.5	–1.6	–9.5	–6.5	–12.7	.9	–1.1	9.6
II	2.4	2.6	15.3	57.6	1.9	7.1	4.4	10.1	57.5	–6.8	1.3
III	4.4	4.7	–4.9	13.8	9.5	9.1	1.1	19.0	–31.8	–1.4	23.3
IV	3.2	3.3	2.0	–.9	3.4	5.5	2.7	8.7	16.3	–1.7	12.3
2024: I	1.6	1.6	5.6	–10.5	8.3	–6.5	–10.4	–1.8	–9.1	4.0	6.7
II	3.0	3.3	23.8	–4.9	5.2	8.2	5.8	10.9	5.6	2.3	–.6

[1] Consists of agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing.
[2] Consists of utilities; wholesale trade; retail trade; transportation and warehousing; information; finance, insurance, real estate, rental, and leasing; professional and business services; educational services, health care, and social assistance; arts, entertainment, recreation, accommodation, and food services; and other services, except government.

See next page for continuation of table.

Table B–9. Real gross domestic product by industry, value added, and percent changes, 2013–2024—*Continued*

Year	Private industries—Continued							Government	Private goods-producing industries[1]	Private services-producing industries[2]
	Transportation and warehousing	Information	Finance, insurance, real estate, rental, and leasing	Professional and business services	Educational services, health care, and social assistance	Arts, entertainment, recreation, accommodation, and food services	Other services, except government			
	Chain-type quantity indexes for value added (2017=100)									
2013	86.192	75.518	95.723	86.363	89.698	89.384	91.976	98.400	91.789	89.378
2014	89.654	77.904	97.903	90.213	91.582	92.798	96.172	98.349	94.046	92.052
2015	93.015	86.201	99.046	93.361	95.191	95.785	97.869	98.176	96.782	95.256
2016	95.017	93.855	99.735	95.354	97.998	97.476	97.946	98.986	97.124	97.471
2017	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
2018	103.487	105.547	101.493	106.203	102.806	101.915	103.209	101.110	104.232	102.991
2019	103.692	116.604	103.760	111.450	106.028	104.062	103.662	101.770	105.875	106.251
2020	95.046	121.210	105.130	110.886	102.604	76.482	93.375	100.467	102.274	104.031
2021	107.988	137.679	111.021	125.125	107.235	95.745	96.367	101.273	107.413	111.578
2022	109.639	146.411	114.564	135.869	112.396	103.920	100.668	102.942	105.619	115.701
2023	111.250	158.992	115.947	139.370	117.720	107.062	95.628	105.147	108.390	119.289
2021: I	104.408	130.666	108.339	118.933	105.454	83.593	92.388	100.238	106.855	108.722
II	106.247	136.254	110.078	122.926	106.544	96.451	96.384	100.773	107.467	110.881
III	109.444	139.165	111.473	127.234	107.684	101.296	98.325	102.063	106.867	112.126
IV	111.854	144.631	114.196	131.405	109.257	101.642	98.369	102.019	108.461	114.581
2022: I	109.774	143.132	114.422	133.165	110.959	100.358	100.168	102.519	107.135	114.420
II	109.315	144.811	114.631	134.766	111.607	104.554	100.950	102.802	104.842	115.070
III	109.780	147.560	114.931	136.909	113.162	105.802	100.957	102.960	104.523	116.223
IV	109.687	150.141	114.270	138.639	113.857	104.966	100.597	103.487	105.976	117.091
2023: I	110.115	153.660	115.550	138.711	116.357	107.609	98.247	104.321	105.114	118.320
II	110.957	156.703	115.234	138.950	116.899	107.095	95.692	104.807	107.586	118.590
III	111.915	162.331	116.276	139.288	118.105	107.281	93.708	105.384	109.861	119.671
IV	112.013	163.275	116.726	140.533	119.517	106.261	94.863	106.076	110.998	120.573
2024: I	112.251	164.090	116.692	142.002	120.940	107.998	94.696	106.566	110.281	121.344
II	112.361	164.723	117.788	142.667	122.094	108.824	94.264	106.766	112.149	122.079
	Percent change from year earlier; quarterly changes at seasonally adjusted annual rates									
2013	3.2	10.6	–0.4	1.8	1.8	2.6	1.0	–0.5	4.0	2.1
2014	4.0	3.2	2.3	4.5	2.1	3.8	4.6	–.1	2.5	3.0
2015	3.7	10.7	1.2	3.5	3.9	3.2	1.8	–.2	2.9	3.5
2016	2.2	8.9	.7	2.1	2.9	1.8	.1	.8	.4	2.3
2017	5.2	6.5	.3	4.9	2.0	2.6	2.1	1.0	3.0	2.6
2018	3.5	5.5	1.5	6.2	2.8	1.9	3.2	1.1	4.2	3.0
2019	.2	10.5	2.2	4.9	3.1	2.1	.4	.7	1.6	3.2
2020	–8.3	4.0	1.3	–.5	–3.2	–26.5	–9.9	–1.3	–3.4	–2.1
2021	13.6	13.6	5.6	12.8	4.5	25.2	3.2	.8	5.0	7.3
2022	1.5	6.3	3.2	8.6	4.8	8.5	4.5	1.6	–1.7	3.7
2023	1.5	8.6	1.2	2.6	4.7	3.0	–5.0	2.1	2.6	3.1
2021: I	32.3	16.6	3.2	14.8	–5.2	25.2	–10.6	.3	4.9	6.8
II	7.2	18.2	6.6	14.1	4.2	77.2	18.5	2.2	2.3	8.2
III	12.6	8.8	5.2	14.8	4.3	21.7	8.3	5.2	–2.2	4.6
IV	9.1	16.7	10.1	13.8	6.0	1.4	.2	–.2	6.1	9.0
2022: I	–7.2	–4.1	.8	5.5	6.4	–5.0	7.5	2.0	–4.8	–.6
II	–1.7	4.8	.7	4.9	2.4	17.8	3.2	1.1	–8.3	2.3
III	1.7	7.8	1.1	6.5	5.7	4.9	.0	.6	–1.2	4.1
IV	–.3	7.2	–2.3	5.2	2.5	–3.1	–1.4	2.1	5.7	3.0
2023: I	1.6	9.7	4.6	.2	9.1	10.5	–9.0	3.3	–3.2	4.3
II	3.1	8.2	–1.1	.7	1.9	–1.9	–10.0	1.9	9.7	.9
III	3.5	15.2	3.7	1.0	4.2	.7	–8.0	2.2	8.7	3.7
IV	.4	2.3	1.6	3.6	4.9	–3.7	5.0	2.7	4.2	3.0
2024: I	.9	2.0	–.1	4.2	4.8	6.7	–.7	1.9	–2.6	2.6
II	.4	1.6	3.8	1.9	3.9	3.1	–1.8	.8	6.9	2.4

Note: Data are based on the 2017 North American Industry Classification System (NAICS).

See Note, Table B–8.

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

Table B–10. Personal consumption expenditures, 1973–2024

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

Year or quarter	Personal consumption expenditures	Goods						Services					Addendum: Personal consumption expenditures excluding food and energy [2]
		Total	Durable		Nondurable			Total	Household consumption expenditures				
			Total [1]	Motor vehicles and parts	Total [1]	Food and beverages purchased for off-premises consumption	Gasoline and other energy goods		Total [1]	Housing and utilities	Health care	Financial services and insurance	
1973	849.6	416.6	130.5	54.4	286.1	126.7	34.3	432.9	419.2	143.5	67.2	39.9	668.5
1974	930.2	451.5	130.2	48.2	321.4	143.0	43.8	478.6	463.1	158.6	76.1	44.1	719.7
1975	1,030.5	491.3	142.2	52.6	349.2	156.6	48.0	539.2	522.2	176.5	89.0	51.8	797.3
1976	1,147.7	546.3	168.6	68.2	377.7	167.3	53.0	601.4	582.4	194.7	101.8	56.8	894.7
1977	1,274.0	600.4	192.0	79.8	408.4	179.8	57.8	673.6	653.0	217.8	115.7	65.1	998.6
1978	1,422.3	663.6	213.3	89.2	450.2	196.1	61.5	758.7	735.7	244.3	131.2	76.7	1,122.4
1979	1,585.4	737.9	226.3	90.2	511.6	218.4	80.4	847.5	821.4	273.4	148.8	83.6	1,239.7
1980	1,750.7	799.8	226.4	84.4	573.4	239.2	101.9	950.9	920.8	312.5	171.7	91.7	1,353.1
1981	1,934.0	869.4	243.9	93.0	625.4	255.3	113.4	1,064.6	1,030.4	352.1	201.9	98.5	1,501.5
1982	2,071.3	899.3	253.0	100.0	646.3	267.1	108.4	1,172.0	1,134.0	387.5	225.2	113.7	1,622.9
1983	2,281.6	973.8	295.0	122.9	678.8	277.0	106.5	1,307.8	1,267.1	421.2	253.1	141.0	1,817.2
1984	2,492.3	1,063.7	342.2	147.2	721.5	291.1	108.2	1,428.6	1,383.3	457.5	276.5	150.8	2,008.1
1985	2,712.8	1,137.6	380.4	170.1	757.2	303.0	110.5	1,575.2	1,527.3	500.6	302.2	178.2	2,210.3
1986	2,886.3	1,195.6	421.4	187.5	774.2	316.4	91.2	1,690.7	1,638.0	537.0	330.2	187.7	2,391.3
1987	3,076.3	1,256.3	442.0	188.2	814.3	324.3	96.4	1,820.0	1,764.3	571.6	366.0	189.5	2,566.6
1988	3,330.0	1,337.3	475.1	202.2	862.3	342.8	99.9	1,992.7	1,929.4	614.4	410.1	202.9	2,793.1
1989	3,576.8	1,423.8	494.3	207.8	929.5	365.4	110.4	2,153.0	2,084.9	655.2	451.2	222.3	3,002.1
1990	3,809.0	1,491.3	497.1	205.1	994.2	391.2	124.2	2,317.7	2,241.8	696.5	506.2	230.8	3,194.9
1991	3,943.4	1,497.4	477.2	185.7	1,020.3	403.0	121.1	2,446.0	2,365.9	735.2	555.8	250.1	3,314.4
1992	4,197.6	1,563.3	508.1	204.8	1,055.2	404.5	125.0	2,634.3	2,546.4	771.1	612.8	277.0	3,561.7
1993	4,452.0	1,642.3	551.5	224.7	1,090.8	413.5	126.9	2,809.6	2,719.6	814.9	648.8	314.0	3,796.6
1994	4,721.0	1,746.6	607.2	249.8	1,139.4	432.1	129.2	2,974.4	2,876.6	863.3	680.5	327.9	4,042.5
1995	4,962.6	1,815.5	635.7	255.7	1,179.8	443.7	133.4	3,147.1	3,044.7	913.7	719.9	347.0	4,267.2
1996	5,244.6	1,917.7	676.3	273.5	1,241.4	461.9	144.7	3,326.9	3,216.9	962.4	752.1	372.1	4,513.0
1997	5,536.8	2,006.5	715.5	293.1	1,291.0	474.8	147.7	3,530.3	3,424.7	1,009.8	790.9	408.9	4,787.8
1998	5,877.2	2,108.4	779.3	320.2	1,329.1	487.4	132.4	3,768.8	3,645.0	1,065.5	832.0	446.1	5,132.4
1999	6,283.8	2,287.1	855.6	350.7	1,431.5	515.5	146.5	3,996.7	3,858.5	1,123.1	863.6	484.6	5,495.9
2000	6,767.2	2,453.2	912.6	363.2	1,540.6	540.6	184.5	4,314.0	4,156.0	1,198.6	918.4	541.9	5,904.5
2001	7,073.8	2,525.6	941.5	383.3	1,584.1	564.0	178.0	4,548.2	4,369.1	1,287.5	996.6	529.3	6,182.2
2002	7,348.9	2,598.8	985.4	401.3	1,613.4	575.1	167.9	4,750.1	4,551.8	1,329.5	1,082.9	539.0	6,460.4
2003	7,740.7	2,722.6	1,017.8	401.5	1,704.8	599.6	196.4	5,018.2	4,812.6	1,391.1	1,154.0	574.2	6,784.4
2004	8,232.0	2,902.0	1,080.6	409.3	1,821.4	632.6	232.7	5,329.9	5,123.6	1,466.6	1,238.9	619.3	7,198.5
2005	8,769.1	3,082.9	1,128.6	410.0	1,954.3	668.2	283.8	5,686.1	5,475.9	1,580.1	1,320.5	676.8	7,627.2
2006	9,277.2	3,239.7	1,158.3	394.9	2,081.3	700.3	319.7	6,037.6	5,798.4	1,665.7	1,391.9	719.5	8,056.6
2007	9,746.6	3,367.0	1,188.0	400.6	2,179.0	737.3	345.5	6,379.6	6,130.8	1,759.6	1,478.2	762.7	8,453.5
2008	10,050.1	3,363.2	1,098.8	343.3	2,264.5	769.1	391.1	6,686.9	6,399.6	1,872.7	1,555.3	777.5	8,666.3
2009	9,891.2	3,180.0	1,012.1	318.6	2,167.9	772.9	287.0	6,711.2	6,422.0	1,900.0	1,632.7	720.5	8,616.1
2010	10,260.3	3,317.8	1,049.0	344.5	2,268.9	786.9	336.7	6,942.4	6,648.0	1,947.9	1,699.6	768.0	8,915.3
2011	10,698.9	3,518.1	1,093.5	365.2	2,424.6	819.5	413.8	7,180.7	6,868.9	1,983.3	1,757.1	811.1	9,246.6
2012	11,047.4	3,637.7	1,144.2	396.6	2,493.5	846.2	421.9	7,409.6	7,068.1	2,014.7	1,821.3	830.9	9,571.6
2013	11,388.2	3,742.2	1,191.8	422.1	2,550.4	870.5	421.6	7,646.1	7,298.7	2,085.7	1,863.8	870.8	9,876.2
2014	11,874.5	3,886.6	1,247.3	451.6	2,639.3	910.4	410.9	7,987.9	7,634.6	2,146.0	1,945.5	925.6	10,321.0
2015	12,297.4	3,955.1	1,315.8	490.7	2,639.3	942.0	318.8	8,342.3	7,978.5	2,196.1	2,059.8	976.8	10,811.0
2016	12,726.8	4,033.0	1,356.5	504.6	2,676.5	969.6	287.0	8,693.8	8,305.5	2,269.0	2,164.6	996.1	11,249.4
2017	13,290.6	4,212.2	1,415.9	529.4	2,796.3	1,010.4	324.0	9,078.4	8,682.0	2,350.2	2,245.3	1,073.2	11,730.3
2018	13,934.4	4,414.2	1,488.8	550.0	2,925.4	1,044.4	366.7	9,520.2	9,099.3	2,459.3	2,344.7	1,130.9	12,278.0
2019	14,437.5	4,532.8	1,523.6	545.0	3,009.2	1,083.2	352.5	9,904.7	9,487.0	2,562.0	2,472.4	1,135.0	12,760.4
2020	14,225.7	4,706.7	1,616.9	546.7	3,089.8	1,198.9	258.4	9,519.0	9,037.0	2,684.0	2,354.2	1,152.9	12,526.3
2021	16,113.9	5,500.4	1,990.3	697.3	3,510.1	1,291.9	385.8	10,613.6	10,172.8	2,837.1	2,639.3	1,266.2	14,176.2
2022	17,690.8	5,939.1	2,078.0	726.4	3,861.0	1,395.8	514.6	11,751.8	11,214.9	3,114.1	2,815.7	1,329.0	15,466.5
2023	18,822.8	6,123.9	2,142.6	750.0	3,981.3	1,444.0	467.2	12,698.9	12,144.8	3,347.7	3,057.6	1,436.3	16,603.8
2021: I	15,259.4	5,248.9	1,917.4	672.6	3,331.6	1,252.7	318.6	10,010.5	9,576.2	2,771.7	2,534.0	1,226.4	13,430.3
II	16,016.3	5,543.6	2,050.3	744.6	3,493.3	1,282.1	369.3	10,472.7	10,053.9	2,808.6	2,623.0	1,254.7	14,108.1
III	16,363.9	5,501.8	1,953.3	665.2	3,548.6	1,301.2	403.6	10,862.0	10,424.4	2,857.9	2,677.6	1,279.4	14,396.4
IV	16,816.1	5,707.1	2,040.1	707.0	3,667.0	1,331.5	451.6	11,109.1	10,636.6	2,910.3	2,722.7	1,304.1	14,769.8
2022: I	17,175.1	5,846.1	2,084.5	735.4	3,761.6	1,357.2	496.6	11,329.0	10,825.6	2,997.5	2,753.8	1,309.5	15,026.3
II	17,603.8	5,971.1	2,078.8	727.4	3,892.3	1,385.7	564.0	11,632.7	11,096.2	3,080.5	2,772.7	1,312.6	15,337.3
III	17,876.2	5,973.0	2,083.4	723.2	3,889.6	1,411.2	511.5	11,903.3	11,350.4	3,149.8	2,835.3	1,334.8	15,637.7
IV	18,108.3	5,966.2	2,065.4	719.5	3,900.8	1,429.1	486.5	12,142.1	11,587.3	3,228.4	2,901.0	1,359.3	15,864.6
2023: I	18,506.2	6,084.8	2,146.4	764.0	3,938.5	1,436.1	469.4	12,421.4	11,874.9	3,275.2	2,983.3	1,389.4	16,289.9
II	18,685.7	6,088.1	2,143.1	761.7	3,945.1	1,434.8	459.1	12,597.6	12,049.2	3,317.0	3,029.9	1,437.2	16,491.7
III	18,929.0	6,147.9	2,141.7	743.4	4,006.2	1,447.6	476.2	12,781.1	12,221.7	3,377.4	3,068.6	1,459.3	16,692.8
IV	19,170.2	6,174.8	2,139.3	730.7	4,035.4	1,457.6	464.0	12,995.4	12,433.4	3,421.2	3,148.8	1,459.2	16,940.9
2024: I	19,424.8	6,148.9	2,127.3	711.9	4,021.5	1,464.9	443.3	13,275.9	12,688.9	3,479.7	3,233.6	1,516.4	17,202.8
II	19,682.7	6,204.6	2,141.8	715.6	4,062.8	1,471.4	456.2	13,478.1	12,856.8	3,534.0	3,274.3	1,535.8	17,435.3
III [p]	19,928.2	6,264.3	2,168.2	724.3	4,096.1	1,487.6	436.7	13,663.9	13,041.1	3,576.9	3,341.6	1,567.4	17,689.4

[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.

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

Table B–11. Real personal consumption expenditures, 2007–2024

[Billions of chained (2017) dollars; quarterly data at seasonally adjusted annual rates]

Year or quarter	Personal consumption expenditures	Goods						Services					Addendum: Personal consumption expenditures excluding food and energy [2]
		Total	Durable		Nondurable			Total	Household consumption expenditures				
			Total [1]	Motor vehicles and parts	Total [1]	Food and beverages purchased for off-premises consumption	Gasoline and other energy goods		Total [1]	Housing and utilities	Health care	Financial services and insurance	
2007	11,253.9	3,415.7	985.4	424.3	2,434.5	869.7	314.1	7,838.5	7,571.1	2,193.9	1,754.0	1,013.6	9,829.5
2008	11,270.7	3,312.7	928.8	370.4	2,396.1	855.1	301.7	7,981.2	7,669.9	2,255.7	1,797.0	1,038.2	9,883.2
2009	11,123.6	3,209.4	871.9	344.2	2,356.4	849.3	303.5	7,948.6	7,624.8	2,263.0	1,836.4	1,028.0	9,735.4
2010	11,335.6	3,300.2	920.6	357.5	2,393.5	862.0	302.0	8,065.3	7,730.8	2,314.8	1,864.5	1,026.5	9,929.6
2011	11,528.5	3,372.3	967.5	367.5	2,414.6	863.3	295.0	8,183.9	7,833.3	2,323.8	1,893.1	1,053.2	10,137.8
2012	11,686.1	3,444.2	1,025.3	393.8	2,424.9	870.7	291.0	8,265.3	7,882.6	2,318.8	1,927.6	1,040.2	10,303.5
2013	11,889.9	3,562.3	1,087.9	415.2	2,478.6	887.0	298.8	8,341.9	7,956.1	2,343.2	1,945.6	1,037.2	10,474.9
2014	12,226.4	3,717.7	1,168.2	443.6	2,552.3	910.3	302.0	8,516.3	8,131.1	2,341.5	2,008.2	1,047.9	10,785.1
2015	12,638.8	3,902.5	1,257.7	481.3	2,646.3	931.4	318.8	8,738.9	8,355.1	2,336.7	2,114.2	1,073.6	11,159.9
2016	12,949.0	4,044.7	1,325.5	498.1	2,719.9	968.3	323.8	8,904.9	8,507.0	2,347.0	2,196.3	1,046.5	11,429.3
2017	13,290.6	4,212.2	1,415.9	529.4	2,796.3	1,010.4	324.0	9,078.4	8,682.0	2,350.2	2,245.3	1,073.2	11,730.3
2018	13,654.9	4,378.7	1,509.5	549.9	2,869.8	1,039.0	323.0	9,276.6	8,861.3	2,385.0	2,301.8	1,073.4	12,049.5
2019	13,948.1	4,513.6	1,559.7	540.4	2,954.6	1,066.9	321.8	9,436.2	9,034.6	2,411.2	2,384.5	1,051.1	12,320.2
2020	13,594.7	4,723.0	1,670.0	533.4	3,055.3	1,143.0	277.8	8,891.6	8,433.2	2,460.6	2,214.4	1,055.0	11,935.4
2021	14,787.2	5,258.6	1,947.4	610.6	3,317.1	1,194.4	311.3	9,557.9	9,168.9	2,526.6	2,412.6	1,091.3	13,041.0
2022	15,236.2	5,226.3	1,909.8	569.4	3,321.1	1,169.8	313.9	10,031.7	9,605.2	2,598.2	2,513.5	1,088.3	13,505.3
2023	15,621.7	5,323.7	1,984.3	587.0	3,347.2	1,152.1	317.3	10,318.7	9,917.5	2,610.6	2,667.0	1,131.7	13,921.5
2021: I	14,328.6	5,177.5	1,956.0	639.1	3,228.7	1,182.3	289.8	9,184.6	8,781.6	2,508.0	2,329.7	1,087.3	12,609.4
II	14,809.1	5,354.9	2,024.4	663.9	3,337.8	1,199.8	311.9	9,488.8	9,112.2	2,517.6	2,402.0	1,087.3	13,057.2
III	14,924.3	5,221.4	1,885.0	565.8	3,340.8	1,197.1	320.4	9,727.3	9,346.4	2,535.5	2,443.7	1,091.6	13,165.2
IV	15,086.9	5,280.7	1,924.2	573.8	3,361.3	1,198.5	322.8	9,831.0	9,435.6	2,545.3	2,475.1	1,099.0	13,332.2
2022: I	15,123.4	5,258.4	1,924.6	578.5	3,338.7	1,189.4	318.4	9,888.6	9,473.1	2,581.7	2,478.0	1,086.8	13,363.0
II	15,219.9	5,238.3	1,914.2	572.6	3,328.8	1,173.9	313.8	10,004.0	9,572.5	2,599.9	2,486.2	1,080.7	13,479.4
III	15,277.6	5,208.5	1,905.1	564.4	3,308.1	1,159.6	311.4	10,090.2	9,654.7	2,597.5	2,521.6	1,090.0	13,569.7
IV	15,324.0	5,200.0	1,895.4	562.0	3,308.8	1,156.1	311.9	10,144.1	9,720.3	2,613.6	2,568.0	1,095.5	13,609.3
2023: I	15,510.2	5,293.5	1,971.8	601.4	3,329.2	1,150.4	317.4	10,238.1	9,833.0	2,601.9	2,629.6	1,111.2	13,813.7
II	15,548.5	5,288.9	1,970.2	590.8	3,326.2	1,148.1	318.6	10,279.7	9,879.1	2,605.2	2,648.3	1,136.4	13,853.5
III	15,646.7	5,334.1	1,990.5	582.1	3,351.6	1,152.9	315.5	10,333.3	9,932.7	2,618.5	2,669.2	1,139.8	13,941.1
IV	15,781.4	5,378.5	2,004.5	573.7	3,381.7	1,157.2	317.7	10,423.6	10,025.3	2,617.1	2,720.9	1,139.4	14,077.6
2024: I	15,856.9	5,362.8	1,995.7	562.5	3,374.5	1,156.8	310.6	10,511.3	10,097.7	2,621.9	2,767.3	1,156.2	14,164.3
II	15,967.3	5,402.1	2,022.3	571.5	3,388.6	1,163.0	316.3	10,582.7	10,151.0	2,634.2	2,789.0	1,153.9	14,257.3
III p	16,106.4	5,476.0	2,059.5	584.9	3,426.5	1,171.3	319.1	10,650.9	10,224.9	2,640.5	2,832.4	1,164.4	14,388.6

[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.

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

Table B–12. Private fixed investment by type, 1973–2024

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

Year or quarter	Private fixed investment	Nonresidential											Residential		
		Total nonresidential	Structures	Equipment						Intellectual property products			Total residential [1]	Structures	
				Total [1]	Information processing equipment			Industrial equipment	Transportation equipment	Total [1]	Software	Research and development [2]		Total [1]	Single family
					Total	Computers and peripheral equipment	Other								
1973	251.0	172.7	55.0	95.1	19.9	3.5	16.3	26.0	26.6	22.7	3.2	14.6	78.3	76.6	35.2
1974	260.5	191.1	61.2	104.3	23.1	3.9	19.2	30.7	26.3	25.5	3.9	16.4	69.5	67.6	29.7
1975	263.5	196.8	61.4	107.6	23.8	3.6	20.2	31.3	25.2	27.8	4.8	17.5	66.7	64.8	29.6
1976	306.1	219.3	65.9	121.2	27.5	4.4	23.1	34.1	30.0	32.2	5.2	19.6	86.8	84.6	43.9
1977	374.3	259.1	74.6	148.7	33.7	5.7	28.0	39.4	39.3	35.8	5.5	21.8	115.2	112.8	62.2
1978	452.6	314.6	93.6	180.6	42.3	7.6	34.8	47.7	47.3	40.4	6.3	24.9	138.0	135.3	72.8
1979	521.7	373.8	117.7	208.1	50.3	10.2	40.2	56.2	53.6	48.1	8.1	29.1	147.8	144.7	72.3
1980	536.4	406.9	136.2	216.4	58.9	12.5	46.4	60.7	48.4	54.4	9.8	34.2	129.5	126.1	52.9
1981	601.4	472.9	167.3	240.9	69.6	17.1	52.5	65.5	50.6	64.8	11.8	39.7	128.5	124.9	52.0
1982	595.9	485.1	177.6	234.9	74.2	18.9	55.3	62.7	46.8	72.7	14.0	44.8	110.8	107.2	41.5
1983	643.3	482.2	154.3	246.5	83.7	23.9	59.8	58.9	53.5	81.3	16.4	49.6	161.1	156.9	72.5
1984	754.7	564.3	177.4	291.9	101.2	31.6	69.6	68.1	64.4	95.0	20.4	56.9	190.4	185.6	86.4
1985	807.8	607.8	194.5	307.9	106.6	33.7	72.9	72.5	69.0	105.3	23.8	63.0	200.1	195.0	87.4
1986	842.6	607.8	176.5	317.7	111.1	33.4	77.7	75.4	70.5	113.5	25.6	66.5	234.8	229.3	104.1
1987	865.0	615.2	174.2	320.9	112.2	35.8	76.4	76.7	68.1	120.1	29.0	69.2	249.8	244.0	117.2
1988	918.5	662.3	182.8	346.8	120.8	38.0	82.8	84.2	72.9	132.7	33.3	76.4	256.2	250.1	120.1
1989	972.0	716.0	193.7	372.2	130.7	43.1	87.6	93.3	67.9	150.1	40.6	84.1	256.0	249.9	120.9
1990	978.9	739.2	202.9	371.9	129.6	38.6	90.9	92.1	70.0	164.4	45.4	91.5	239.7	233.7	112.9
1991	944.7	723.6	183.6	360.8	129.2	37.7	91.5	89.3	71.5	179.1	48.7	101.0	221.2	215.4	99.4
1992	996.7	741.9	172.6	381.7	142.1	44.0	98.1	93.0	74.7	187.7	51.1	105.4	254.7	248.8	122.0
1993	1,086.0	799.2	177.2	425.1	153.3	47.9	105.4	102.2	89.4	196.9	57.2	106.3	286.8	280.7	140.1
1994	1,192.7	868.9	186.8	476.4	167.0	52.4	114.6	113.6	107.7	205.7	60.4	109.2	323.8	317.6	162.3
1995	1,286.3	962.2	207.3	528.1	188.4	66.1	122.3	129.0	116.1	226.8	65.5	121.2	324.1	317.7	153.5
1996	1,401.3	1,043.2	224.6	565.3	204.7	72.8	131.9	136.5	123.2	253.3	74.5	134.5	358.1	351.7	170.8
1997	1,524.7	1,149.1	250.3	610.9	222.8	81.4	141.4	140.4	135.5	288.0	93.8	148.1	375.6	369.3	175.2
1998	1,673.0	1,254.1	276.0	660.0	240.1	87.9	152.2	147.4	147.1	318.1	109.2	160.6	418.8	412.1	199.4
1999	1,826.2	1,364.5	285.7	713.6	259.8	97.2	162.5	149.1	174.4	365.1	136.6	177.5	461.8	454.5	223.8
2000	1,983.9	1,498.4	321.0	766.1	293.8	103.2	190.6	162.9	170.8	411.3	156.8	199.0	485.4	477.7	236.8
2001	1,973.1	1,460.1	333.5	711.5	265.9	87.6	178.4	151.9	154.2	415.0	157.7	202.7	513.1	505.2	249.1
2002	1,910.4	1,352.8	287.0	659.6	236.7	79.7	157.0	141.7	141.6	406.2	152.5	196.1	557.6	549.6	265.9
2003	2,013.0	1,375.9	286.6	670.6	242.7	79.9	162.8	143.4	134.1	418.7	155.0	201.0	637.1	628.8	310.6
2004	2,217.2	1,467.4	307.7	721.9	255.8	84.2	171.6	144.2	159.2	437.8	166.3	207.4	749.8	740.8	377.6
2005	2,477.2	1,621.0	353.0	794.9	267.0	84.2	182.8	162.4	179.6	473.1	178.6	224.7	856.2	846.6	433.5
2006	2,632.0	1,793.8	425.2	862.3	288.5	92.6	195.9	181.6	194.3	506.3	189.5	245.6	838.2	828.1	416.0
2007	2,639.1	1,948.6	510.3	893.4	310.9	95.4	215.5	194.1	188.8	544.8	206.4	268.0	690.5	680.6	305.2
2008	2,506.9	1,990.9	571.1	845.4	306.3	93.9	212.4	194.3	148.7	574.4	223.8	284.2	516.0	506.4	185.8
2009	2,080.4	1,690.4	455.8	670.3	275.6	88.9	186.7	153.7	74.9	564.4	226.0	274.6	390.0	381.2	105.3
2010	2,111.6	1,735.0	379.8	777.0	307.5	99.6	207.9	155.2	135.8	578.2	226.4	282.4	376.6	367.4	112.6
2011	2,286.3	1,907.5	404.5	881.3	313.3	95.6	217.7	191.5	177.8	621.7	249.8	303.4	378.8	369.1	108.2
2012	2,550.5	2,118.5	479.4	983.4	331.2	103.5	227.7	211.2	215.3	655.7	272.1	313.4	432.0	421.5	132.0
2013	2,732.9	2,221.3	491.5	1,035.3	344.8	102.1	242.6	211.4	243.4	694.6	285.6	338.7	511.5	500.0	170.8
2014	2,989.2	2,425.2	574.6	1,109.1	352.2	101.9	250.2	223.4	274.9	741.5	303.7	364.4	564.0	551.7	193.6
2015	3,148.4	2,507.5	584.5	1,144.1	362.2	101.3	260.9	224.7	309.8	778.9	316.3	385.3	640.9	627.6	221.1
2016	3,239.2	2,529.0	566.2	1,119.8	365.2	99.5	265.8	222.9	297.8	843.0	347.9	413.2	710.2	696.0	242.5
2017	3,435.0	2,661.1	594.9	1,160.0	386.0	105.8	280.2	237.3	299.9	906.2	382.9	437.5	773.9	758.9	270.2
2018	3,668.4	2,856.5	636.6	1,227.6	406.6	120.4	286.2	253.6	319.3	992.2	422.8	479.5	811.9	796.2	289.6
2019	3,820.8	2,993.7	677.9	1,240.9	405.4	118.9	286.5	262.1	308.4	1,074.9	447.4	535.6	827.1	811.3	280.0
2020	3,791.1	2,870.5	624.7	1,109.5	400.4	126.6	273.8	241.0	221.3	1,136.3	478.4	568.5	920.6	903.5	309.4
2021	4,211.6	3,079.1	628.3	1,188.6	442.1	147.3	294.7	268.1	214.7	1,262.1	533.8	637.8	1,132.5	1,112.2	423.9
2022	4,671.6	3,492.8	756.1	1,317.7	482.4	162.1	320.3	298.8	229.9	1,419.0	601.9	714.4	1,178.8	1,157.3	453.2
2023	4,943.1	3,831.6	884.1	1,425.8	468.7	151.2	317.4	313.1	321.7	1,521.7	645.8	765.4	1,111.5	1,090.2	400.4
2021: I	4,086.7	3,000.2	612.6	1,180.8	437.4	147.6	289.8	249.8	233.7	1,206.9	510.2	610.3	1,086.5	1,066.6	392.5
II	4,182.2	3,067.3	622.7	1,196.7	436.6	142.0	294.6	265.1	234.5	1,247.9	529.7	629.8	1,114.9	1,094.2	417.3
III	4,231.0	3,085.9	630.1	1,178.6	432.6	144.3	288.3	274.6	207.3	1,277.2	540.6	644.6	1,145.1	1,125.0	437.9
IV	4,346.4	3,162.9	647.9	1,198.4	461.7	155.4	306.3	282.8	183.3	1,316.7	554.6	666.4	1,183.5	1,162.9	447.8
2022: I	4,539.9	3,319.5	691.2	1,267.9	489.1	167.0	322.1	295.1	191.8	1,360.3	576.4	687.8	1,220.4	1,199.0	478.2
II	4,669.6	3,443.8	735.4	1,298.8	480.7	158.0	322.7	297.8	215.2	1,409.6	596.8	710.8	1,225.8	1,204.0	491.5
III	4,727.8	3,564.0	781.7	1,340.4	490.0	167.2	322.9	297.5	240.3	1,441.8	613.0	722.7	1,163.9	1,142.2	442.2
IV	4,749.0	3,643.9	816.1	1,363.6	469.8	156.3	313.5	304.8	272.2	1,464.2	621.5	736.3	1,105.1	1,083.9	401.0
2023: I	4,826.3	3,742.3	857.6	1,390.1	469.9	149.3	320.7	310.8	292.5	1,494.6	635.8	750.4	1,084.0	1,062.4	378.5
II	4,925.7	3,833.7	888.7	1,432.1	465.8	150.3	315.6	313.6	329.9	1,512.9	639.3	762.5	1,091.9	1,070.8	384.5
III	4,974.2	3,848.8	884.1	1,437.2	463.6	148.5	315.1	313.3	336.7	1,527.4	647.3	769.2	1,125.3	1,104.2	411.8
IV	5,046.1	3,901.5	905.8	1,443.9	475.3	157.0	318.4	314.5	327.6	1,551.7	660.6	779.7	1,144.7	1,123.5	426.9
2024: I	5,138.5	3,957.8	914.9	1,458.8	483.7	168.1	315.6	324.0	320.6	1,584.1	675.2	795.0	1,180.7	1,159.8	440.3
II	5,201.1	4,018.5	916.0	1,499.7	495.1	176.1	319.0	323.2	349.8	1,602.7	690.7	798.6	1,182.6	1,161.3	435.9
III [p]	5,263.7	4,084.0	906.3	1,547.2	518.0	190.9	327.1	329.0	371.9	1,630.6	707.0	810.2	1,179.6	1,158.1	421.8

[1] Includes other items not shown separately.

[2] Research and development investment includes expenditures for software.

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

Table B–13. Real private fixed investment by type, 2007–2024

[Billions of chained (2017) dollars; quarterly data at seasonally adjusted annual rates]

Year or quarter	Private fixed investment	Nonresidential											Residential		
		Total nonresidential	Structures	Equipment						Intellectual property products			Total residential [2]	Structures	
				Total [2]	Information processing equipment			Industrial equipment	Transportation equipment	Total [2]	Software	Research and development [3]		Total [2]	Single family
					Total	Computers and peripheral equipment [1]	Other								
2007	2,782.2	1,996.1	625.5	839.9	204.5	72.2	134.2	219.6	212.9	552.7	173.3	316.0	821.9	818.3	356.6
2008	2,620.6	2,008.3	666.0	799.7	215.6	77.9	140.1	210.5	166.9	573.7	187.4	325.3	623.0	617.7	224.0
2009	2,201.6	1,716.4	541.4	630.2	204.8	79.2	128.9	164.4	78.1	570.8	193.1	317.3	487.9	482.1	132.4
2010	2,269.9	1,794.3	454.8	757.8	239.2	91.9	151.1	164.2	152.4	586.4	200.4	318.5	472.8	465.8	143.8
2011	2,432.5	1,951.3	469.0	859.6	250.8	91.8	162.1	197.0	195.8	622.9	222.3	331.8	472.2	464.1	137.2
2012	2,678.0	2,137.1	531.5	953.9	274.0	101.1	176.4	213.5	231.8	653.8	246.7	334.5	533.3	525.3	166.0
2013	2,842.0	2,238.6	537.3	1,006.5	293.9	100.6	195.5	212.8	257.7	695.0	264.3	357.7	601.1	592.1	203.6
2014	3,052.6	2,421.1	597.2	1,086.0	312.9	100.4	213.7	223.5	287.4	739.1	286.1	377.0	626.8	616.2	216.1
2015	3,193.6	2,498.9	598.2	1,127.2	336.7	100.4	236.7	225.7	318.7	774.0	304.6	390.3	693.2	681.1	240.8
2016	3,286.9	2,544.8	579.7	1,117.5	356.1	99.7	256.5	224.9	302.6	847.6	340.5	424.5	742.2	728.6	253.2
2017	3,435.0	2,661.1	594.9	1,160.0	386.0	105.8	280.2	237.3	299.9	906.2	382.9	437.5	773.9	758.9	270.2
2018	3,611.7	2,844.3	629.2	1,228.6	416.8	119.6	297.1	248.7	318.3	986.5	433.9	464.3	768.5	753.4	277.7
2019	3,710.9	2,952.2	644.0	1,241.1	428.9	121.1	307.8	253.2	304.9	1,067.0	466.5	510.8	761.6	746.5	260.1
2020	3,639.0	2,815.5	585.0	1,115.6	432.5	131.5	300.5	230.7	220.4	1,115.1	510.9	520.7	820.1	804.2	275.8
2021	3,902.9	2,985.2	569.6	1,190.3	478.7	150.7	327.0	246.1	226.6	1,228.9	586.8	563.5	909.4	892.0	338.1
2022	4,007.5	3,192.9	590.3	1,242.2	513.6	159.8	352.8	253.8	227.5	1,367.1	673.7	613.9	831.6	814.5	311.7
2023	4,103.9	3,384.5	654.3	1,285.2	491.5	148.5	342.6	256.0	290.2	1,445.9	722.2	645.1	762.7	745.0	266.3
2021: I	3,867.1	2,937.9	575.3	1,187.2	474.0	152.5	320.4	235.6	236.0	1,178.0	559.0	542.0	919.1	901.5	332.2
II	3,919.5	3,001.4	576.1	1,212.1	473.3	146.1	326.5	245.9	254.7	1,216.7	580.8	558.7	910.5	892.7	340.1
III	3,898.5	2,988.2	570.5	1,178.7	468.0	146.9	320.2	249.9	221.7	1,242.0	595.0	568.2	902.6	885.7	342.6
IV	3,926.4	3,013.3	556.5	1,183.2	499.4	157.3	341.0	253.0	194.0	1,279.0	612.5	585.1	905.3	888.3	337.7
2022: I	4,006.8	3,110.7	571.1	1,228.9	522.4	165.7	355.4	256.9	202.9	1,317.3	644.0	595.8	894.9	877.8	345.5
II	4,026.4	3,165.9	583.3	1,232.2	512.0	155.7	355.8	253.4	217.3	1,357.2	666.5	611.0	867.8	850.6	339.4
III	4,008.2	3,225.1	596.3	1,252.1	521.6	164.8	355.6	250.2	234.9	1,383.6	682.1	620.0	807.1	789.8	297.7
IV	3,988.7	3,270.0	610.4	1,255.5	498.3	153.1	344.6	254.8	254.8	1,410.2	702.3	628.9	756.5	739.7	264.0
2023: I	4,018.8	3,312.8	631.9	1,258.2	493.7	145.3	348.5	256.1	263.9	1,425.8	706.5	639.4	748.2	730.8	251.7
II	4,103.0	3,391.6	656.3	1,295.7	488.6	147.8	340.4	256.7	301.6	1,439.6	714.7	644.7	756.4	738.9	258.5
III	4,128.9	3,400.9	659.2	1,292.3	485.9	146.5	339.1	255.2	303.0	1,449.7	725.6	645.2	770.6	752.8	274.8
IV	4,164.9	3,432.9	669.7	1,294.6	497.7	154.5	342.5	255.8	292.4	1,468.3	741.8	650.9	775.5	757.4	280.3
2024: I	4,231.4	3,471.0	679.9	1,295.7	502.0	164.7	335.7	260.9	282.7	1,495.0	760.9	660.1	800.8	782.8	290.0
II	4,255.7	3,504.1	680.2	1,326.5	511.7	172.3	337.4	258.2	308.3	1,497.7	765.3	659.7	795.2	776.7	284.0
III p	4,274.0	3,536.8	672.0	1,360.4	533.1	187.0	343.5	261.6	323.7	1,507.1	769.6	665.3	785.1	766.5	273.5

[1] Because computers exhibit rapid changes in prices relative to other prices in the economy, the chained-dollar estimates should not be used to measure the component's relative importance or its contribution to the growth rate of more aggregate series. The quantity index for computers can be used to accurately measure the real growth rate of this series. For information on this component, see *Survey of Current Business* Table 5.3.1 (for growth rates), Table 5.3.2 (for contributions), and Table 5.3.3 (for quantity indexes).

[2] Includes other items not shown separately.

[3] Research and development investment includes expenditures for software.

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

Table B–14. Foreign transactions in the national income and product accounts, 1973–2024

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

Year or quarter	Current receipts from rest of the world					Current payments to rest of the world									Balance on current account, NIPA[2]
	Total	Exports of goods and services			Income receipts	Total	Imports of goods and services			Income payments	Current taxes and transfer payments to rest of the world (net)				
		Total	Goods[1]	Services[1]			Total	Goods[1]	Services[1]		Total	From persons (net)	From government (net)	From business (net)	
1973	118.8	95.3	75.8	19.5	23.5	109.9	91.2	71.8	19.3	10.9	7.9	1.6	5.6	0.7	8.9
1974	156.5	126.7	103.5	23.2	29.8	150.5	127.5	104.5	22.9	14.3	8.7	1.4	6.4	1.0	6.0
1975	166.7	138.7	112.5	26.2	28.0	146.9	122.7	99.0	23.7	15.0	9.1	1.3	7.1	.7	19.8
1976	181.9	149.5	121.5	28.0	32.4	174.8	151.1	124.6	26.5	15.5	8.1	1.4	5.7	1.1	7.1
1977	196.5	159.3	128.4	30.9	37.2	207.5	182.4	152.6	29.8	16.9	8.1	1.4	5.3	1.4	–10.9
1978	233.1	186.9	149.9	37.0	46.3	245.8	212.3	177.4	34.8	24.7	8.8	1.6	5.9	1.4	–12.6
1979	298.5	230.1	187.3	42.9	68.3	299.6	252.7	212.8	39.9	36.4	10.6	1.7	6.8	2.0	–1.2
1980	359.9	280.8	230.4	50.3	79.1	351.4	293.8	248.6	45.3	44.9	12.6	2.0	8.3	2.4	8.5
1981	397.3	305.2	245.2	60.0	92.0	393.9	317.8	267.8	49.9	59.1	17.0	5.6	8.3	3.2	3.4
1982	384.2	283.2	222.6	60.7	101.0	387.5	303.2	250.5	52.6	64.5	19.8	6.7	9.7	3.4	–3.3
1983	378.9	277.0	214.0	62.9	101.9	413.9	328.6	272.7	56.0	64.8	20.5	7.0	10.1	3.4	–35.1
1984	424.2	302.4	231.3	71.1	121.9	514.3	405.1	336.3	68.8	85.6	23.6	7.9	12.2	3.5	–90.1
1985	415.9	303.2	227.5	75.7	112.7	530.2	417.2	343.3	73.9	87.3	25.7	8.3	14.4	2.9	–114.3
1986	432.3	321.0	231.4	89.6	111.3	575.0	452.9	370.0	82.9	94.4	27.8	9.1	15.4	3.2	–142.7
1987	487.2	363.9	265.6	98.4	123.3	641.3	508.7	414.8	93.9	105.8	26.8	10.0	13.4	3.4	–154.1
1988	596.7	444.6	332.1	112.5	152.1	712.4	554.0	452.1	101.9	129.5	29.0	10.8	13.7	4.5	–115.7
1989	682.0	504.3	374.8	129.5	177.7	774.3	591.0	484.8	106.2	152.9	30.4	11.6	14.2	4.6	–92.4
1990	740.7	551.9	403.3	148.6	188.8	815.6	629.7	508.1	121.7	154.2	31.7	12.2	14.7	4.8	–74.9
1991	763.3	594.9	430.1	164.8	168.4	755.4	623.5	500.7	122.8	136.8	–4.9	14.1	–24.0	5.0	7.9
1992	785.1	633.1	455.3	177.7	152.1	830.7	667.8	544.9	122.9	121.0	41.9	14.5	22.0	5.4	–45.6
1993	810.4	654.8	467.7	187.1	155.6	889.8	720.0	592.8	127.2	124.4	45.4	17.1	22.9	5.4	–79.4
1994	905.5	720.9	518.4	202.6	184.5	1,021.1	813.4	676.8	136.6	161.6	46.1	18.9	21.1	6.0	–115.6
1995	1,042.6	812.8	592.4	220.4	229.8	1,148.5	902.6	757.4	145.1	201.9	44.1	20.3	15.6	8.2	–105.9
1996	1,114.0	867.6	628.8	238.8	246.4	1,229.0	964.0	807.4	156.5	215.5	49.5	22.6	20.0	6.9	–115.0
1997	1,233.9	953.8	699.9	253.9	280.1	1,364.0	1,055.8	885.7	170.1	256.8	51.4	25.7	16.7	9.1	–130.1
1998	1,239.8	953.0	692.6	260.4	286.8	1,445.1	1,115.7	930.8	184.9	269.4	60.0	29.7	17.4	13.0	–205.3
1999	1,355.2	992.9	711.7	281.2	324.6	1,631.9	1,252.5	1,051.2	201.3	293.7	85.7	36.3	25.0	24.4	–276.6
2000	1,527.8	1,096.1	795.1	301.1	390.6	1,924.7	1,477.2	1,251.2	226.0	352.2	95.4	38.6	26.8	29.9	–396.9
2001	1,411.6	1,026.8	739.6	287.2	339.6	1,803.0	1,403.6	1,176.2	227.4	289.3	110.2	42.5	26.7	41.1	–391.4
2002	1,390.6	998.0	706.6	291.4	335.8	1,846.0	1,437.7	1,198.9	238.9	290.0	118.3	44.4	29.3	44.6	–455.4
2003	1,478.5	1,035.2	733.9	301.3	377.4	2,006.2	1,557.1	1,299.0	258.1	318.9	130.1	46.1	32.0	52.0	–527.6
2004	1,705.6	1,176.4	828.0	348.4	464.7	2,343.4	1,810.5	1,513.6	296.9	388.0	144.9	49.5	34.0	61.4	–637.8
2005	1,940.9	1,301.6	919.3	382.2	569.3	2,692.0	2,041.5	1,722.8	318.7	494.5	156.1	54.4	39.9	61.8	–751.2
2006	2,247.7	1,470.2	1,043.1	427.1	702.6	3,067.0	2,256.6	1,900.6	356.0	656.2	154.2	57.1	41.7	55.3	–819.3
2007	2,584.4	1,659.3	1,159.7	499.6	850.2	3,325.2	2,395.2	2,002.7	392.5	754.5	175.5	65.3	49.1	61.0	–740.9
2008	2,779.9	1,835.3	1,291.0	544.3	855.2	3,484.1	2,576.2	2,148.7	427.5	710.0	198.0	71.1	54.3	72.5	–704.2
2009	2,362.1	1,582.8	1,057.4	525.4	689.3	2,745.3	2,001.9	1,588.1	413.8	539.0	204.3	69.8	62.9	71.6	–383.1
2010	2,714.1	1,857.2	1,272.9	584.3	760.0	3,153.8	2,389.6	1,947.0	442.5	554.3	209.9	72.1	63.3	74.6	–439.8
2011	3,049.8	2,115.9	1,468.5	647.4	827.9	3,510.1	2,695.5	2,231.1	464.3	589.9	224.7	74.7	66.8	83.2	–460.3
2012	3,161.8	2,217.7	1,529.6	688.1	827.4	3,585.8	2,769.3	2,293.3	476.1	594.7	221.8	75.7	67.3	78.7	–424.0
2013	3,266.0	2,287.9	1,563.9	724.1	847.2	3,617.2	2,766.4	2,293.9	472.5	616.9	233.9	77.8	66.6	89.6	–351.2
2014	3,405.9	2,378.5	1,617.0	761.6	881.5	3,781.0	2,887.4	2,389.3	498.1	646.4	247.2	83.7	65.3	98.1	–375.1
2015	3,269.3	2,270.6	1,496.7	773.9	860.6	3,692.4	2,794.9	2,289.6	505.4	640.5	257.0	89.5	65.2	102.4	–423.1
2016	3,275.1	2,235.6	1,447.6	788.0	892.9	3,676.5	2,738.8	2,218.7	520.1	661.5	276.1	90.6	69.2	116.3	–401.4
2017	3,585.1	2,388.3	1,546.7	841.6	1,031.1	3,963.1	2,931.6	2,369.9	561.7	738.2	293.4	95.7	67.8	129.8	–378.0
2018	3,830.7	2,538.1	1,669.3	868.8	1,138.7	4,271.8	3,131.2	2,559.1	572.1	848.4	292.3	98.7	74.3	119.3	–441.2
2019	3,876.1	2,539.4	1,644.8	894.6	1,174.7	4,323.4	3,116.7	2,516.7	600.0	892.8	313.9	102.3	74.4	137.2	–447.3
2020	3,312.7	2,151.1	1,421.6	729.5	989.1	3,885.6	2,777.3	2,305.1	472.2	777.5	330.8	102.3	87.7	140.8	–572.9
2021	3,819.9	2,555.4	1,747.2	808.2	1,083.5	4,699.3	3,415.5	2,839.6	575.9	930.8	353.0	111.4	95.6	146.0	–879.4
2022	4,431.1	3,017.4	2,065.1	952.3	1,219.2	5,452.0	3,976.3	3,257.0	719.3	1,069.9	405.8	128.6	122.3	154.9	–1,020.9
2023	4,666.5	3,052.5	2,022.0	1,030.5	1,411.4	5,582.4	3,849.8	3,096.1	753.7	1,311.3	421.2	135.6	122.3	163.4	–915.9
2021: I	3,615.3	2,381.2	1,621.8	759.4	1,051.0	4,394.4	3,177.0	2,675.8	501.2	867.6	349.9	106.2	101.8	141.9	–779.1
II	3,737.0	2,505.0	1,717.7	787.3	1,055.7	4,599.1	3,340.1	2,798.5	541.6	925.7	333.3	108.4	84.7	140.2	–862.1
III	3,852.4	2,570.1	1,752.8	817.4	1,101.5	4,797.5	3,458.8	2,844.2	614.6	966.0	372.7	113.3	110.0	149.4	–945.1
IV	4,074.8	2,765.4	1,896.6	868.7	1,125.7	5,006.0	3,686.0	3,039.9	646.1	964.0	356.1	117.9	85.7	152.5	–931.2
2022: I	4,158.6	2,848.7	1,949.3	899.4	1,127.0	5,298.2	3,925.7	3,253.6	672.2	1,009.3	363.2	123.5	96.4	143.3	–1,139.6
II	4,451.6	3,071.6	2,121.5	950.1	1,194.2	5,516.9	4,093.7	3,374.3	719.4	1,033.2	390.1	128.3	110.2	151.6	–1,065.4
III	4,547.5	3,102.6	2,140.5	962.0	1,257.5	5,507.3	3,988.4	3,245.4	743.1	1,080.9	437.9	129.8	147.6	160.4	–959.8
IV	4,566.7	3,046.7	2,049.1	997.6	1,298.1	5,485.7	3,897.4	3,154.9	742.5	1,156.2	432.1	132.8	135.1	164.2	–919.0
2023: I	4,602.3	3,060.6	2,059.6	1,001.0	1,347.1	5,531.6	3,874.2	3,135.8	738.5	1,247.0	410.4	133.2	128.5	148.7	–929.3
II	4,587.8	2,995.5	1,968.1	1,027.4	1,388.5	5,505.4	3,799.0	3,051.5	747.5	1,283.8	422.6	134.2	129.7	158.7	–917.6
III	4,714.6	3,062.0	2,025.7	1,036.3	1,455.7	5,630.9	3,843.1	3,090.8	752.4	1,355.2	432.6	136.2	124.8	171.6	–916.3
IV	4,761.3	3,091.7	2,034.3	1,057.4	1,454.2	5,661.6	3,882.9	3,106.5	776.4	1,359.3	419.4	138.7	106.2	174.5	–900.3
2024: I	4,823.3	3,125.4	2,037.0	1,088.4	1,493.0	5,796.0	3,967.0	3,170.1	796.9	1,410.8	418.2	140.9	99.8	177.5	–972.7
II	4,859.5	3,154.3	2,053.4	1,100.9	1,504.0	5,920.9	4,061.2	3,252.8	808.4	1,444.1	415.6	141.4	95.5	178.8	–1,061.3
III ^{p}	4,855.3	3,204.1	2,088.4	1,115.7	1,449.1	6,074.9	4,158.3	3,331.6	826.7	1,433.7	483.0	141.9	156.3	184.7	–1,219.6

[1] Certain goods, primarily military equipment purchased and sold by the Federal Government, are included in services. Beginning with 1986, repairs and alterations of equipment were reclassified from goods to services.

[2] National income and product accounts (NIPA).

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

Table B–15. Real exports and imports of goods and services, 2007–2024

[Billions of chained (2017) dollars; quarterly data at seasonally adjusted annual rates]

Year or quarter	Exports of goods and services						Imports of goods and services					
	Total	Goods [1]				Services [1]	Total	Goods [1]				Services [1]
		Total	Durable goods	Nondurable goods	Nonagricultural goods			Total	Durable goods	Nondurable goods	Nonpetroleum goods	
2007	1,745.5	1,146.7	764.1	382.9	1,040.1	595.2	2,376.4	1,927.5	1,050.8	866.7	1,602.4	446.7
2008	1,846.6	1,214.0	801.1	413.0	1,101.0	628.5	2,325.4	1,864.5	1,017.4	837.3	1,550.6	463.5
2009	1,693.1	1,070.0	666.5	402.6	960.6	628.3	2,031.8	1,576.0	811.2	760.6	1,284.3	468.2
2010	1,907.3	1,232.4	786.3	445.1	1,111.0	675.6	2,295.3	1,818.3	1,002.3	802.9	1,526.0	485.1
2011	2,044.2	1,324.5	861.8	463.3	1,204.9	719.7	2,405.8	1,918.6	1,096.9	808.8	1,638.7	493.1
2012	2,126.3	1,376.9	905.0	474.0	1,256.4	749.6	2,464.7	1,969.5	1,186.2	776.0	1,729.5	500.4
2013	2,190.3	1,417.3	924.9	493.5	1,295.3	773.5	2,494.6	2,009.0	1,242.0	763.1	1,795.5	487.7
2014	2,275.8	1,480.6	963.5	517.9	1,348.8	794.3	2,623.4	2,120.8	1,352.1	769.3	1,929.5	503.4
2015	2,283.1	1,475.7	942.5	532.6	1,341.3	807.5	2,759.5	2,243.5	1,442.2	802.7	2,052.5	515.8
2016	2,293.9	1,485.2	932.7	552.3	1,343.6	808.7	2,799.7	2,268.4	1,459.7	810.0	2,069.6	531.4
2017	2,388.3	1,546.7	962.5	584.1	1,402.8	841.6	2,931.6	2,369.9	1,562.3	807.6	2,172.5	561.7
2018	2,456.4	1,612.1	996.5	615.4	1,467.7	844.2	3,050.0	2,491.6	1,650.9	841.0	2,305.0	558.4
2019	2,469.5	1,614.9	974.2	639.6	1,471.7	854.5	3,085.9	2,504.8	1,656.3	848.6	2,331.7	580.8
2020	2,145.3	1,452.6	819.6	633.6	1,302.0	694.9	2,808.8	2,357.7	1,534.8	822.4	2,209.3	454.2
2021	2,284.3	1,564.4	917.7	648.7	1,423.0	722.8	3,220.8	2,698.7	1,807.0	893.5	2,539.3	525.4
2022	2,455.9	1,656.8	967.4	690.7	1,521.3	802.8	3,497.6	2,880.4	1,950.3	935.3	2,729.6	619.2
2023	2,523.8	1,694.3	992.9	703.4	1,569.9	833.5	3,456.6	2,828.2	1,931.8	904.2	2,670.0	629.3
2021: I	2,235.4	1,542.0	898.0	644.9	1,390.0	696.9	3,102.2	2,636.7	1,771.0	866.8	2,484.5	470.4
II	2,253.2	1,546.6	921.6	628.6	1,412.3	709.5	3,164.7	2,670.8	1,794.4	878.6	2,511.6	497.9
III	2,258.3	1,536.2	910.1	629.7	1,406.4	724.7	3,230.2	2,676.5	1,780.3	897.3	2,511.3	555.9
IV	2,390.3	1,632.7	941.0	691.6	1,483.2	760.3	3,386.3	2,811.0	1,882.3	931.4	2,649.8	577.6
2022: I	2,362.2	1,592.7	940.6	656.3	1,456.4	773.1	3,494.3	2,901.9	1,967.2	940.6	2,753.1	594.7
II	2,433.7	1,634.5	957.2	679.5	1,492.2	803.7	3,545.0	2,924.1	1,983.1	946.8	2,781.5	623.0
III	2,517.5	1,711.9	982.1	726.8	1,575.8	808.8	3,495.7	2,862.2	1,948.5	920.8	2,707.0	635.2
IV	2,510.3	1,688.4	989.8	700.4	1,560.8	825.8	3,455.5	2,833.4	1,902.5	933.1	2,676.8	623.9
2023: I	2,522.5	1,710.3	992.5	718.2	1,581.9	816.4	3,448.5	2,834.4	1,919.5	920.1	2,671.6	616.2
II	2,491.6	1,661.5	981.7	682.8	1,545.1	833.7	3,421.3	2,798.4	1,921.5	886.0	2,647.4	623.7
III	2,521.5	1,691.8	1,006.4	689.5	1,571.2	833.8	3,460.4	2,833.7	1,934.9	906.8	2,675.1	627.7
IV	2,559.6	1,713.6	990.8	723.3	1,581.4	850.0	3,496.3	2,846.1	1,951.5	903.8	2,685.9	649.8
2024: I	2,571.8	1,712.5	986.9	725.8	1,574.9	862.8	3,548.7	2,891.1	1,988.6	912.9	2,742.5	657.4
II	2,578.4	1,716.5	998.9	718.7	1,588.6	865.5	3,614.0	2,949.9	2,028.2	932.2	2,795.6	664.4
III p	2,625.4	1,759.2	1,027.5	733.2	1,623.5	870.6	3,702.9	3,025.4	2,085.4	951.5	2,876.4	678.1

[1] Certain goods, primarily military equipment purchased and sold by the Federal Government, are included in services. Repairs and alterations of equipment are also included in services.

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

Table B–16. Sources of personal income, 1973–2024

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

Year or quarter	Personal income	Compensation of employees: Total	Wages and salaries: Total	Wages and salaries: Private industries	Wages and salaries: Government	Supplements to wages and salaries: Total	Supplements: Employer contributions for employee pension and insurance funds	Supplements: Employer contributions for government social insurance	Proprietors' income with inventory valuation and capital consumption adjustments: Total	Proprietors' income: Farm	Proprietors' income: Nonfarm	Rental income of persons with capital consumption adjustment
1973	1,140.8	812.7	708.8	560.0	148.8	103.9	64.1	39.8	112.5	29.1	83.4	23.1
1974	1,251.8	887.7	772.3	611.8	160.5	115.4	70.7	44.7	112.2	23.5	88.7	23.2
1975	1,369.4	947.2	814.8	638.6	176.2	132.4	85.7	46.7	118.2	22.0	96.2	22.3
1976	1,502.6	1,048.3	899.7	710.8	188.9	148.6	94.2	54.4	131.0	17.2	113.8	20.3
1977	1,659.2	1,165.8	994.2	791.6	202.6	171.7	110.6	61.1	144.5	16.0	128.5	15.9
1978	1,863.7	1,316.8	1,120.6	900.6	220.0	196.2	124.7	71.5	166.0	19.9	146.1	16.5
1979	2,082.7	1,477.2	1,253.3	1,016.2	237.1	223.9	141.3	82.6	179.4	22.2	157.3	16.1
1980	2,324.5	1,622.2	1,373.4	1,112.0	261.5	248.8	159.9	88.9	171.6	11.7	159.9	19.0
1981	2,603.2	1,792.5	1,511.4	1,225.5	285.8	281.2	177.5	103.6	179.7	19.0	160.7	23.8
1982	2,789.5	1,893.0	1,587.5	1,280.0	307.5	305.5	195.7	109.8	171.2	13.3	157.9	23.8
1983	2,981.7	2,012.5	1,677.5	1,352.7	324.8	335.0	215.1	119.9	186.3	6.2	180.1	24.4
1984	3,288.7	2,215.9	1,844.9	1,496.8	348.1	371.0	231.9	139.0	228.2	20.9	207.3	24.7
1985	3,522.9	2,387.3	1,982.6	1,608.7	373.9	404.8	257.0	147.7	241.1	21.0	220.1	26.2
1986	3,731.2	2,542.1	2,102.3	1,705.1	397.2	439.7	281.9	157.9	256.5	22.8	233.7	18.3
1987	3,946.8	2,722.4	2,256.3	1,833.2	423.1	466.1	299.9	166.3	286.5	28.9	257.6	16.6
1988	4,280.0	2,948.0	2,439.8	1,987.7	452.0	508.2	323.6	184.6	325.5	26.8	298.7	22.5
1989	4,621.0	3,139.6	2,583.1	2,101.9	481.1	556.6	362.9	193.7	341.1	33.0	308.1	21.5
1990	4,913.3	3,340.4	2,741.2	2,222.2	519.0	599.2	392.7	206.5	353.2	32.2	321.0	28.2
1991	5,089.9	3,450.5	2,814.5	2,265.7	548.8	636.0	420.9	215.1	354.2	26.8	327.4	38.6
1992	5,417.5	3,668.2	2,965.5	2,393.5	572.0	702.7	474.3	228.4	400.2	34.8	365.4	60.6
1993	5,652.9	3,817.3	3,079.3	2,490.3	589.0	737.9	498.3	239.7	428.0	31.4	396.6	90.1
1994	5,940.9	4,006.2	3,236.6	2,627.1	609.5	769.6	515.5	254.1	456.6	34.7	422.0	113.7
1995	6,283.4	4,198.1	3,418.0	2,789.0	629.0	780.1	515.9	264.1	481.2	22.0	459.2	124.9
1996	6,666.2	4,416.9	3,616.5	2,968.4	648.1	800.5	525.7	274.8	543.8	37.3	506.4	142.5
1997	7,074.0	4,708.8	3,876.8	3,205.0	671.9	832.0	542.4	289.6	584.0	32.4	551.6	147.1
1998	7,588.4	5,071.1	4,181.6	3,480.3	701.3	889.5	582.3	307.2	640.3	28.6	611.7	165.2
1999	7,978.6	5,402.7	4,457.9	3,724.2	733.8	944.8	621.4	323.3	696.4	28.0	668.3	178.5
2000	8,621.3	5,847.1	4,824.9	4,045.2	779.8	1,022.2	677.0	345.2	753.6	31.2	722.4	183.5
2001	8,993.1	6,038.3	4,953.6	4,131.6	822.0	1,084.7	726.7	358.0	831.1	32.1	798.9	202.4
2002	9,150.0	6,135.1	4,995.8	4,123.0	872.9	1,139.3	773.2	366.0	870.1	20.3	849.8	208.4
2003	9,481.8	6,353.6	5,138.3	4,224.3	914.0	1,215.3	832.8	382.5	897.5	37.1	860.4	227.1
2004	10,015.9	6,719.5	5,421.0	4,468.7	952.3	1,298.5	889.7	408.8	962.9	52.4	910.5	242.8
2005	10,546.1	7,066.1	5,691.4	4,700.1	991.3	1,374.7	946.7	428.1	979.1	47.9	931.2	221.1
2006	11,302.0	7,479.7	6,056.7	5,022.2	1,034.5	1,422.9	975.6	447.3	1,050.9	34.3	1,016.6	181.1
2007	11,932.1	7,878.5	6,396.4	5,307.8	1,088.5	1,482.1	1,020.4	461.7	995.4	41.5	953.9	186.3
2008	12,425.7	8,056.8	6,534.1	5,390.2	1,143.9	1,522.7	1,051.3	471.4	960.3	39.5	920.8	290.3
2009	12,065.7	7,759.0	6,249.1	5,073.9	1,175.2	1,509.9	1,051.8	458.1	938.1	27.6	910.5	347.6
2010	12,556.6	7,925.4	6,372.5	5,181.3	1,191.2	1,552.9	1,083.9	469.0	1,108.5	38.7	1,069.8	433.7
2011	13,309.6	8,226.2	6,626.2	5,431.3	1,194.9	1,600.0	1,107.3	492.7	1,228.3	63.9	1,164.4	506.5
2012	13,917.8	8,567.4	6,928.1	5,729.8	1,198.3	1,639.2	1,125.9	513.3	1,299.9	61.0	1,238.9	534.5
2013	14,068.8	8,835.0	7,114.0	5,906.0	1,208.0	1,721.0	1,194.7	526.3	1,351.7	87.5	1,264.2	578.7
2014	14,784.1	9,250.2	7,476.3	6,239.4	1,236.9	1,773.9	1,227.5	546.4	1,370.0	68.5	1,301.5	598.5
2015	15,473.7	9,699.4	7,859.5	6,583.7	1,275.8	1,839.9	1,270.6	569.4	1,347.7	55.5	1,292.3	601.4
2016	15,887.7	9,966.1	8,091.2	6,783.2	1,308.0	1,874.9	1,293.9	580.9	1,349.2	36.0	1,313.2	618.7
2017	16,662.8	10,424.4	8,474.4	7,126.2	1,348.2	1,950.0	1,345.3	604.7	1,428.6	41.0	1,387.6	642.0
2018	17,528.2	10,957.4	8,899.8	7,498.0	1,401.9	2,057.6	1,432.8	624.8	1,495.3	32.1	1,463.2	671.5
2019	18,363.2	11,446.6	9,325.1	7,874.8	1,450.3	2,121.5	1,470.8	650.6	1,555.8	33.8	1,522.0	688.4
2020	19,620.1	11,596.4	9,465.7	7,971.1	1,494.6	2,130.8	1,472.1	658.7	1,594.0	46.3	1,547.7	738.1
2021	21,419.5	12,557.0	10,315.6	8,770.5	1,545.1	2,241.4	1,534.7	706.7	1,815.3	75.5	1,739.7	772.3
2022	22,088.9	13,436.7	11,123.1	9,499.0	1,624.2	2,313.6	1,548.3	765.3	1,873.6	95.9	1,777.6	870.3
2023	23,402.5	14,190.2	11,725.2	9,992.5	1,732.8	2,464.9	1,643.9	821.0	1,949.0	71.3	1,877.7	989.1
2021: I	22,155.5	12,089.1	9,879.5	8,370.4	1,509.2	2,209.6	1,529.4	680.1	1,697.5	49.3	1,648.3	745.6
II	21,034.8	12,404.0	10,171.9	8,642.8	1,529.1	2,232.1	1,534.8	697.3	1,845.5	94.9	1,750.6	761.6
III	21,148.8	12,702.3	10,451.0	8,885.6	1,565.3	2,251.3	1,536.9	714.4	1,867.1	89.2	1,778.0	781.2
IV	21,338.9	13,032.7	10,759.9	9,183.2	1,576.8	2,272.8	1,537.6	735.2	1,850.8	68.8	1,782.0	800.7
2022: I	21,557.4	13,174.2	10,892.8	9,298.0	1,594.8	2,281.5	1,537.0	744.5	1,833.3	81.2	1,752.1	814.3
II	21,853.0	13,287.8	10,995.9	9,387.3	1,608.6	2,291.9	1,537.7	754.2	1,850.1	98.1	1,752.0	858.2
III	22,299.8	13,604.6	11,278.9	9,644.7	1,634.2	2,325.7	1,548.4	777.3	1,895.3	100.5	1,794.9	889.5
IV	22,645.5	13,680.3	11,325.0	9,665.9	1,659.1	2,355.3	1,570.0	785.3	1,915.5	104.0	1,811.5	919.1
2023: I	22,981.2	13,883.4	11,480.7	9,792.9	1,687.8	2,402.7	1,602.1	800.7	1,934.7	92.7	1,842.0	963.6
II	23,288.8	14,084.6	11,641.0	9,929.3	1,711.7	2,443.7	1,628.3	815.4	1,936.6	76.0	1,860.6	984.1
III	23,532.4	14,311.4	11,824.0	10,073.0	1,751.0	2,487.5	1,657.9	829.6	1,954.6	66.2	1,888.3	995.0
IV	23,807.8	14,481.2	11,955.3	10,174.7	1,780.7	2,525.9	1,687.4	838.5	1,970.1	50.2	1,920.0	1,013.6
2024: I	24,344.2	14,823.7	12,251.0	10,434.7	1,816.2	2,572.8	1,722.7	850.1	1,972.1	38.5	1,933.6	1,046.1
II	24,574.0	14,945.6	12,343.0	10,499.7	1,843.3	2,602.6	1,750.3	852.3	2,002.3	41.1	1,961.2	1,053.4
III p	24,749.9	15,093.3	12,457.6	10,591.1	1,866.5	2,635.8	1,776.6	859.1	2,009.5	40.9	1,968.6	1,055.7

See next page for continuation of table.

Table B–16. Sources of personal income, 1973–2024—*Continued*

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

Year or quarter	Personal income receipts on assets			Personal current transfer receipts								Less: Contributions for government social insurance, domestic
					Government social benefits to persons						Other current transfer receipts, from business (net)	
	Total	Personal interest income	Personal dividend income	Total	Total [1]	Social security [2]	Medicare [3]	Medicaid	Unemployment insurance	Other		
1973	155.4	125.5	29.9	112.6	108.6	50.7	10.2	9.6	4.6	23.3	3.9	75.5
1974	180.6	147.4	33.2	133.3	128.6	57.6	12.7	11.2	7.0	28.4	4.7	85.2
1975	201.0	168.0	32.9	170.0	163.1	65.9	15.6	13.9	18.1	35.7	6.8	89.3
1976	220.0	181.0	39.0	184.3	177.6	74.5	18.8	15.5	16.4	38.7	6.7	101.3
1977	251.6	206.9	44.7	194.6	189.5	83.2	22.1	16.7	13.1	40.9	5.1	113.1
1978	285.8	235.1	50.7	209.9	203.4	91.4	25.5	18.6	9.4	44.9	6.5	131.3
1979	327.1	269.5	57.7	235.6	227.3	102.6	29.9	21.1	9.7	49.9	8.2	152.7
1980	397.7	333.5	64.2	280.1	271.5	118.6	36.2	23.9	16.1	62.1	8.6	166.2
1981	483.9	414.2	69.7	319.0	307.8	138.6	43.5	27.7	15.9	66.3	11.2	195.7
1982	554.9	481.8	73.1	355.5	343.1	153.7	50.9	30.2	25.2	66.8	12.4	208.9
1983	600.2	518.2	82.0	384.3	370.5	164.4	57.8	33.9	26.4	71.5	13.8	226.0
1984	676.7	590.9	85.8	400.6	380.9	173.0	64.7	36.6	16.0	74.3	19.7	257.5
1985	724.3	630.5	93.8	425.4	403.1	183.3	69.7	39.7	15.9	78.0	22.3	281.4
1986	766.3	663.1	103.1	451.6	428.6	193.6	75.3	43.6	16.5	83.0	22.9	303.4
1987	776.3	674.3	102.0	468.1	447.9	201.0	81.6	47.8	14.6	86.4	20.2	323.1
1988	848.0	720.1	128.0	497.5	476.9	213.9	86.3	53.0	13.3	93.6	20.6	361.5
1989	959.7	802.3	157.5	544.2	521.1	227.4	98.2	60.8	14.4	103.1	23.2	385.2
1990	1,004.8	835.1	169.7	596.9	574.7	244.1	107.6	73.1	18.2	113.9	22.2	410.1
1991	1,008.7	827.7	181.0	668.1	650.5	264.2	117.5	96.9	26.8	127.0	17.6	430.2
1992	995.4	806.2	189.3	748.0	731.8	281.8	132.6	116.2	39.6	142.9	16.3	455.0
1993	1,001.9	796.8	205.1	793.0	778.9	297.9	146.8	130.1	34.8	150.0	14.1	477.4
1994	1,043.6	806.3	237.3	829.0	815.7	312.2	164.4	139.4	23.9	156.1	13.3	508.2
1995	1,128.5	869.4	259.2	883.5	864.7	327.7	181.2	149.6	21.7	164.0	18.7	532.8
1996	1,188.8	886.4	302.4	929.2	906.3	342.0	194.9	158.2	22.3	167.6	22.9	555.1
1997	1,266.5	928.8	337.8	954.9	935.4	356.6	206.9	163.1	20.1	166.4	19.4	587.2
1998	1,352.5	994.0	358.4	983.9	957.9	369.2	205.6	170.2	19.7	170.0	26.0	624.7
1999	1,336.2	987.7	348.5	1,026.2	992.2	379.9	208.7	184.6	20.5	174.4	34.0	661.3
2000	1,455.6	1,069.3	386.4	1,087.3	1,044.9	401.4	219.1	199.5	20.7	179.1	42.4	705.8
2001	1,461.9	1,087.5	374.4	1,192.6	1,145.8	425.1	242.6	227.3	31.9	192.4	46.8	733.2
2002	1,402.6	1,001.2	401.5	1,285.2	1,251.0	446.9	259.7	250.0	53.5	211.3	34.2	751.5
2003	1,435.6	1,004.4	431.2	1,347.3	1,321.0	463.5	276.7	264.5	53.2	231.2	26.3	779.3
2004	1,498.7	939.3	559.4	1,421.2	1,404.5	485.5	304.4	289.8	36.4	254.3	16.8	829.2
2005	1,636.4	1,081.3	555.0	1,516.7	1,490.9	512.7	332.1	304.4	31.8	273.5	25.8	873.3
2006	1,899.0	1,215.4	683.6	1,613.8	1,593.0	544.1	399.1	299.1	30.4	281.5	20.8	922.5
2007	2,105.3	1,325.2	780.1	1,728.1	1,697.3	575.7	428.2	324.2	32.7	294.9	30.8	961.4
2008	2,151.5	1,345.8	805.7	1,955.1	1,919.3	605.5	461.6	338.3	51.1	417.7	35.8	988.4
2009	1,838.5	1,272.8	565.6	2,146.7	2,107.7	664.5	493.0	369.6	131.2	398.0	39.0	964.3
2010	1,747.7	1,211.1	536.6	2,325.2	2,281.4	690.2	513.4	396.9	138.9	484.2	43.7	983.7
2011	1,906.5	1,216.1	690.4	2,358.7	2,310.1	713.3	535.6	406.0	107.2	484.8	48.5	916.7
2012	2,103.6	1,271.8	831.7	2,363.0	2,322.6	762.1	554.7	417.5	83.6	434.4	40.4	950.5
2013	1,983.2	1,201.6	781.6	2,424.3	2,385.9	799.0	572.8	440.0	62.5	432.5	38.4	1,104.3
2014	2,177.4	1,260.4	917.0	2,541.6	2,498.6	834.6	600.0	490.9	35.5	453.5	42.9	1,153.6
2015	2,344.6	1,347.7	996.9	2,685.4	2,635.1	871.8	634.9	535.9	32.5	467.4	50.3	1,204.7
2016	2,415.4	1,388.0	1,027.4	2,777.0	2,717.3	896.5	662.1	562.8	32.0	467.1	59.7	1,238.8
2017	2,611.0	1,466.7	1,144.3	2,855.7	2,807.4	926.1	691.8	573.7	30.2	474.2	48.3	1,298.9
2018	2,789.4	1,554.5	1,234.9	2,976.3	2,926.0	972.4	733.6	589.8	27.6	482.9	50.3	1,361.7
2019	2,950.0	1,603.5	1,346.5	3,147.1	3,090.8	1,030.7	790.5	614.0	27.5	498.2	56.3	1,424.8
2020	2,912.4	1,509.0	1,403.5	4,228.8	4,181.1	1,077.9	820.4	657.6	528.6	951.7	47.7	1,449.7
2021	3,180.7	1,480.3	1,700.5	4,653.7	4,561.0	1,114.6	878.9	736.5	317.3	1,360.7	92.7	1,559.5
2022	3,474.0	1,634.9	1,839.2	4,139.2	4,013.8	1,211.5	935.0	814.4	23.8	860.3	125.4	1,704.8
2023	3,822.9	1,892.0	1,930.9	4,268.0	4,146.5	1,357.0	1,009.5	878.1	33.2	671.7	121.6	1,816.6
2021: I	3,048.0	1,477.7	1,570.3	6,078.0	6,007.8	1,105.6	854.9	704.9	583.8	2,608.5	70.3	1,502.8
II	3,158.1	1,480.3	1,677.8	4,404.3	4,311.6	1,109.6	871.2	745.6	440.8	992.9	92.7	1,538.8
III	3,225.4	1,475.0	1,750.4	4,148.6	4,048.7	1,116.9	887.1	749.2	212.8	928.7	99.9	1,575.8
IV	3,291.3	1,488.0	1,803.4	3,984.0	3,876.0	1,126.2	902.4	746.3	31.8	912.7	108.0	1,620.7
2022: I	3,333.6	1,526.6	1,807.0	4,062.3	3,944.5	1,198.5	917.6	791.9	24.5	851.6	117.8	1,660.3
II	3,424.9	1,595.9	1,828.9	4,115.2	3,986.8	1,207.2	926.6	819.2	21.7	847.0	128.4	1,683.2
III	3,509.5	1,663.7	1,845.8	4,130.9	4,002.9	1,214.8	937.4	819.0	23.1	837.6	127.9	1,729.9
IV	3,628.2	1,753.3	1,874.9	4,248.3	4,120.9	1,225.6	958.5	827.5	25.9	905.1	127.4	1,745.9
2023: I	3,729.9	1,823.3	1,906.6	4,245.6	4,121.6	1,339.9	981.1	877.6	30.1	706.5	124.0	1,776.0
II	3,806.4	1,870.6	1,935.8	4,281.6	4,160.2	1,353.3	1,001.8	911.6	32.7	666.8	121.4	1,804.5
III	3,836.2	1,908.7	1,927.5	4,268.3	4,147.5	1,360.7	1,019.9	867.2	34.7	664.2	120.9	1,833.2
IV	3,919.1	1,965.3	1,953.8	4,276.5	4,156.5	1,374.0	1,035.3	856.2	35.3	649.1	120.0	1,852.8
2024: I	3,938.9	1,951.0	1,988.0	4,446.1	4,314.6	1,426.5	1,049.2	904.8	34.9	687.4	131.5	1,882.9
II	3,950.2	1,966.2	1,984.0	4,512.3	4,380.1	1,439.7	1,067.1	924.7	34.9	696.8	132.3	1,889.9
III p	3,938.8	1,964.1	1,974.7	4,557.6	4,424.9	1,453.2	1,090.2	919.4	35.7	704.8	132.6	1,905.0

[1] Includes Veterans' benefits, not shown seperately.
[2] Includes old-age, survivors, and disability insurance benefits that are distributed from the federal old-age and survivors insurance trust fund and the disability insurance trust fund.
[3] Includes hospital and supplementary medical insurance benefits that are distributed from the federal hospital insurance trust fund and the supplementary medical insurance trust fund.

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

Table B–17. Disposition of personal income, 1973–2024

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

Year or quarter	Personal income	Less: Personal current taxes	Equals: Disposable personal income	Less: Personal outlays				Equals: Personal saving	Percent of disposable personal income [2]		
				Total	Personal consumption expenditures	Personal interest payments [1]	Personal current transfer payments		Personal outlays		Personal saving
									Total	Personal consumption expenditures	
1973	1,140.8	132.4	1,008.4	872.6	849.6	19.6	3.4	135.8	86.5	84.3	13.5
1974	1,251.8	151.0	1,100.8	954.5	930.2	20.9	3.4	146.3	86.7	84.5	13.3
1975	1,369.4	147.6	1,221.8	1,057.8	1,030.5	23.4	3.8	164.0	86.6	84.3	13.4
1976	1,502.6	172.7	1,330.0	1,175.6	1,147.7	23.5	4.4	154.4	88.4	86.3	11.6
1977	1,659.2	197.9	1,461.4	1,305.4	1,274.0	26.6	4.8	155.9	89.3	87.2	10.7
1978	1,863.7	229.6	1,634.1	1,459.0	1,422.3	31.3	5.4	175.1	89.3	87.0	10.7
1979	2,082.7	268.9	1,813.8	1,627.0	1,585.4	35.5	6.0	186.8	89.7	87.4	10.3
1980	2,324.5	299.5	2,024.9	1,800.1	1,750.7	42.5	6.9	224.9	88.9	86.5	11.1
1981	2,603.2	345.8	2,257.4	1,993.9	1,934.0	48.4	11.5	263.6	88.3	85.7	11.7
1982	2,789.5	354.7	2,434.7	2,143.5	2,071.3	58.5	13.8	291.2	88.0	85.1	12.0
1983	2,981.7	352.9	2,628.8	2,364.2	2,281.6	67.4	15.1	264.7	89.9	86.8	10.1
1984	3,288.7	377.9	2,910.8	2,584.5	2,492.3	75.0	17.1	326.3	88.8	85.6	11.2
1985	3,522.9	417.8	3,105.1	2,822.1	2,712.8	90.6	18.8	282.9	90.9	87.4	9.1
1986	3,731.2	437.8	3,293.4	3,004.7	2,886.3	97.3	21.1	288.7	91.2	87.6	8.8
1987	3,946.8	489.6	3,457.2	3,196.6	3,076.3	97.1	23.2	260.6	92.5	89.0	7.5
1988	4,280.0	505.9	3,774.1	3,457.0	3,330.0	101.3	25.6	317.1	91.6	88.2	8.4
1989	4,621.0	567.7	4,053.3	3,717.9	3,576.8	113.1	28.0	335.4	91.7	88.2	8.3
1990	4,913.3	594.7	4,318.6	3,958.0	3,809.0	118.4	30.6	360.6	91.7	88.2	8.4
1991	5,089.9	588.9	4,501.0	4,100.0	3,943.4	119.9	36.7	401.0	91.1	87.6	8.9
1992	5,417.5	612.8	4,804.7	4,354.2	4,197.6	116.1	40.5	450.5	90.6	87.4	9.4
1993	5,652.9	648.8	5,004.1	4,611.5	4,452.0	113.9	45.6	392.6	92.2	89.0	7.8
1994	5,940.9	693.1	5,247.8	4,890.6	4,721.0	119.9	49.8	357.2	93.2	90.0	6.8
1995	6,283.4	748.4	5,535.0	5,155.9	4,962.6	140.4	52.9	379.0	93.2	89.7	6.8
1996	6,666.2	837.1	5,829.1	5,459.2	5,244.6	157.0	57.6	369.9	93.7	90.0	6.3
1997	7,074.0	931.8	6,142.2	5,770.4	5,536.8	169.7	63.9	371.8	93.9	90.1	6.1
1998	7,588.4	1,032.4	6,555.9	6,131.3	5,877.2	184.6	69.5	424.6	93.5	89.6	6.5
1999	7,978.6	1,111.9	6,866.7	6,550.9	6,283.8	190.8	76.3	315.8	95.4	91.5	4.6
2000	8,621.3	1,236.3	7,385.0	7,068.1	6,767.2	217.7	83.2	316.8	95.7	91.6	4.3
2001	8,993.1	1,239.0	7,754.1	7,390.9	7,073.8	225.6	91.5	363.2	95.3	91.2	4.7
2002	9,150.0	1,052.2	8,097.9	7,646.3	7,348.9	200.6	96.7	451.6	94.4	90.8	5.6
2003	9,481.8	1,003.5	8,478.2	8,038.3	7,740.7	196.5	101.1	439.9	94.8	91.3	5.2
2004	10,015.9	1,048.7	8,967.1	8,550.1	8,232.0	207.3	110.9	417.0	95.3	91.8	4.7
2005	10,546.1	1,212.5	9,333.6	9,124.5	8,769.1	237.3	118.1	209.2	97.8	94.0	2.2
2006	11,302.0	1,357.0	9,945.0	9,669.1	9,277.2	266.9	124.9	276.0	97.2	93.3	2.8
2007	11,932.1	1,492.5	10,439.6	10,176.2	9,746.6	291.2	138.4	263.4	97.5	93.4	2.5
2008	12,425.7	1,507.5	10,918.2	10,466.7	10,050.1	272.0	144.6	451.5	95.9	92.0	4.1
2009	12,065.7	1,152.4	10,913.3	10,288.4	9,891.2	252.8	144.3	624.9	94.3	90.6	5.7
2010	12,556.6	1,237.6	11,319.0	10,647.6	10,260.3	242.3	145.0	671.4	94.1	90.6	5.9
2011	13,309.6	1,453.7	11,855.9	11,079.6	10,698.9	229.9	150.8	776.3	93.5	90.2	6.5
2012	13,917.8	1,509.5	12,408.3	11,431.8	11,047.4	229.6	154.8	976.5	92.1	89.0	7.9
2013	14,068.8	1,677.5	12,391.2	11,775.5	11,388.2	229.5	157.8	615.7	95.0	91.9	5.0
2014	14,784.1	1,785.7	12,998.4	12,286.4	11,874.5	243.7	168.2	712.0	94.5	91.4	5.5
2015	15,473.7	1,940.9	13,532.9	12,742.3	12,297.4	263.5	181.4	790.6	94.2	90.9	5.8
2016	15,887.7	1,958.8	13,928.9	13,182.7	12,726.8	272.8	183.1	746.2	94.6	91.4	5.4
2017	16,662.8	2,048.8	14,613.9	13,772.3	13,290.6	290.4	191.3	841.6	94.2	90.9	5.8
2018	17,528.2	2,074.2	15,454.0	14,457.4	13,934.4	321.3	201.6	996.7	93.6	90.2	6.4
2019	18,363.2	2,198.7	16,164.5	14,986.3	14,437.5	341.2	207.6	1,178.2	92.7	89.3	7.3
2020	19,620.1	2,245.3	17,374.8	14,715.8	14,225.7	287.5	202.7	2,659.0	84.7	81.9	15.3
2021	21,419.5	2,705.1	18,714.4	16,618.7	16,113.9	277.8	227.0	2,095.7	88.8	86.1	11.2
2022	22,088.9	3,244.9	18,844.0	18,277.9	17,690.8	334.4	252.6	566.1	97.0	93.9	3.0
2023	23,402.5	2,855.7	20,546.8	19,579.6	18,822.8	493.1	263.7	967.2	95.3	91.6	4.7
2021: I	22,155.5	2,547.7	19,607.7	15,739.8	15,259.4	263.2	217.2	3,867.9	80.3	77.8	19.7
II	21,034.8	2,675.6	18,359.2	16,522.4	16,016.3	283.4	222.6	1,836.8	90.0	87.2	10.0
III	21,148.8	2,750.0	18,398.8	16,878.4	16,363.9	284.5	230.0	1,520.4	91.7	88.9	8.3
IV	21,338.9	2,847.0	18,491.9	17,334.2	16,816.1	280.1	237.9	1,157.7	93.7	90.9	6.3
2022: I	21,557.4	3,254.1	18,303.3	17,699.3	17,175.1	280.1	244.1	604.1	96.7	93.8	3.3
II	21,853.0	3,297.4	18,555.6	18,154.6	17,603.8	299.0	251.9	401.0	97.8	94.9	2.2
III	22,299.8	3,224.9	19,074.9	18,482.1	17,876.2	351.2	254.7	592.7	96.9	93.7	3.1
IV	22,645.5	3,203.3	19,442.3	18,775.6	18,108.3	407.5	259.9	666.6	96.6	93.1	3.4
2023: I	22,981.2	2,834.2	20,147.0	19,196.3	18,506.2	430.4	259.7	950.7	95.3	91.9	4.7
II	23,288.8	2,828.4	20,460.4	19,427.3	18,685.7	480.4	261.2	1,033.1	95.0	91.3	5.0
III	23,532.4	2,866.0	20,666.4	19,723.5	18,929.0	529.5	265.0	942.9	95.4	91.6	4.6
IV	23,807.8	2,894.3	20,913.5	19,971.3	19,170.2	532.2	268.9	942.2	95.5	91.7	4.5
2024: I	24,344.2	2,965.6	21,378.6	20,230.5	19,424.8	534.4	271.4	1,148.1	94.6	90.9	5.4
II	24,574.0	3,005.4	21,568.6	20,507.5	19,682.7	551.7	273.1	1,061.1	95.1	91.3	4.9
III p	24,749.9	3,058.4	21,691.5	20,757.1	19,928.2	554.0	274.9	934.4	95.7	91.9	4.3

[1] Consists of nonmortgage interest paid by households.
[2] Percents based on data in millions of dollars.

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

Table B–18. Total and per capita disposable personal income and personal consumption expenditures, and per capita gross domestic product, in current and real dollars, 1973–2024

[Quarterly data at seasonally adjusted annual rates, except as noted]

Year or quarter	Disposable personal income				Personal consumption expenditures				Gross domestic product per capita (dollars)		Population (thou- sands) [1]
	Total (billions of dollars)		Per capita (dollars)		Total (billions of dollars)		Per capita (dollars)				
	Current dollars	Chained (2017) dollars	Current dollars	Chained (2017) dollars	Current dollars	Chained (2017) dollars	Current dollars	Chained (2017) dollars	Current dollars	Chained (2017) dollars	
1973	1,008.4	4,490.5	4,758	21,188	849.6	3,783.4	4,009	17,851	6,725	28,812	211,939
1974	1,100.8	4,439.8	5,146	20,757	930.2	3,751.7	4,349	17,540	7,224	28,394	213,898
1975	1,221.8	4,548.7	5,657	21,061	1,030.5	3,836.7	4,771	17,764	7,801	28,062	215,981
1976	1,330.0	4,694.0	6,098	21,524	1,147.7	4,050.6	5,262	18,573	8,590	29,289	218,086
1977	1,461.4	4,842.7	6,634	21,984	1,274.0	4,221.8	5,783	19,165	9,450	30,337	220,289
1978	1,634.1	5,062.8	7,340	22,741	1,422.3	4,406.5	6,388	19,793	10,563	31,679	222,629
1979	1,813.8	5,161.1	8,058	22,928	1,585.4	4,511.3	7,043	20,041	11,672	32,323	225,106
1980	2,024.9	5,201.8	8,892	22,842	1,750.7	4,497.2	7,688	19,748	12,547	31,869	227,726
1981	2,257.4	5,322.2	9,815	23,139	1,934.0	4,559.6	8,408	19,823	13,943	32,353	230,008
1982	2,434.7	5,438.1	10,485	23,418	2,071.3	4,626.3	8,919	19,922	14,399	31,467	232,218
1983	2,628.8	5,632.1	11,218	24,035	2,281.6	4,888.2	9,737	20,860	15,508	32,613	234,333
1984	2,910.8	6,009.2	12,313	25,420	2,492.3	5,145.4	10,543	21,766	17,080	34,668	236,394
1985	3,105.1	6,194.3	13,019	25,971	2,712.8	5,411.8	11,374	22,690	18,192	35,794	238,506
1986	3,293.4	6,430.0	13,684	26,716	2,886.3	5,635.2	11,992	23,413	19,028	36,698	240,683
1987	3,457.2	6,547.5	14,236	26,962	3,076.3	5,826.1	12,668	23,991	19,993	37,628	242,843
1988	3,774.1	6,878.8	15,401	28,070	3,330.0	6,069.4	13,589	24,767	21,368	38,845	245,061
1989	4,053.3	7,078.6	16,384	28,613	3,576.8	6,246.4	14,458	25,249	22,805	39,893	247,387
1990	4,318.6	7,224.8	17,262	28,878	3,809.0	6,372.2	15,225	25,470	23,835	40,191	250,181
1991	4,501.0	7,286.3	17,753	28,739	3,943.4	6,383.7	15,554	25,179	24,290	39,618	253,530
1992	4,804.7	7,575.9	18,701	29,487	4,197.6	6,618.6	16,338	25,761	25,379	40,472	256,922
1993	5,004.1	7,698.6	19,226	29,578	4,452.0	6,849.2	17,104	26,314	26,350	41,048	260,282
1994	5,247.8	7,908.6	19,919	30,019	4,721.0	7,114.5	17,919	27,005	27,660	42,188	263,455
1995	5,535.0	8,169.2	20,762	30,644	4,962.6	7,324.5	18,615	27,475	28,658	42,811	266,588
1996	5,829.1	8,423.3	21,612	31,230	5,244.6	7,578.6	19,445	28,099	29,932	43,912	269,714
1997	6,142.2	8,723.8	22,502	31,960	5,536.8	7,864.0	20,284	28,810	31,424	45,319	272,958
1998	6,555.9	9,238.0	23,740	33,452	5,877.2	8,281.7	21,283	29,989	32,818	46,803	276,154
1999	6,866.7	9,536.9	24,583	34,142	6,283.8	8,727.3	22,496	31,244	34,480	48,487	279,328
2000	7,385.0	10,003.7	26,151	35,424	6,767.2	9,166.9	23,963	32,461	36,300	49,915	282,398
2001	7,754.1	10,297.3	27,186	36,102	7,073.8	9,393.9	24,801	32,935	37,100	49,893	285,225
2002	8,097.9	10,614.4	28,122	36,861	7,348.9	9,632.8	25,521	33,452	37,954	50,260	287,955
2003	8,478.2	10,884.3	29,172	37,451	7,740.7	9,937.6	26,635	34,194	39,420	51,191	290,626
2004	8,967.1	11,233.2	30,577	38,304	8,232.0	10,312.2	28,070	35,164	41,660	52,682	293,262
2005	9,333.6	11,364.9	31,533	38,396	8,769.1	10,677.4	29,626	36,073	44,052	54,015	295,993
2006	9,945.0	11,777.6	33,281	39,414	9,277.2	10,986.8	31,046	36,767	46,234	54,994	298,818
2007	10,439.6	12,054.1	34,603	39,954	9,746.6	11,253.9	32,306	37,302	47,976	55,561	301,696
2008	10,918.2	12,244.3	35,851	40,205	10,050.1	11,270.7	33,001	37,009	48,498	55,104	304,543
2009	10,913.3	12,273.0	35,520	39,946	9,891.2	11,123.6	32,194	36,205	47,123	53,213	307,240
2010	11,319.0	12,505.3	36,532	40,361	10,260.3	11,335.6	33,115	36,586	48,570	54,189	309,839
2011	11,855.9	12,775.2	37,964	40,908	10,698.9	11,528.5	34,259	36,915	49,952	54,604	312,295
2012	12,408.3	13,125.7	39,426	41,705	11,047.4	11,686.1	35,102	37,131	51,645	55,422	314,725
2013	12,391.2	12,937.1	39,077	40,798	11,388.2	11,889.9	35,914	37,496	53,235	56,172	317,099
2014	12,998.4	13,383.7	40,671	41,876	11,874.5	12,226.4	37,154	38,255	55,094	57,139	319,601
2015	13,532.9	13,908.5	42,013	43,179	12,297.4	12,638.8	38,177	39,237	56,797	58,364	322,113
2016	13,928.9	14,172.0	42,910	43,659	12,726.8	12,949.0	39,207	39,891	57,931	58,968	324,609
2017	14,613.9	14,613.9	44,710	44,710	13,290.6	13,290.6	40,662	40,662	60,002	60,002	326,860
2018	15,454.0	15,144.0	47,002	46,059	13,934.4	13,654.9	42,380	41,530	62,825	61,418	328,794
2019	16,164.5	15,616.5	48,907	47,249	14,437.5	13,948.1	43,682	42,202	65,171	62,677	330,513
2020	17,374.8	16,604.2	52,365	50,043	14,225.7	13,594.7	42,874	40,973	64,358	61,084	331,800
2021	18,714.4	17,173.6	56,306	51,670	16,113.9	14,787.2	48,482	44,491	71,250	64,672	332,367
2022	18,844.0	16,229.4	56,492	48,654	17,690.8	15,236.2	53,035	45,676	77,966	66,058	333,568
2023	20,546.8	17,052.5	61,296	50,871	18,822.8	15,621.7	56,152	46,603	82,697	67,633	335,208
2021: I	19,607.7	18,411.7	59,059	55,456	15,259.4	14,328.6	45,961	43,158	68,242	63,428	332,005
II	18,359.2	16,975.3	55,271	51,105	16,016.3	14,809.1	48,218	44,583	70,353	64,392	332,166
III	18,398.8	16,780.2	55,335	50,467	16,363.9	14,924.3	49,215	44,886	71,947	64,877	332,497
IV	18,491.9	16,590.4	55,564	49,851	16,816.1	15,086.9	50,529	45,333	74,450	65,986	332,802
2022: I	18,303.3	16,116.8	54,966	48,400	17,175.1	15,123.4	51,578	45,417	75,724	65,779	332,991
II	18,555.6	16,042.8	55,669	48,130	17,603.8	15,219.9	52,813	45,661	77,421	65,760	333,320
III	19,074.9	16,302.0	57,151	48,843	17,876.2	15,277.6	53,560	45,774	78,715	66,115	333,762
IV	19,442.3	16,452.9	58,175	49,230	18,108.3	15,324.0	54,184	45,853	79,995	66,575	334,201
2023: I	20,147.0	16,885.3	60,222	50,472	18,506.2	15,510.2	55,317	46,362	81,197	66,967	334,547
II	20,460.4	17,025.2	61,088	50,832	18,685.7	15,548.5	55,789	46,423	81,968	67,295	334,934
III	20,666.4	17,082.8	61,612	50,928	18,929.0	15,646.7	56,432	46,647	83,379	67,916	335,430
IV	20,913.5	17,216.5	62,257	51,251	19,170.2	15,781.4	57,067	46,979	84,237	68,351	335,923
2024: I	21,378.6	17,451.8	63,569	51,892	19,424.8	15,856.9	57,759	47,150	85,113	68,549	336,308
II	21,568.6	17,497.2	64,060	51,968	19,682.7	15,967.3	58,459	47,424	86,182	68,977	336,692
III ^{p}	21,691.5	17,531.6	64,331	51,994	19,928.2	16,106.4	59,102	47,767	87,057	69,359	337,184

[1] Population of the United States including Armed Forces overseas. Annual data are averages of quarterly data. Quarterly data are averages for the period.

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

TABLE B–19. Gross saving and investment, 1973–2024

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

Year or quarter	Gross saving										
	Total gross saving	Net saving							Consumption of fixed capital		
		Total net saving	Net private saving			Net government saving			Total	Private	Government
			Total	Personal saving	Undis-tributed corporate profits [1]	Total	Federal	State and local			
1973	335.3	156.6	189.3	135.8	53.5	–32.7	–38.3	5.6	178.7	131.5	47.2
1974	349.2	142.3	186.0	146.3	39.7	–43.7	–41.3	–2.3	206.9	153.2	53.7
1975	348.1	109.6	218.3	164.0	54.3	–108.6	–97.9	–10.7	238.5	178.8	59.7
1976	399.3	139.1	224.4	154.4	70.0	–85.3	–80.9	–4.4	260.2	196.5	63.7
1977	459.4	169.6	242.5	155.9	86.6	–72.9	–73.4	.5	289.8	221.1	68.7
1978	548.0	220.8	278.0	175.1	102.9	–57.2	–62.0	4.9	327.2	252.1	75.1
1979	613.6	239.7	288.3	186.8	101.5	–48.6	–47.4	–1.2	373.9	290.7	83.1
1980	630.3	201.9	296.5	224.9	71.6	–94.7	–88.8	–5.9	428.4	335.0	93.5
1981	744.2	257.0	355.3	263.6	91.7	–98.2	–88.1	–10.2	487.2	381.9	105.3
1982	726.0	189.1	379.2	291.2	88.0	–190.1	–167.4	–22.8	537.0	420.4	116.6
1983	716.8	154.2	379.8	264.7	115.1	–225.6	–207.2	–18.4	562.6	438.8	123.8
1984	881.8	283.4	480.1	326.3	153.8	–196.7	–196.5	–.2	598.4	463.5	134.9
1985	881.2	241.0	442.7	282.9	159.7	–201.7	–199.2	–2.4	640.1	496.4	143.7
1986	864.7	179.4	399.3	288.7	110.6	–219.9	–215.9	–4.0	685.3	531.6	153.7
1987	949.1	218.7	398.8	260.6	138.2	–180.1	–165.7	–14.4	730.4	566.3	164.1
1988	1,076.8	292.3	463.6	317.1	146.5	–171.3	–160.0	–11.3	784.5	607.9	176.6
1989	1,110.0	271.7	450.4	335.4	115.0	–178.7	–159.4	–19.3	838.3	649.6	188.6
1990	1,113.6	225.0	464.6	360.6	104.0	–239.5	–203.3	–36.3	888.5	688.4	200.1
1991	1,153.6	221.2	529.8	401.0	128.8	–308.5	–248.4	–60.1	932.4	721.5	210.9
1992	1,148.0	187.8	593.4	450.5	142.9	–405.6	–334.5	–71.1	960.2	742.9	217.4
1993	1,163.9	160.4	546.6	392.6	154.0	–386.2	–313.5	–72.6	1,003.5	778.2	225.3
1994	1,295.8	240.2	560.1	357.2	202.9	–319.9	–255.6	–64.2	1,055.6	822.5	233.1
1995	1,427.2	304.8	617.7	379.0	238.7	–312.9	–242.1	–70.8	1,122.4	880.7	241.7
1996	1,580.0	404.7	638.3	369.9	268.3	–233.6	–179.4	–54.2	1,175.3	929.1	246.2
1997	1,781.9	542.5	676.9	371.8	305.2	–134.4	–92.0	–42.4	1,239.3	987.8	251.6
1998	1,931.7	622.0	651.3	424.6	226.7	–29.3	1.4	–30.7	1,309.7	1,052.2	257.6
1999	2,008.2	609.3	579.8	315.8	264.0	29.5	69.1	–39.7	1,398.9	1,132.2	266.7
2000	2,126.2	614.9	496.7	316.8	179.9	118.2	159.7	–41.5	1,511.2	1,231.5	279.7
2001	2,072.0	472.5	577.3	363.2	214.1	–104.7	15.0	–119.8	1,599.5	1,311.7	287.8
2002	2,000.3	342.3	793.8	451.6	342.2	–451.4	–267.8	–183.6	1,658.0	1,361.8	296.2
2003	1,987.8	268.7	848.2	439.9	408.3	–579.4	–397.4	–182.0	1,719.1	1,412.0	307.1
2004	2,157.8	336.0	879.2	417.0	462.2	–543.3	–393.5	–149.8	1,821.8	1,497.1	324.7
2005	2,353.8	382.8	780.2	209.2	571.0	–397.4	–293.8	–103.7	1,971.1	1,622.6	348.4
2006	2,642.3	518.2	826.1	276.0	550.1	–307.9	–221.9	–86.0	2,124.2	1,751.8	372.3
2007	2,511.9	259.1	649.2	263.4	385.7	–390.0	–259.7	–130.4	2,252.8	1,852.4	400.3
2008	2,211.8	–147.2	699.8	451.5	248.3	–847.0	–624.9	–222.1	2,359.0	1,931.9	427.0
2009	1,997.7	–373.5	1,211.9	624.9	587.0	–1,585.5	–1,243.2	–342.3	2,371.3	1,928.5	442.8
2010	2,300.7	–89.6	1,537.7	671.4	866.2	–1,627.3	–1,318.4	–309.0	2,390.4	1,933.2	457.2
2011	2,533.1	58.8	1,570.0	776.3	793.7	–1,511.2	–1,234.1	–277.0	2,474.4	1,997.2	477.2
2012	2,972.4	396.9	1,754.4	976.5	777.8	–1,357.5	–1,072.7	–284.8	2,575.5	2,081.9	493.6
2013	3,118.8	437.2	1,337.1	615.7	721.4	–899.9	–633.9	–266.0	2,681.6	2,176.6	505.0
2014	3,446.2	626.5	1,458.0	712.0	746.0	–831.6	–594.0	–237.6	2,819.7	2,301.4	518.3
2015	3,587.8	664.9	1,438.9	790.6	648.3	–774.0	–557.4	–216.6	2,922.9	2,397.9	525.1
2016	3,473.7	465.6	1,375.1	746.2	628.9	–909.5	–667.3	–242.2	3,008.1	2,475.6	532.5
2017	3,703.2	554.2	1,515.9	841.6	674.2	–961.6	–736.8	–224.8	3,149.0	2,599.1	549.9
2018	3,950.8	638.2	1,744.5	996.7	747.8	–1,106.2	–906.4	–199.9	3,312.6	2,737.3	575.3
2019	4,163.4	685.9	1,935.4	1,178.2	757.3	–1,249.6	–1,043.8	–205.8	3,477.5	2,879.7	597.8
2020	3,893.3	269.8	3,261.8	2,659.0	602.8	–2,992.0	–2,940.8	–51.2	3,623.5	3,004.3	619.2
2021	4,171.0	299.6	2,893.0	2,095.7	797.3	–2,593.4	–2,838.8	245.4	3,871.4	3,209.4	662.0
2022	4,763.1	449.7	1,381.7	566.1	815.6	–932.0	–1,020.3	88.3	4,313.4	3,579.8	733.6
2023	4,810.8	223.1	1,951.1	967.2	983.8	–1,728.0	–1,666.4	–61.6	4,587.7	3,810.9	776.8
2021: I	4,118.6	387.8	4,688.3	3,867.9	820.4	–4,300.5	–4,170.4	–130.1	3,730.7	3,091.2	639.5
II	3,947.3	134.1	2,728.1	1,836.8	891.4	–2,594.1	–3,359.5	765.5	3,813.2	3,159.8	653.4
III	4,140.5	226.0	2,300.8	1,520.4	780.4	–2,074.8	–2,270.4	195.6	3,914.4	3,246.1	668.3
IV	4,477.7	450.6	1,854.9	1,157.7	697.2	–1,404.3	–1,554.7	150.4	4,027.1	3,340.5	686.6
2022: I	4,643.7	488.7	1,221.7	604.1	617.6	–733.0	–897.4	164.4	4,155.0	3,448.3	706.6
II	4,705.6	426.9	1,181.8	401.0	780.8	–754.9	–907.9	153.0	4,278.7	3,550.5	728.2
III	4,914.3	535.0	1,542.8	592.7	950.0	–1,007.8	–1,052.5	44.8	4,379.3	3,634.9	744.4
IV	4,788.9	348.3	1,580.5	666.6	913.9	–1,232.2	–1,223.3	–8.9	4,440.6	3,685.3	755.2
2023: I	4,661.8	151.2	1,833.7	950.7	883.1	–1,682.5	–1,637.5	–45.0	4,510.6	3,744.0	766.5
II	4,755.1	196.2	1,925.5	1,033.1	892.4	–1,729.3	–1,659.5	–69.8	4,558.9	3,786.3	772.6
III	4,804.8	191.7	1,961.7	942.9	1,018.8	–1,770.0	–1,677.2	–92.8	4,613.0	3,832.7	780.4
IV	5,021.6	353.2	2,083.3	942.2	1,141.0	–1,730.1	–1,691.4	–38.7	4,668.5	3,880.6	787.9
2024: I	5,103.2	389.1	2,189.0	1,148.1	1,040.9	–1,799.9	–1,746.1	–53.8	4,714.1	3,918.0	796.1
II	5,102.6	321.6	2,206.7	1,061.1	1,145.5	–1,885.1	–1,791.6	–93.5	4,781.0	3,976.9	804.1
III p	4,973.1	121.6	2,090.7	934.4	1,156.2	–1,969.1	–1,933.7	–35.4	4,851.6	4,036.4	815.1

[1] With inventory valuation and capital consumption adjustments.

See next page for continuation of table.

TABLE B–19. Gross saving and investment, 1973–2024—*Continued*

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

Year or quarter	Gross domestic investment, capital account transactions, and net lending, NIPA[2]: Total	Gross domestic investment: Total	Gross domestic investment: Gross private domestic investment	Gross domestic investment: Gross government investment	Capital account transactions (net)[3]	Net lending or net borrowing (–), NIPA[2, 4]	Statistical discrepancy	Addenda: Gross private saving	Addenda: Gross government saving: Total	Addenda: Gross government saving: Federal	Addenda: Gross government saving: State and local	Addenda: Net domestic investment	Addenda: Gross saving as a percent of gross national income	Addenda: Net saving as a percent of gross national income
1973	341.4	332.6	266.9	65.6	0.0	8.8	6.1	320.8	14.5	–6.0	20.4	153.9	23.4	10.9
1974	356.6	350.7	274.5	76.2	.0	5.9	7.5	339.1	10.1	–6.0	16.0	143.8	22.5	9.2
1975	361.5	341.7	257.3	84.4	.1	19.8	13.3	397.1	–48.9	–59.2	10.3	103.1	20.7	6.5
1976	420.0	412.9	323.2	89.6	.1	7.0	20.7	420.9	–21.6	–39.2	17.6	152.6	21.4	7.4
1977	478.9	489.8	396.6	93.2	.1	–11.0	19.4	463.6	–4.2	–28.2	24.0	199.9	22.1	8.1
1978	571.3	583.9	478.4	105.6	.1	–12.7	23.3	530.1	17.9	–12.4	30.3	256.7	23.3	9.4
1979	658.6	659.8	539.7	120.1	.1	–1.3	45.0	579.0	34.6	7.2	27.3	285.9	23.5	9.2
1980	674.6	666.0	530.1	135.9	.1	8.4	44.3	631.5	–1.2	–28.4	27.1	237.6	22.1	7.1
1981	781.9	778.6	631.2	147.3	.1	3.3	37.7	737.2	7.1	–20.6	27.6	291.3	23.2	8.0
1982	734.7	738.0	581.0	156.9	.1	–3.4	8.6	799.6	–73.5	–92.0	18.4	201.0	21.5	5.6
1983	773.6	808.7	637.5	171.2	.1	–35.2	56.9	818.6	–101.8	–126.1	24.3	246.1	19.8	4.3
1984	923.2	1,013.3	820.1	193.2	.1	–90.2	41.4	943.6	–61.8	–105.9	44.1	414.9	21.9	7.0
1985	935.2	1,049.5	829.7	219.9	.1	–114.4	54.1	939.1	–57.9	–102.3	44.4	409.4	20.4	5.6
1986	944.6	1,087.2	849.1	238.1	.1	–142.8	79.8	930.9	–66.2	–112.4	46.2	401.9	19.1	4.0
1987	992.7	1,146.8	892.2	254.6	.1	–154.2	43.6	965.1	–16.0	–55.6	39.6	416.4	19.7	4.5
1988	1,079.6	1,195.4	937.0	258.4	.1	–115.9	2.8	1,071.5	5.3	–41.0	46.4	410.9	20.5	5.6
1989	1,177.8	1,270.1	999.7	270.4	.3	–92.7	67.8	1,100.0	9.9	–32.5	42.4	431.9	19.8	4.9
1990	1,208.9	1,283.8	993.4	290.4	7.4	–82.3	95.4	1,153.0	–39.4	–69.8	30.4	395.3	18.9	3.8
1991	1,246.3	1,238.4	944.3	294.1	5.3	2.6	92.7	1,251.2	–97.6	–108.3	10.7	306.0	18.9	3.6
1992	1,263.6	1,309.1	1,013.0	296.1	–1.3	–44.3	115.5	1,336.3	–188.2	–191.2	3.0	348.9	17.8	2.9
1993	1,319.3	1,398.7	1,106.8	291.9	.9	–80.2	155.4	1,324.8	–160.9	–166.5	5.6	395.2	17.3	2.4
1994	1,435.1	1,550.7	1,256.5	294.2	1.3	–116.9	139.2	1,382.6	–86.8	–105.3	18.5	495.0	18.1	3.3
1995	1,519.3	1,625.2	1,317.5	307.7	.4	–106.3	92.2	1,498.5	–71.3	–88.6	17.3	502.8	18.8	4.0
1996	1,637.0	1,752.0	1,432.1	320.0	.2	–115.2	57.0	1,567.4	12.6	–25.7	38.3	576.7	19.6	5.0
1997	1,792.1	1,922.2	1,595.6	326.6	.5	–130.6	10.3	1,664.7	117.2	62.3	54.8	682.9	20.7	6.3
1998	1,875.3	2,080.7	1,736.7	344.0	.2	–205.6	–56.4	1,703.5	228.2	156.8	71.4	770.9	21.1	6.8
1999	1,978.9	2,255.5	1,887.1	368.5	6.7	–283.3	–29.3	1,712.0	296.2	227.3	68.9	856.6	20.7	6.3
2000	2,030.4	2,427.3	2,038.4	388.9	4.6	–401.4	–95.8	1,728.2	397.9	322.8	75.1	916.0	20.5	5.9
2001	1,955.3	2,346.7	1,934.8	411.9	–11.9	–379.5	–116.7	1,889.0	183.1	179.5	3.6	747.2	19.3	4.4
2002	1,918.7	2,374.1	1,930.4	443.7	4.2	–459.6	–81.7	2,155.6	–155.3	–101.0	–54.3	716.1	18.1	3.1
2003	1,963.6	2,491.3	2,027.1	464.2	8.8	–536.4	–24.2	2,260.1	–272.3	–225.1	–47.1	772.2	17.2	2.3
2004	2,129.7	2,767.5	2,281.3	486.2	4.6	–642.4	–28.1	2,376.4	–218.6	–213.0	–5.6	945.6	17.5	2.7
2005	2,296.8	3,048.0	2,534.7	513.3	–.7	–750.5	–57.0	2,402.8	–49.0	–103.2	54.2	1,077.0	17.9	2.9
2006	2,432.5	3,251.8	2,701.0	550.9	7.7	–827.0	–209.8	2,577.9	64.4	–20.7	85.1	1,127.7	18.8	3.7
2007	2,524.2	3,265.0	2,673.0	592.0	6.4	–747.2	12.3	2,501.6	10.3	–46.9	57.2	1,012.3	17.3	1.8
2008	2,403.0	3,107.2	2,477.6	629.6	.8	–705.0	191.2	2,631.8	–420.0	–399.1	–20.9	748.2	15.0	–1.0
2009	2,189.5	2,572.6	1,929.7	642.9	6.3	–389.4	191.7	3,140.4	–1,142.7	–1,009.5	–133.2	201.3	13.8	–2.6
2010	2,370.2	2,810.0	2,165.5	644.5	7.4	–447.2	69.4	3,470.9	–1,170.2	–1,074.6	–95.5	419.6	15.2	–.6
2011	2,508.8	2,969.2	2,332.6	636.6	9.5	–469.8	–24.3	3,567.2	–1,034.0	–979.2	–54.8	494.8	16.0	.4
2012	2,818.8	3,242.8	2,621.8	621.0	–.5	–423.5	–153.6	3,836.3	–863.9	–811.0	–52.8	667.2	17.9	2.4
2013	3,089.0	3,440.2	2,838.3	601.8	7.0	–358.2	–29.8	3,513.7	–394.9	–367.9	–27.1	758.6	18.2	2.6
2014	3,305.2	3,680.3	3,074.0	606.3	6.9	–382.0	–140.9	3,759.4	–313.2	–322.7	9.5	860.6	19.2	3.5
2015	3,494.8	3,917.9	3,288.5	629.4	8.3	–431.4	–93.0	3,836.7	–248.9	–285.0	36.1	995.0	19.3	3.6
2016	3,526.6	3,928.0	3,278.3	649.7	7.0	–408.4	52.9	3,850.6	–376.9	–393.6	16.7	919.9	18.3	2.5
2017	3,771.1	4,149.1	3,467.7	681.4	16.0	–394.0	67.9	4,114.9	–411.8	–456.6	44.9	1,000.1	18.7	2.8
2018	4,014.3	4,455.4	3,724.8	730.6	4.7	–445.8	63.4	4,481.8	–530.9	–616.2	85.3	1,142.8	18.9	3.1
2019	4,220.4	4,667.7	3,893.7	773.9	6.9	–454.1	57.0	4,815.2	–651.8	–744.9	93.2	1,190.2	19.1	3.2
2020	4,000.9	4,573.8	3,755.0	818.8	6.1	–579.0	107.6	6,266.1	–2,372.8	–2,630.3	257.5	950.3	18.1	1.3
2021	4,172.6	5,052.0	4,223.8	828.2	7.3	–886.6	1.6	6,102.4	–1,931.4	–2,510.0	578.6	1,180.6	17.5	1.3
2022	4,687.5	5,708.5	4,821.2	887.2	.9	–1,021.8	–75.6	4,961.5	–198.4	–662.4	464.1	1,395.1	18.2	1.7
2023	5,055.4	5,971.3	4,984.8	986.6	6.8	–922.7	244.6	5,762.0	–951.1	–1,288.2	337.1	1,383.6	17.4	.8
2021: I	4,088.8	4,867.9	4,045.5	822.4	31.3	–810.4	–29.8	7,779.6	–3,661.0	–3,850.5	189.5	1,137.2	18.0	1.7
II	3,977.3	4,839.3	4,017.6	821.7	3.1	–865.1	30.0	5,887.9	–1,940.6	–3,034.6	1,094.0	1,026.1	16.8	.6
III	4,114.8	5,059.9	4,232.8	827.1	–12.5	–932.6	–25.7	5,546.9	–1,406.5	–1,939.2	532.7	1,145.4	17.2	.9
IV	4,509.5	5,440.8	4,599.2	841.6	7.1	–938.4	31.8	5,195.3	–717.7	–1,215.9	498.3	1,413.7	18.0	1.8
2022: I	4,503.9	5,643.5	4,784.8	858.7	5.9	–1,145.5	–139.7	4,670.1	–26.4	–550.3	523.9	1,488.6	18.2	1.9
II	4,598.7	5,664.1	4,786.5	877.6	10.8	–1,076.2	–106.9	4,732.2	–26.6	–552.3	525.6	1,385.4	18.0	1.6
III	4,731.6	5,691.4	4,801.6	889.8	–24.6	–935.2	–182.7	5,177.7	–263.4	–690.3	426.9	1,312.1	18.5	2.0
IV	4,915.8	5,834.8	4,911.9	922.9	11.4	–930.4	126.9	5,265.9	–477.0	–856.7	379.8	1,394.2	17.9	1.3
2023: I	4,861.7	5,791.0	4,847.2	943.7	10.6	–939.8	199.9	5,577.8	–916.0	–1,266.0	350.1	1,280.4	17.2	.6
II	4,979.6	5,897.3	4,925.7	971.6	4.8	–922.4	224.5	5,711.8	–956.7	–1,283.9	327.2	1,338.3	17.4	.7
III	5,144.6	6,060.9	5,063.4	997.5	4.5	–920.8	339.8	5,794.4	–989.6	–1,296.5	306.9	1,447.8	17.3	.7
IV	5,235.9	6,136.2	5,102.8	1,033.4	7.5	–907.8	214.3	5,963.9	–942.3	–1,306.4	364.1	1,467.8	17.8	1.3
2024: I	5,228.0	6,200.8	5,159.9	1,040.9	8.0	–980.7	124.9	6,107.0	–1,003.8	–1,356.8	353.0	1,486.7	17.9	1.4
II	5,297.4	6,358.7	5,297.8	1,060.9	6.6	–1,068.0	194.8	6,183.6	–1,081.0	–1,396.7	315.7	1,577.7	17.7	1.1
III p	5,213.5	6,433.1	5,347.7	1,085.4	....	....	240.3	6,127.1	–1,154.0	–1,533.0	379.1	1,581.5	17.1	.4

[2] National income and product accounts (NIPA).
[3] Consists of capital transfers and the acquisition and disposal of nonproduced nonfinancial assets.
[4] Prior to 1982, equals the balance on current account, NIPA.

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

TABLE B–20. Median money income (in 2023 dollars) and poverty status of families and people, by race, 2015–2023

Race, Hispanic origin, and year	Families [1]						People below poverty level [2]		Median money income (in 2023 dollars) of people 15 years old and over with income [3]			
	Number (millions)	Median money income (in 2023 dollars) [3]	Below poverty level [2]				Number (millions)	Percent	Males		Females	
			Total		Female householder, no husband present							
			Number (millions)	Percent	Number (millions)	Percent			All people	Year-round full-time workers	All people	Year-round full-time workers
TOTAL (all races) [4]												
2015	82.2	$88,820	8.6	10.4	4.4	28.2	43.1	13.5	$46,660	$65,640	$29,860	$52,450
2016	82.9	90,540	8.1	9.8	4.1	26.6	40.6	12.7	48,400	66,590	31,000	53,790
2017	83.1	92,930	7.8	9.3	4.0	25.7	39.7	12.3	49,430	68,330	31,190	54,310
2017 [5]	83.5	93,170	7.8	9.3	4.0	26.2	39.6	12.3	49,430	67,920	31,690	56,090
2018	83.5	94,340	7.5	9.0	3.7	24.9	38.2	11.8	49,920	68,640	32,480	55,810
2019	83.7	101,700	6.6	7.8	3.3	22.2	34.0	10.5	52,380	71,960	34,760	59,260
2020 [6]	83.7	98,680	7.3	8.7	3.6	23.5	37.6	11.5	49,950	75,970	34,410	61,550
2021	84.3	99,200	7.4	8.8	3.6	23.0	37.9	11.6	51,420	71,380	34,640	59,330
2022	84.4	96,430	7.4	8.8	3.5	23.0	37.9	11.5	50,380	68,810	34,090	57,770
2023	84.7	100,800	7.0	8.3	3.3	21.8	36.8	11.1	51,350	70,790	35,410	57,770
WHITE, non-Hispanic [7]												
2015	53.8	101,200	3.5	6.4	1.6	21.7	17.8	9.1	53,020	76,320	32,200	57,400
2016	54.1	102,200	3.4	6.3	1.6	21.1	17.3	8.8	54,040	76,210	32,990	58,910
2017	53.9	105,100	3.2	6.0	1.4	19.8	17.0	8.7	56,090	76,390	33,180	59,910
2017 [5]	54.2	106,400	3.2	5.9	1.4	20.2	16.6	8.5	56,530	76,260	34,030	61,870
2018	54.2	107,300	3.2	5.8	1.4	19.7	15.7	8.1	57,360	78,310	35,350	60,810
2019	54.3	114,800	2.7	5.0	1.1	17.1	14.2	7.3	59,770	83,100	37,040	63,520
2020 [6]	53.5	113,000	3.1	5.8	1.3	18.8	16.0	8.2	58,710	84,570	36,840	67,000
2021	53.5	113,100	3.0	5.6	1.2	17.3	15.8	8.1	57,610	81,360	36,560	64,730
2022	53.0	107,500	3.2	6.1	1.3	18.9	16.7	8.6	54,820	78,640	36,570	62,960
2023	52.8	113,200	2.8	5.3	1.1	16.7	14.9	7.7	58,010	80,960	37,440	63,120
BLACK [7]												
2015	9.8	57,510	2.1	21.1	1.5	33.9	10.0	24.1	34,430	52,400	27,150	46,620
2016	10.0	61,470	1.9	19.0	1.3	31.6	9.2	22.0	36,910	52,280	28,440	46,490
2017	10.0	61,920	1.8	18.2	1.3	30.8	9.0	21.2	36,850	53,480	28,930	45,950
2017 [5]	10.0	61,980	1.9	18.9	1.4	31.9	9.2	21.7	35,950	51,910	29,280	47,190
2018	9.8	63,700	1.7	17.7	1.2	29.4	8.9	20.8	37,330	54,690	30,540	48,240
2019	10.0	69,170	1.6	16.3	1.1	27.3	8.1	18.8	36,950	55,250	31,940	49,640
2020 [6]	10.2	67,350	1.7	16.8	1.2	28.2	8.6	19.6	36,590	60,200	31,270	53,870
2021	10.3	66,670	1.8	17.4	1.3	29.3	8.6	19.5	37,960	57,270	31,890	53,950
2022	10.4	69,420	1.5	14.3	1.0	24.5	7.6	17.1	38,780	54,490	33,660	52,530
2023	10.4	71,390	1.6	15.4	1.1	25.9	8.0	17.9	40,220	56,530	32,450	51,310
ASIAN [7]												
2015	4.7	114,100	.4	8.0	.1	16.2	2.1	11.4	54,910	81,330	33,330	62,960
2016	4.7	116,400	.3	7.2	.1	19.4	1.9	10.1	58,020	83,720	33,340	63,980
2017	4.9	113,500	.4	7.8	.1	15.5	2.0	10.0	59,770	86,660	34,580	63,910
2017 [5]	4.9	115,900	.4	7.4	.1	16.3	1.9	9.7	60,190	86,410	33,780	65,650
2018	5.1	121,400	.4	7.6	.1	19.6	2.0	10.1	62,120	86,080	37,410	69,640
2019	5.1	132,700	.3	5.7	.1	14.4	1.5	7.3	63,450	92,620	37,940	71,250
2020 [6]	5.2	128,300	.3	6.4	.1	15.4	1.6	8.1	60,620	104,000	37,730	84,130
2021	5.3	132,600	.4	7.1	.1	14.7	1.9	9.3	63,470	96,530	38,380	77,080
2022	5.5	131,300	.3	6.3	.1	15.0	1.9	8.6	63,550	94,410	42,250	74,270
2023	5.6	131,800	.4	6.4	.1	13.7	2.0	9.1	64,360	96,720	40,850	74,290
HISPANIC (any race) [7]												
2015	12.8	59,460	2.5	19.6	1.2	35.5	12.1	21.4	35,310	45,190	23,750	39,770
2016	13.0	63,640	2.3	17.3	1.1	32.7	11.1	19.4	37,990	47,550	24,790	39,890
2017	13.2	65,610	2.2	16.3	1.1	32.7	10.8	18.3	37,560	48,830	24,860	39,700
2017 [5]	13.3	65,590	2.2	16.4	1.1	33.4	10.8	18.3	37,310	47,170	25,100	40,200
2018	13.3	66,090	2.1	15.5	1.0	30.8	10.5	17.6	37,690	48,410	26,020	42,190
2019	13.2	72,020	1.8	13.9	.9	26.8	9.5	15.7	38,160	49,640	27,680	43,620
2020 [6]	13.7	70,260	2.0	14.8	1.0	28.6	10.5	17.0	37,530	53,630	26,800	47,160
2021	14.1	69,770	2.1	15.0	1.0	28.2	10.7	17.1	40,690	51,930	28,360	45,440
2022	14.2	70,580	2.2	15.2	1.0	29.6	10.8	16.9	38,740	50,350	27,860	43,470
2023	14.7	71,150	2.1	14.4	1.0	27.4	10.9	16.6	39,280	50,540	28,360	45,570

[1] The term "family" refers to a group of two or more persons related by birth, marriage, or adoption and residing together. Every family must include a reference person.
[2] Poverty thresholds are updated each year to reflect changes in the consumer price index for all urban consumers (CPI-U).
[3] Adjusted by the chained consumer price index for all urban consumers (C-CPI-U).
[4] Data for American Indians and Alaska natives, native Hawaiians and other Pacific Islanders, and those reporting two or more races are included in the total but not shown separately.
[5] Reflects implementation of an updated data processing system.
[6] Reflects implementation of Census 2020-based population controls comparable to succeeding years.
[7] The CPS allows respondents to choose more than one race. Data shown are for "white alone, non-Hispanic," "black alone," and "Asian alone" race categories. ("Black" is also "black or African American.") Family race and Hispanic origin are based on the reference person.

Note: For details see *Income and Poverty in the United States* in publication Series P–60 on the CPS ASEC.

Source: Department of Commerce (Bureau of the Census).

Table B–21. Real farm income, 1957–2024

[Billions of chained (2024) dollars]

Year	Income of farm operators from farming [1]							
	Gross farm income						Production expenses	Net farm income
	Total	Value of agricultural sector production				Direct Federal Government payments		
		Total	Crops [2, 3]	Animals and animal products [3]	Farm-related income [4]			
1957	295.5	286.9	116.0	154.3	16.6	8.6	201.4	94.2
1958	323.4	314.4	124.6	172.5	17.3	9.0	214.1	109.3
1959	310.5	304.9	121.0	165.4	18.5	5.6	222.7	87.8
1960	311.9	306.2	126.7	160.6	18.9	5.7	221.3	90.6
1961	324.3	312.4	126.5	166.3	19.6	11.9	228.7	95.6
1962	334.6	320.8	131.7	169.3	19.9	13.8	239.3	95.3
1963	338.8	325.6	140.1	164.8	20.7	13.3	246.9	92.0
1964	325.5	308.8	129.8	157.5	21.4	16.8	244.8	80.7
1965	351.8	333.2	143.8	167.7	21.7	18.6	254.3	97.5
1966	371.0	346.9	134.6	190.1	22.2	24.1	268.4	102.6
1967	360.9	338.9	137.3	178.6	23.1	22.0	272.8	88.2
1968	355.3	331.6	129.7	178.9	23.0	23.7	270.8	84.4
1969	368.4	343.7	128.6	191.5	23.5	24.8	275.1	93.4
1970	364.9	341.9	127.3	190.9	23.6	23.1	275.8	89.1
1971	366.8	348.2	138.3	185.8	24.1	18.6	278.1	88.6
1972	402.7	380.2	146.9	208.9	24.5	22.4	292.6	110.1
1973	530.7	516.8	231.0	259.5	26.3	14.0	346.4	184.4
1974	483.8	481.2	242.0	210.8	28.3	2.6	349.5	134.3
1975	453.1	449.5	227.1	193.7	28.6	3.6	338.1	114.9
1976	439.5	436.4	206.5	199.1	30.7	3.1	353.4	86.2
1977	437.3	430.0	205.7	190.3	34.1	7.3	357.4	79.9
1978	482.5	471.2	212.7	221.1	37.4	11.4	387.9	94.7
1979	522.8	518.1	231.2	247.0	39.9	4.8	427.7	95.1
1980	474.8	470.7	204.7	223.7	42.4	4.1	423.5	51.3
1981	483.4	477.8	229.4	204.6	43.8	5.6	405.3	78.1
1982	449.3	439.8	196.6	193.0	50.2	9.6	384.1	65.3
1983	405.3	380.8	149.8	184.5	46.5	24.5	367.7	37.6
1984	427.1	405.6	197.6	183.1	24.9	21.4	361.0	66.0
1985	396.9	378.0	181.5	170.0	26.4	19.0	326.7	70.3
1986	377.1	348.6	152.9	170.9	24.8	28.5	302.0	75.2
1987	397.0	357.5	152.0	178.6	27.0	39.5	307.4	89.6
1988	405.1	372.2	157.7	179.0	35.4	33.0	314.9	90.2
1989	419.8	396.0	178.6	182.9	34.5	23.9	318.0	101.9
1990	417.7	398.1	175.7	190.1	32.2	19.6	320.0	97.7
1991	392.4	375.6	165.9	178.2	31.5	16.8	310.2	82.2
1992	400.6	382.3	177.9	174.1	30.3	18.3	300.4	100.2
1993	400.0	373.9	161.3	179.5	33.1	26.1	308.9	91.2
1994	412.9	397.8	192.0	171.4	34.4	15.1	312.4	100.4
1995	394.5	380.9	179.5	164.2	37.2	13.6	320.1	74.4
1996	433.3	419.8	212.6	169.2	38.1	13.5	325.0	108.3
1997	430.0	416.4	203.2	174.0	39.2	13.5	337.3	92.7
1998	415.6	393.4	182.4	168.2	42.8	22.1	331.4	84.2
1999	413.9	376.0	163.5	167.7	44.8	37.9	329.9	84.0
2000	416.3	376.3	163.6	170.7	42.1	40.0	329.0	87.3
2001	420.8	383.0	160.0	179.1	43.9	37.8	328.3	92.4
2002	382.5	361.9	162.4	155.0	44.4	20.6	317.6	64.9
2003	420.7	393.9	176.6	170.8	46.5	26.9	321.6	99.2
2004	467.1	446.5	198.2	196.8	51.5	20.5	328.6	138.5
2005	458.5	421.0	175.6	194.3	51.1	37.5	337.5	121.0
2006	432.3	408.7	176.8	177.8	54.2	23.5	346.7	85.6
2007	492.5	475.2	219.1	200.8	55.3	17.3	390.9	101.5
2008	518.9	501.4	247.4	198.4	55.7	17.4	407.8	111.0
2009	476.0	458.8	232.8	169.2	56.8	17.2	388.1	87.9
2010	498.2	480.9	234.9	196.0	50.0	17.3	390.5	107.7
2011	575.7	561.4	272.9	224.2	64.3	14.3	420.2	155.5
2012	604.5	590.2	286.1	227.3	76.8	14.3	475.0	129.5
2013	639.6	625.1	308.9	239.3	76.9	14.5	476.2	163.4
2014	627.7	615.0	267.9	278.4	68.7	12.7	507.9	119.8
2015	567.5	553.6	237.3	250.0	66.3	13.9	462.4	105.1
2016	525.7	509.2	241.4	211.0	56.8	16.6	446.3	79.5
2017	532.8	518.3	235.4	221.6	61.4	14.4	437.9	94.8
2018	521.0	504.2	228.9	216.8	58.5	16.7	420.1	100.9
2019	517.7	490.7	216.3	211.0	63.4	27.0	418.9	98.8
2020	542.1	487.9	229.5	196.3	62.1	54.2	424.6	117.5
2021	589.1	559.6	278.8	221.3	59.6	29.5	422.8	166.4
2022	655.4	638.9	288.4	272.5	78.0	16.5	462.3	193.1
2023	623.4	610.8	279.7	253.9	77.2	12.6	473.1	150.3
2024 p	594.6	584.0	240.5	269.6	73.9	10.6	453.9	140.7

[1] The GDP chain-type price index is used to convert the current-dollar statistics to 2024=100 equivalents.
[2] Crop receipts include proceeds received from commodities placed under Commodity Credit Corporation loans.
[3] The value of production equates to the sum of cash receipts, home consumption, and the value of the change in inventories.
[4] Includes income from forest products sold, the gross imputed rental value of farm dwellings, machine hire and custom work, and other sources of farm income such as commodity insurance indemnities.

Note: Data for 2024 are forecasts.

Source: Department of Agriculture (Economic Research Service).

Table B–22. Civilian labor force, 1929–2024

[Monthly data seasonally adjusted, except as noted]

Year or month	Civilian noninstitutional population[1]	Civilian labor force: Total	Employment: Total	Employment: Agricultural	Employment: Non-agricultural	Unemployment	Not in labor force	Civilian labor force participation rate[2]	Civilian employment/population ratio[3]	Unemployment rate, civilian workers[4]
	Thousands of persons 14 years of age and over							Percent		
1929	...	49,180	47,630	10,450	37,180	1,550	...	...	...	3.2
1930	...	49,820	45,480	10,340	35,140	4,340	...	...	...	8.7
1931	...	50,420	42,400	10,290	32,110	8,020	...	...	...	15.9
1932	...	51,000	38,940	10,170	28,770	12,060	...	...	...	23.6
1933	...	51,590	38,760	10,090	28,670	12,830	...	...	...	24.9
1934	...	52,230	40,890	9,900	30,990	11,340	...	...	...	21.7
1935	...	52,870	42,260	10,110	32,150	10,610	...	...	...	20.1
1936	...	53,440	44,410	10,000	34,410	9,030	...	...	...	16.9
1937	...	54,000	46,300	9,820	36,480	7,700	...	...	...	14.3
1938	...	54,610	44,220	9,690	34,530	10,390	...	...	...	19.0
1939	...	55,230	45,750	9,610	36,140	9,480	...	...	...	17.2
1940	99,840	55,640	47,520	9,540	37,980	8,120	44,200	55.7	47.6	14.6
1941	99,900	55,910	50,350	9,100	41,250	5,560	43,990	56.0	50.4	9.9
1942	98,640	56,410	53,750	9,250	44,500	2,660	42,230	57.2	54.5	4.7
1943	94,640	55,540	54,470	9,080	45,390	1,070	39,100	58.7	57.6	1.9
1944	93,220	54,630	53,960	8,950	45,010	670	38,590	58.6	57.9	1.2
1945	94,090	53,860	52,820	8,580	44,240	1,040	40,230	57.2	56.1	1.9
1946	103,070	57,520	55,250	8,320	46,930	2,270	45,550	55.8	53.6	3.9
1947	106,018	60,168	57,812	8,256	49,557	2,356	45,850	56.8	54.5	3.9
	Thousands of persons 16 years of age and over									
1947	101,827	59,350	57,038	7,890	49,148	2,311	42,477	58.3	56.0	3.9
1948	103,068	60,621	58,343	7,629	50,714	2,276	42,447	58.8	56.6	3.8
1949	103,994	61,286	57,651	7,658	49,993	3,637	42,708	58.9	55.4	5.9
1950	104,995	62,208	58,918	7,160	51,758	3,288	42,787	59.2	56.1	5.3
1951	104,621	62,017	59,961	6,726	53,235	2,055	42,604	59.2	57.3	3.3
1952	105,231	62,138	60,250	6,500	53,749	1,883	43,093	59.0	57.3	3.0
1953	107,056	63,015	61,179	6,260	54,919	1,834	44,041	58.9	57.1	2.9
1954	108,321	63,643	60,109	6,205	53,904	3,532	44,678	58.8	55.5	5.5
1955	109,683	65,023	62,170	6,450	55,722	2,852	44,660	59.3	56.7	4.4
1956	110,954	66,552	63,799	6,283	57,514	2,750	44,402	60.0	57.5	4.1
1957	112,265	66,929	64,071	5,947	58,123	2,859	45,336	59.6	57.1	4.3
1958	113,727	67,639	63,036	5,586	57,450	4,602	46,088	59.5	55.4	6.8
1959	115,329	68,369	64,630	5,565	59,065	3,740	46,960	59.3	56.0	5.5
1960	117,245	69,628	65,778	5,458	60,318	3,852	47,617	59.4	56.1	5.5
1961	118,771	70,459	65,746	5,200	60,546	4,714	48,312	59.3	55.4	6.7
1962	120,153	70,614	66,702	4,944	61,759	3,911	49,539	58.8	55.5	5.5
1963	122,416	71,833	67,762	4,687	63,076	4,070	50,583	58.7	55.4	5.7
1964	124,485	73,091	69,305	4,523	64,782	3,786	51,394	58.7	55.7	5.2
1965	126,513	74,455	71,088	4,361	66,726	3,366	52,058	58.9	56.2	4.5
1966	128,058	75,770	72,895	3,979	68,915	2,875	52,288	59.2	56.9	3.8
1967	129,874	77,347	74,372	3,844	70,527	2,975	52,527	59.6	57.3	3.8
1968	132,028	78,737	75,920	3,817	72,103	2,817	53,291	59.6	57.5	3.6
1969	134,335	80,734	77,902	3,606	74,296	2,832	53,602	60.1	58.0	3.5
1970	137,085	82,771	78,678	3,463	75,215	4,093	54,315	60.4	57.4	4.9
1971	140,216	84,382	79,367	3,394	75,972	5,016	55,834	60.2	56.6	5.9
1972	144,126	87,034	82,153	3,484	78,669	4,882	57,091	60.4	57.0	5.6
1973	147,096	89,429	85,064	3,470	81,594	4,365	57,667	60.8	57.8	4.9
1974	150,120	91,949	86,794	3,515	83,279	5,156	58,171	61.3	57.8	5.6
1975	153,153	93,775	85,846	3,408	82,438	7,929	59,377	61.2	56.1	8.5
1976	156,150	96,158	88,752	3,331	85,421	7,406	59,991	61.6	56.8	7.7
1977	159,033	99,009	92,017	3,283	88,734	6,991	60,025	62.3	57.9	7.1
1978	161,910	102,251	96,048	3,387	92,661	6,202	59,659	63.2	59.3	6.1
1979	164,863	104,962	98,824	3,347	95,477	6,137	59,900	63.7	59.9	5.8
1980	167,745	106,940	99,303	3,364	95,938	7,637	60,806	63.8	59.2	7.1
1981	170,130	108,670	100,397	3,368	97,030	8,273	61,460	63.9	59.0	7.6
1982	172,271	110,204	99,526	3,401	96,125	10,678	62,067	64.0	57.8	9.7
1983	174,215	111,550	100,834	3,383	97,450	10,717	62,665	64.0	57.9	9.6
1984	176,383	113,544	105,005	3,321	101,685	8,539	62,839	64.4	59.5	7.5
1985	178,206	115,461	107,150	3,179	103,971	8,312	62,744	64.8	60.1	7.2
1986	180,587	117,834	109,597	3,163	106,434	8,237	62,752	65.3	60.7	7.0
1987	182,753	119,865	112,440	3,208	109,232	7,425	62,888	65.6	61.5	6.2
1988	184,613	121,669	114,968	3,169	111,800	6,701	62,944	65.9	62.3	5.5
1989	186,393	123,869	117,342	3,199	114,142	6,528	62,523	66.5	63.0	5.3

[1] Not seasonally adjusted.
[2] Civilian labor force as percent of civilian noninstitutional population.
[3] Civilian employment as percent of civilian noninstitutional population.
[4] Unemployed as percent of civilian labor force.

See next page for continuation of table.

Table B–22. Civilian labor force, 1929–2024—*Continued*

[Monthly data seasonally adjusted, except as noted]

Year or month	Civilian noninstitutional population [1]	Civilian labor force: Total	Employment: Total	Employment: Agricultural	Employment: Non-agricultural	Unemployment	Not in labor force	Civilian labor force participation rate [2]	Civilian employment/population ratio [3]	Unemployment rate, civilian workers [4]
	Thousands of persons 16 years of age and over							Percent		
1990	189,164	125,840	118,793	3,223	115,570	7,047	63,324	66.5	62.8	5.6
1991	190,925	126,346	117,718	3,269	114,449	8,628	64,578	66.2	61.7	6.8
1992	192,805	128,105	118,492	3,247	115,245	9,613	64,700	66.4	61.5	7.5
1993	194,838	129,200	120,259	3,115	117,144	8,940	65,638	66.3	61.7	6.9
1994	196,814	131,056	123,060	3,409	119,651	7,996	65,758	66.6	62.5	6.1
1995	198,584	132,304	124,900	3,440	121,460	7,404	66,280	66.6	62.9	5.6
1996	200,591	133,943	126,708	3,443	123,264	7,236	66,647	66.8	63.2	5.4
1997	203,133	136,297	129,558	3,399	126,159	6,739	66,837	67.1	63.8	4.9
1998	205,220	137,673	131,463	3,378	128,085	6,210	67,547	67.1	64.1	4.5
1999	207,753	139,368	133,488	3,281	130,207	5,880	68,385	67.1	64.3	4.2
2000 [5]	212,577	142,583	136,891	2,464	134,427	5,692	69,994	67.1	64.4	4.0
2001	215,092	143,734	136,933	2,299	134,635	6,801	71,359	66.8	63.7	4.7
2002	217,570	144,863	136,485	2,311	134,174	8,378	72,707	66.6	62.7	5.8
2003	221,168	146,510	137,736	2,275	135,461	8,774	74,658	66.2	62.3	6.0
2004	223,357	147,401	139,252	2,232	137,020	8,149	75,956	66.0	62.3	5.5
2005	226,082	149,320	141,730	2,197	139,532	7,591	76,762	66.0	62.7	5.1
2006	228,815	151,428	144,427	2,206	142,221	7,001	77,387	66.2	63.1	4.6
2007	231,867	153,124	146,047	2,095	143,952	7,078	78,743	66.0	63.0	4.6
2008	233,788	154,287	145,362	2,168	143,194	8,924	79,501	66.0	62.2	5.8
2009	235,801	154,142	139,877	2,103	137,775	14,265	81,659	65.4	59.3	9.3
2010	237,830	153,889	139,064	2,206	136,858	14,825	83,941	64.7	58.5	9.6
2011	239,618	153,617	139,869	2,254	137,615	13,747	86,001	64.1	58.4	8.9
2012	243,284	154,975	142,469	2,186	140,283	12,506	88,310	63.7	58.6	8.1
2013	245,679	155,389	143,929	2,130	141,799	11,460	90,290	63.2	58.6	7.4
2014	247,947	155,922	146,305	2,237	144,068	9,617	92,025	62.9	59.0	6.2
2015	250,801	157,130	148,834	2,422	146,411	8,296	93,671	62.7	59.3	5.3
2016	253,538	159,187	151,436	2,460	148,976	7,751	94,351	62.8	59.7	4.9
2017	255,079	160,320	153,337	2,454	150,883	6,982	94,759	62.9	60.1	4.4
2018	257,791	162,075	155,761	2,425	153,336	6,314	95,716	62.9	60.4	3.9
2019	259,175	163,539	157,538	2,425	155,113	6,001	95,636	63.1	60.8	3.7
2020	260,329	160,742	147,795	2,349	145,446	12,947	99,587	61.7	56.8	8.1
2021	261,445	161,204	152,581	2,291	150,290	8,623	100,241	61.7	58.4	5.3
2022	263,973	164,287	158,291	2,290	156,001	5,996	99,686	62.2	60.0	3.6
2023	266,942	167,116	161,037	2,264	158,772	6,080	99,826	62.6	60.3	3.6
2023: Jan	265,962	165,871	160,152	2,249	157,663	5,719	100,090	62.4	60.2	3.4
Feb	266,112	166,263	160,301	2,343	157,797	5,962	99,849	62.5	60.2	3.6
Mar	266,272	166,690	160,824	2,223	158,332	5,866	99,582	62.6	60.4	3.5
Apr	266,443	166,678	160,962	2,295	158,615	5,715	99,766	62.6	60.4	3.4
May	266,618	166,823	160,707	2,293	158,491	6,117	99,795	62.6	60.3	3.7
June	266,801	167,000	161,004	2,299	158,886	5,997	99,801	62.6	60.3	3.6
July	267,002	167,113	161,209	2,251	159,089	5,904	99,889	62.6	60.4	3.5
Aug	267,213	167,840	161,500	2,279	159,275	6,340	99,374	62.8	60.4	3.8
Sept	267,428	167,897	161,550	2,286	159,306	6,347	99,531	62.8	60.4	3.8
Oct	267,642	167,723	161,280	2,201	159,166	6,443	99,919	62.7	60.3	3.8
Nov	267,822	168,127	161,866	2,262	159,578	6,262	99,695	62.8	60.4	3.7
Dec	267,991	167,451	161,183	2,205	158,993	6,268	100,540	62.5	60.1	3.7
2024: Jan	267,540	167,276	161,152	2,184	158,735	6,124	100,265	62.5	60.2	3.7
Feb	267,711	167,426	160,968	2,201	158,601	6,458	100,285	62.5	60.1	3.9
Mar	267,884	167,895	161,466	2,217	158,970	6,429	99,989	62.7	60.3	3.8
Apr	268,066	167,982	161,491	2,246	159,161	6,492	100,083	62.7	60.2	3.9
May	268,248	167,732	161,083	2,221	158,919	6,649	100,516	62.5	60.1	4.0
June	268,438	168,009	161,199	2,379	158,984	6,811	100,429	62.6	60.1	4.1
July	268,644	168,429	161,266	2,273	159,100	7,163	100,215	62.7	60.0	4.3
Aug	268,856	168,549	161,434	2,327	159,108	7,115	100,306	62.7	60.0	4.2
Sept	269,080	168,699	161,864	2,267	159,635	6,834	100,381	62.7	60.2	4.1
Oct	269,289	168,479	161,496	2,248	159,353	6,984	100,809	62.6	60.0	4.1
Nov	269,463	168,286	161,141	2,201	158,955	7,145	101,177	62.5	59.8	4.2

[5] Beginning in 2000, data for agricultural employment are for agricultural and related industries; data for this series and for nonagricultural employment are not strictly comparable with data for earlier years. Because of independent seasonal adjustment for these two series, monthly data will not add to total civilian employment.

Note: Labor force data in Tables B–22 through B–28 are based on household interviews and usually relate to the calendar week that includes the 12th of the month. Historical comparability is affected by revisions to population controls, changes in occupational and industry classification, and other changes to the survey. In recent years, updated population controls have been introduced annually with the release of January data, so data are not strictly comparable with earlier periods. Particularly notable changes were introduced for data in the years 1953, 1960, 1962, 1972, 1973, 1978, 1980, 1990, 1994, 1997, 1998, 2000, 2003, 2008 and 2012. For definitions of terms, area samples used, historical comparability of the data, comparability with other series, etc., see *Employment and Earnings* or concepts and methodology of the CPS at http://www.bls.gov/cps/documentation.htm#concepts.

Source: Department of Labor (Bureau of Labor Statistics).

TABLE B–23. Civilian employment by sex, age, and demographic characteristic, 1978–2024

[Thousands of persons 16 years of age and over, except as noted; monthly data seasonally adjusted]

Year or month	All civilian workers	By sex and age			By race or ethnicity [1]									
					White			Black or African American			Asian	Hispanic or Latino ethnicity		
		Men 20 years and over	Women 20 years and over	Both sexes 16–19	Total	Men 20 years and over	Women 20 years and over	Total	Men 20 years and over	Women 20 years and over	Total	Total	Men 20 years and over	Women 20 years and over
1978	96,048	52,143	35,836	8,070	84,936	46,594	30,975	9,102	4,483	4,047	....	4,527	2,568	1,537
1979	98,824	53,308	37,434	8,083	87,259	47,546	32,357	9,359	4,606	4,174	....	4,785	2,701	1,638
1980	99,303	53,101	38,492	7,710	87,715	47,419	33,275	9,313	4,498	4,267	....	5,527	3,142	1,886
1981	100,397	53,582	39,590	7,225	88,709	47,846	34,275	9,355	4,520	4,329	....	5,813	3,325	2,029
1982	99,526	52,891	40,086	6,549	87,903	47,209	34,710	9,189	4,414	4,347	....	5,805	3,354	2,040
1983	100,834	53,487	41,004	6,342	88,893	47,618	35,476	9,375	4,531	4,428	....	6,072	3,523	2,127
1984	105,005	55,769	42,793	6,444	92,120	49,461	36,823	10,119	4,871	4,773	....	6,651	3,825	2,357
1985	107,150	56,562	44,154	6,434	93,736	50,061	37,907	10,501	4,992	4,977	....	6,888	3,994	2,456
1986	109,597	57,569	45,556	6,472	95,660	50,818	39,050	10,814	5,150	5,128	....	7,219	4,174	2,615
1987	112,440	58,726	47,074	6,640	97,789	51,649	40,242	11,309	5,357	5,365	....	7,790	4,444	2,872
1988	114,968	59,781	48,383	6,805	99,812	52,466	41,316	11,658	5,509	5,548	....	8,250	4,680	3,047
1989	117,342	60,837	49,745	6,759	101,584	53,292	42,346	11,953	5,602	5,727	....	8,573	4,853	3,172
1990	118,793	61,678	50,535	6,581	102,261	53,685	42,796	12,175	5,692	5,884	....	9,845	5,609	3,567
1991	117,718	61,178	50,634	5,906	101,182	53,103	42,862	12,074	5,706	5,874	....	9,828	5,623	3,603
1992	118,492	61,496	51,328	5,669	101,669	53,357	43,327	12,151	5,681	5,978	....	10,027	5,757	3,693
1993	120,259	62,355	52,099	5,805	103,045	54,021	43,910	12,382	5,793	6,095	....	10,361	5,992	3,800
1994	123,060	63,294	53,606	6,161	105,190	54,676	45,116	12,835	5,964	6,320	....	10,788	6,189	3,989
1995	124,900	64,085	54,396	6,419	106,490	55,254	45,643	13,279	6,137	6,556	....	11,127	6,367	4,116
1996	126,708	64,897	55,311	6,500	107,808	55,977	46,164	13,542	6,167	6,762	....	11,642	6,655	4,341
1997	129,558	66,284	56,613	6,661	109,856	56,986	47,063	13,969	6,325	7,013	....	12,726	7,307	4,705
1998	131,463	67,135	57,278	7,051	110,931	57,500	47,342	14,556	6,530	7,290	....	13,291	7,570	4,928
1999	133,488	67,761	58,555	7,172	112,235	57,934	48,098	15,056	6,702	7,663	....	13,720	7,576	5,290
2000	136,891	69,634	60,067	7,189	114,424	59,119	49,145	15,156	6,741	7,703	6,043	15,735	8,859	5,903
2001	136,933	69,776	60,417	6,740	114,430	59,245	49,369	15,006	6,627	7,741	6,180	16,190	9,100	6,121
2002	136,485	69,734	60,420	6,332	114,013	59,124	49,448	14,872	6,652	7,610	6,215	16,590	9,341	6,367
2003	137,736	70,415	61,402	5,919	114,235	59,348	49,823	14,739	6,586	7,636	5,756	17,372	10,063	6,541
2004	139,252	71,572	61,773	5,907	115,239	60,159	50,040	14,909	6,681	7,707	5,994	17,930	10,385	6,752
2005	141,730	73,050	62,702	5,978	116,949	61,255	50,589	15,313	6,901	7,876	6,244	18,632	10,872	6,913
2006	144,427	74,431	63,834	6,162	118,833	62,259	51,359	15,765	7,079	8,068	6,522	19,613	11,391	7,321
2007	146,047	75,337	64,799	5,911	119,792	62,806	51,996	16,051	7,245	8,240	6,839	20,382	11,827	7,662
2008	145,362	74,750	65,039	5,573	119,126	62,304	52,124	15,953	7,151	8,260	6,917	20,346	11,769	7,707
2009	139,877	71,341	63,699	4,837	114,996	59,626	51,231	15,025	6,628	7,956	6,635	19,647	11,256	7,649
2010	139,064	71,230	63,456	4,378	114,168	59,438	50,997	15,010	6,680	7,944	6,705	19,906	11,438	7,788
2011	139,869	72,182	63,360	4,327	114,690	60,118	50,881	15,051	6,765	7,906	6,867	20,269	11,685	7,918
2012	142,469	73,403	64,640	4,426	114,769	60,193	50,911	15,856	7,104	8,313	7,705	21,878	12,212	8,858
2013	143,929	74,176	65,295	4,458	115,379	60,511	51,198	16,151	7,304	8,408	8,136	22,514	12,638	9,056
2014	146,305	75,471	66,287	4,548	116,788	61,289	51,798	16,732	7,613	8,663	8,325	23,492	13,202	9,431
2015	148,834	76,776	67,323	4,734	117,944	61,959	52,161	17,472	7,938	9,032	8,706	24,400	13,624	9,853
2016	151,436	78,084	68,387	4,965	119,313	62,575	52,771	17,982	8,228	9,219	9,213	25,249	14,055	10,217
2017	153,337	78,919	69,344	5,074	120,176	63,009	53,179	18,587	8,500	9,514	9,448	25,938	14,355	10,543
2018	155,761	80,211	70,424	5,126	121,461	63,719	53,682	19,091	8,745	9,751	9,832	27,012	14,873	11,045
2019	157,538	80,917	71,470	5,150	122,441	64,070	54,304	19,381	8,883	9,910	10,179	27,805	15,204	11,516
2020	147,795	76,227	66,873	4,695	115,341	60,570	51,048	17,873	8,150	9,176	9,437	25,952	14,333	10,593
2021	152,581	78,216	69,099	5,266	118,291	61,737	52,389	18,726	8,597	9,525	10,016	27,429	15,138	11,165
2022	158,291	81,409	71,283	5,600	121,908	63,743	53,767	19,937	9,294	10,034	10,615	29,299	15,997	12,049
2023	161,037	82,698	72,692	5,647	123,165	64,316	54,441	20,674	9,617	10,420	11,096	30,343	16,386	12,649
2023: Jan	160,152	82,281	72,176	5,695	122,796	64,208	54,137	20,512	9,562	10,303	10,936	29,755	16,082	12,453
Feb	160,301	82,340	72,257	5,704	122,764	64,138	54,182	20,613	9,670	10,307	10,970	29,813	16,047	12,474
Mar	160,824	82,688	72,368	5,767	122,846	64,287	54,046	20,974	9,811	10,506	11,056	30,065	16,298	12,473
Apr	160,962	82,596	72,597	5,770	123,263	64,399	54,331	20,713	9,519	10,557	11,053	30,183	16,267	12,568
May	160,707	82,520	72,527	5,660	123,103	64,330	54,349	20,613	9,511	10,449	11,043	30,374	16,436	12,661
June	161,004	82,836	72,605	5,563	123,422	64,498	54,606	20,411	9,478	10,295	11,084	30,588	16,571	12,660
July	161,209	82,896	72,837	5,476	123,366	64,394	54,670	20,523	9,593	10,358	11,260	30,609	16,591	12,724
Aug	161,500	82,800	73,107	5,593	123,543	64,307	54,803	20,626	9,640	10,367	11,125	30,451	16,436	12,776
Sept	161,550	82,853	73,119	5,578	123,403	64,313	54,767	20,650	9,631	10,403	11,255	30,637	16,520	12,785
Oct	161,280	82,526	73,066	5,688	123,198	64,148	54,621	20,636	9,520	10,475	11,134	30,525	16,409	12,727
Nov	161,866	83,084	73,049	5,733	123,550	64,559	54,609	20,886	9,648	10,533	11,144	30,636	16,537	12,737
Dec	161,183	82,958	72,587	5,638	122,802	64,208	54,175	20,952	9,821	10,486	11,084	30,480	16,438	12,746
2024: Jan	161,152	82,304	73,144	5,704	122,663	63,674	54,615	20,887	9,717	10,445	11,223	30,700	16,519	12,759
Feb	160,968	82,178	73,182	5,608	122,685	63,658	54,646	20,950	9,709	10,568	11,081	30,883	16,720	12,860
Mar	161,466	82,543	73,061	5,862	123,286	64,029	54,677	20,746	9,677	10,387	11,113	30,994	16,800	12,870
Apr	161,491	82,318	73,334	5,839	123,229	63,801	54,843	20,812	9,661	10,442	11,214	31,187	16,765	13,016
May	161,083	81,986	73,226	5,871	122,922	63,588	54,752	20,643	9,497	10,421	11,393	31,185	16,767	13,032
June	161,199	82,618	72,798	5,782	123,095	64,011	54,505	20,570	9,643	10,289	11,400	31,388	17,023	12,951
July	161,266	82,576	73,078	5,612	123,032	64,005	54,583	20,739	9,681	10,428	11,383	31,191	16,923	12,949
Aug	161,434	82,452	73,589	5,393	123,049	63,910	54,866	20,639	9,551	10,474	11,269	31,443	16,980	13,223
Sept	161,864	82,815	73,426	5,624	123,490	64,114	54,947	20,801	9,817	10,358	11,202	31,484	16,978	13,262
Oct	161,496	82,896	73,159	5,441	122,905	64,085	54,583	20,832	9,754	10,447	11,393	31,303	17,052	13,032
Nov	161,141	82,617	72,981	5,543	122,830	63,950	54,544	20,556	9,658	10,298	11,339	31,276	16,932	13,144

[1] Beginning in 2003, persons who selected this race group only. Persons whose ethnicity is identified as Hispanic or Latino may be of any race. Prior to 2003, persons who selected more than one race were included in the group they identified as the main race. Data for "black or African American" were for "black" prior to 2003. See Employment and Earnings or concepts and methodology of the Current Population Survey (CPS) at http://www.bls.gov/cps/documentation.htm#concepts for details.

Note: Detail will not sum to total because data for all race groups are not shown here.

See footnote 5 and Note, Table B–22.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–24. Unemployment by sex, age, and demographic characteristic, 1978–2024

[Thousands of persons 16 years of age and over, except as noted; monthly data seasonally adjusted]

Year or month	All civilian workers	By sex and age: Men 20 years and over	By sex and age: Women 20 years and over	By sex and age: Both sexes 16–19	By race or ethnicity[1]: White: Total	White: Men 20 years and over	White: Women 20 years and over	Black or African American: Total	Black or African American: Men 20 years and over	Black or African American: Women 20 years and over	Asian: Total	Hispanic or Latino ethnicity: Total	Hispanic or Latino ethnicity: Men 20 years and over	Hispanic or Latino ethnicity: Women 20 years and over
1978	6,202	2,328	2,292	1,583	4,698	1,797	1,713	1,330	462	510	....	452	175	168
1979	6,137	2,308	2,276	1,555	4,664	1,773	1,699	1,319	473	513	....	434	168	160
1980	7,637	3,353	2,615	1,669	5,884	2,629	1,964	1,553	636	574	....	620	284	190
1981	8,273	3,615	2,895	1,763	6,343	2,825	2,143	1,731	703	671	....	678	321	212
1982	10,678	5,089	3,613	1,977	8,241	3,991	2,715	2,142	954	793	....	929	461	293
1983	10,717	5,257	3,632	1,829	8,128	4,098	2,643	2,272	1,002	878	....	961	491	302
1984	8,539	3,932	3,107	1,499	6,372	2,992	2,264	1,914	815	747	....	800	393	258
1985	8,312	3,715	3,129	1,468	6,191	2,834	2,283	1,864	757	750	....	811	401	269
1986	8,237	3,751	3,032	1,454	6,140	2,857	2,213	1,840	765	728	....	857	438	278
1987	7,425	3,369	2,709	1,347	5,501	2,584	1,922	1,684	666	706	....	751	374	241
1988	6,701	2,987	2,487	1,226	4,944	2,268	1,766	1,547	617	642	....	732	351	234
1989	6,528	2,867	2,467	1,194	4,770	2,149	1,758	1,544	619	625	....	750	342	276
1990	7,047	3,239	2,596	1,212	5,186	2,431	1,852	1,565	664	633	....	876	425	289
1991	8,628	4,195	3,074	1,359	6,560	3,284	2,248	1,723	745	698	....	1,092	575	339
1992	9,613	4,717	3,469	1,427	7,169	3,620	2,512	2,011	886	800	....	1,311	675	418
1993	8,940	4,287	3,288	1,365	6,655	3,263	2,400	1,844	801	729	....	1,248	629	418
1994	7,996	3,627	3,049	1,320	5,892	2,735	2,197	1,666	682	685	....	1,187	558	431
1995	7,404	3,239	2,819	1,346	5,459	2,465	2,042	1,538	593	620	....	1,140	530	404
1996	7,236	3,146	2,783	1,306	5,300	2,363	1,998	1,592	639	643	....	1,132	495	438
1997	6,739	2,882	2,585	1,271	4,836	2,140	1,784	1,560	585	673	....	1,069	471	401
1998	6,210	2,580	2,424	1,205	4,484	1,920	1,688	1,426	524	622	....	1,026	436	376
1999	5,880	2,433	2,285	1,162	4,273	1,813	1,616	1,309	480	561	....	945	374	376
2000	5,692	2,376	2,235	1,081	4,121	1,731	1,595	1,241	499	512	227	954	388	371
2001	6,801	3,040	2,599	1,162	4,969	2,275	1,849	1,416	573	582	288	1,138	495	436
2002	8,378	3,896	3,228	1,253	6,137	2,943	2,269	1,693	695	738	389	1,353	636	496
2003	8,774	4,209	3,314	1,251	6,311	3,125	2,276	1,787	760	772	366	1,441	693	555
2004	8,149	3,791	3,150	1,208	5,847	2,785	2,172	1,729	733	755	277	1,342	635	504
2005	7,591	3,392	3,013	1,186	5,350	2,450	2,054	1,700	699	734	259	1,191	536	464
2006	7,001	3,131	2,751	1,119	5,002	2,281	1,927	1,549	640	656	205	1,081	497	414
2007	7,078	3,259	2,718	1,101	5,143	2,408	1,930	1,445	622	588	229	1,220	576	446
2008	8,924	4,297	3,342	1,285	6,509	3,179	2,384	1,788	811	732	285	1,678	860	567
2009	14,265	7,555	5,157	1,552	10,648	5,746	3,745	2,606	1,286	1,032	522	2,706	1,474	911
2010	14,825	7,763	5,534	1,528	10,916	5,828	3,960	2,852	1,396	1,165	543	2,843	1,519	1,001
2011	13,747	6,898	5,450	1,400	9,889	5,046	3,818	2,831	1,360	1,204	518	2,629	1,345	984
2012	12,506	5,984	5,125	1,397	8,915	4,347	3,564	2,544	1,152	1,119	483	2,514	1,195	995
2013	11,460	5,568	4,565	1,327	8,033	3,994	3,102	2,429	1,082	1,069	448	2,257	1,090	855
2014	9,617	4,585	3,926	1,106	6,540	3,141	2,623	2,141	973	943	436	1,878	864	764
2015	8,296	3,959	3,371	966	5,662	2,751	2,249	1,846	835	811	347	1,726	820	686
2016	7,751	3,675	3,151	925	5,345	2,594	2,100	1,655	737	724	349	1,548	720	627
2017	6,982	3,287	2,868	827	4,765	2,288	1,923	1,501	663	657	333	1,401	632	585
2018	6,314	2,976	2,578	759	4,354	2,094	1,743	1,322	582	573	304	1,323	591	547
2019	6,001	2,819	2,435	746	4,159	1,967	1,664	1,251	571	527	280	1,248	553	497
2020	12,947	6,118	5,804	1,025	9,090	4,334	4,013	2,304	1,069	1,062	894	3,018	1,451	1,291
2021	8,623	4,302	3,625	696	5,854	2,957	2,411	1,756	845	791	529	1,995	986	812
2022	5,996	2,867	2,453	675	4,049	1,995	1,585	1,300	572	596	306	1,302	626	513
2023	6,080	2,985	2,382	713	4,162	2,091	1,580	1,212	542	538	344	1,475	730	557
2023: Jan	5,719	2,759	2,295	665	3,933	1,916	1,547	1,173	537	508	325	1,455	760	578
Feb	5,962	2,805	2,446	711	4,036	1,968	1,603	1,252	524	563	387	1,703	894	624
Mar	5,866	2,877	2,355	635	4,110	2,022	1,660	1,138	547	477	318	1,459	688	588
Apr	5,715	2,797	2,324	595	3,978	1,962	1,573	1,050	458	495	321	1,403	695	534
May	6,117	2,962	2,503	652	4,179	2,100	1,629	1,243	570	587	338	1,283	682	456
June	5,997	2,941	2,358	698	3,936	2,008	1,462	1,294	596	585	360	1,354	627	545
July	5,904	2,874	2,330	699	3,986	2,033	1,503	1,248	537	564	269	1,410	673	536
Aug	6,340	3,151	2,407	781	4,387	2,228	1,619	1,155	516	513	362	1,558	736	587
Sept	6,347	3,271	2,333	743	4,352	2,302	1,583	1,251	570	487	332	1,478	736	570
Oct	6,443	3,161	2,421	861	4,414	2,215	1,588	1,266	528	590	356	1,531	719	537
Nov	6,262	3,172	2,350	739	4,223	2,136	1,521	1,285	651	534	404	1,465	729	523
Dec	6,268	3,050	2,460	758	4,424	2,197	1,669	1,143	473	528	353	1,602	824	601
2024: Jan	6,124	3,060	2,385	679	4,299	2,195	1,604	1,164	548	521	336	1,618	852	577
Feb	6,458	3,002	2,653	803	4,356	2,027	1,808	1,240	636	482	390	1,616	695	675
Mar	6,429	2,855	2,731	842	4,310	1,933	1,811	1,424	640	612	290	1,448	654	612
Apr	6,492	3,064	2,655	772	4,479	2,181	1,779	1,239	533	548	322	1,589	766	623
May	6,649	3,243	2,586	821	4,462	2,208	1,689	1,343	654	572	361	1,630	826	550
June	6,811	3,227	2,788	795	4,457	2,143	1,763	1,372	626	617	488	1,614	746	604
July	7,163	3,477	2,890	795	4,854	2,308	1,946	1,385	689	601	431	1,755	786	741
Aug	7,115	3,405	2,822	888	4,890	2,372	1,911	1,344	602	610	486	1,822	854	698
Sept	6,834	3,192	2,708	935	4,677	2,271	1,747	1,262	532	585	481	1,687	720	663
Oct	6,984	3,361	2,752	870	4,845	2,354	1,843	1,259	585	543	468	1,684	704	712
Nov	7,145	3,369	2,933	843	4,855	2,325	1,916	1,397	612	652	442	1,742	775	723

[1] See footnote 1 and Note, Table B–23.

Note: See footnote 5 and Note, Table B–22.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–25. Civilian labor force participation rate, 1978–2024

[Percent [1]; monthly data seasonally adjusted]

Year or month	All civilian workers	Men				Women				Both sexes 16–19 years	By race or ethnicity [2]			
		20 years and over	20–24 years	25–54 years	55 years and over	20 years and over	20–24 years	25–54 years	55 years and over		White	Black or African American	Asian	Hispanic or Latino ethnicity
1978	63.2	79.8	85.9	94.3	47.2	49.6	68.3	60.6	23.1	57.8	63.3	61.5	....	62.9
1979	63.7	79.8	86.4	94.4	46.6	50.6	69.0	62.3	23.2	57.9	63.9	61.4	....	63.6
1980	63.8	79.4	85.9	94.2	45.6	51.3	68.9	64.0	22.8	56.7	64.1	61.0	....	64.0
1981	63.9	79.0	85.5	94.1	44.5	52.1	69.6	65.3	22.7	55.4	64.3	60.8	....	64.1
1982	64.0	78.7	84.9	94.0	43.8	52.7	69.8	66.3	22.7	54.1	64.3	61.0	....	63.6
1983	64.0	78.5	84.8	93.8	43.0	53.1	69.9	67.1	22.4	53.5	64.3	61.5	....	63.8
1984	64.4	78.3	85.0	93.9	41.8	53.7	70.4	68.2	22.2	53.9	64.6	62.2	....	64.9
1985	64.8	78.1	85.0	93.9	41.0	54.7	71.8	69.6	22.0	54.5	65.0	62.9	....	64.6
1986	65.3	78.1	85.8	93.8	40.4	55.5	72.4	70.8	22.1	54.7	65.5	63.3	....	65.4
1987	65.6	78.0	85.2	93.7	40.4	56.2	73.0	71.9	22.0	54.7	65.8	63.8	....	66.4
1988	65.9	77.9	85.0	93.6	39.9	56.8	72.7	72.7	22.3	55.3	66.2	63.8	....	67.4
1989	66.5	78.1	85.3	93.7	39.6	57.7	72.4	73.6	23.0	55.9	66.7	64.2	....	67.6
1990	66.5	78.2	84.4	93.4	39.4	58.0	71.3	74.0	22.9	53.7	66.9	64.0	....	67.4
1991	66.2	77.7	83.5	93.1	38.5	57.9	70.1	74.1	22.6	51.6	66.6	63.3	....	66.5
1992	66.4	77.7	83.3	93.0	38.4	58.5	70.9	74.6	22.8	51.3	66.8	63.9	....	66.8
1993	66.3	77.3	83.2	92.6	37.7	58.5	70.9	74.6	22.8	51.5	66.8	63.2	....	66.2
1994	66.6	76.8	83.1	91.7	37.8	59.3	71.0	75.3	24.0	52.7	67.1	63.4	....	66.1
1995	66.6	76.7	83.1	91.6	37.9	59.4	70.3	75.6	23.9	53.5	67.1	63.7	....	65.8
1996	66.8	76.8	82.5	91.8	38.3	59.9	71.3	76.1	23.9	52.3	67.2	64.1	....	66.5
1997	67.1	77.0	82.5	91.8	38.9	60.5	72.7	76.7	24.6	51.6	67.5	64.7	....	67.9
1998	67.1	76.8	82.0	91.8	39.1	60.4	73.0	76.5	25.0	52.8	67.3	65.6	....	67.9
1999	67.1	76.7	81.9	91.7	39.6	60.7	73.2	76.8	25.6	52.0	67.3	65.8	....	67.7
2000	67.1	76.7	82.6	91.6	40.1	60.6	73.1	76.7	26.1	52.0	67.3	65.8	67.2	69.7
2001	66.8	76.5	81.6	91.3	40.9	60.6	72.7	76.4	27.0	49.6	67.0	65.3	67.2	69.5
2002	66.6	76.3	80.7	91.0	42.0	60.5	72.1	75.9	28.5	47.4	66.8	64.8	67.2	69.1
2003	66.2	75.9	80.0	90.6	42.6	60.6	70.8	75.6	30.0	44.5	66.5	64.3	66.4	68.3
2004	66.0	75.8	79.6	90.5	43.2	60.3	70.5	75.3	30.5	43.9	66.3	63.8	65.9	68.6
2005	66.0	75.8	79.1	90.5	44.2	60.4	70.1	75.3	31.4	43.7	66.3	64.2	66.1	68.0
2006	66.2	75.9	79.6	90.6	44.9	60.5	69.5	75.5	32.3	43.7	66.5	64.1	66.2	68.7
2007	66.0	75.9	78.7	90.9	45.2	60.6	70.1	75.4	33.2	41.3	66.4	63.7	66.5	68.8
2008	66.0	75.7	78.7	90.5	46.0	60.9	70.0	75.8	33.9	40.2	66.3	63.7	67.0	68.5
2009	65.4	74.8	76.2	89.7	46.3	60.8	69.6	75.6	34.7	37.5	65.8	62.4	66.0	68.0
2010	64.7	74.1	74.5	89.3	46.4	60.3	68.3	75.2	35.1	34.9	65.1	62.2	64.7	67.5
2011	64.1	73.4	74.7	88.7	46.3	59.8	67.8	74.7	35.1	34.1	64.5	61.4	64.6	66.5
2012	63.7	73.0	74.5	88.7	46.8	59.3	67.4	74.5	35.1	34.3	64.0	61.5	63.9	66.4
2013	63.2	72.5	73.9	88.4	46.5	58.8	67.5	73.9	35.1	34.5	63.5	61.2	64.6	66.0
2014	62.9	71.9	73.9	88.2	45.9	58.5	67.7	73.9	34.9	34.0	63.1	61.2	63.6	66.1
2015	62.7	71.7	73.0	88.3	45.9	58.2	68.3	73.7	34.7	34.3	62.8	61.5	62.8	65.9
2016	62.8	71.7	73.0	88.5	46.2	58.3	68.0	74.3	34.7	35.2	62.9	61.6	63.2	65.8
2017	62.9	71.6	74.1	88.6	46.1	58.5	68.5	75.0	34.7	35.2	62.8	62.3	63.6	66.1
2018	62.9	71.6	73.2	89.0	46.2	58.5	69.0	75.3	34.7	35.1	62.8	62.3	63.5	66.3
2019	63.1	71.6	74.0	89.1	46.3	58.9	70.4	76.0	35.0	35.3	63.0	62.5	64.0	66.8
2020	61.7	70.1	71.0	87.9	45.1	57.6	67.5	75.1	34.0	34.5	61.8	60.5	62.7	65.6
2021	61.7	69.8	73.0	88.0	44.2	57.3	68.6	75.3	33.3	36.2	61.5	60.9	63.8	65.5
2022	62.2	70.3	73.2	88.6	44.7	58.1	68.7	76.4	33.6	36.8	62.0	62.2	64.5	66.3
2023	62.6	70.4	72.5	89.1	44.2	58.6	70.1	77.4	33.6	36.9	62.3	63.1	65.0	66.9
2023: Jan	62.4	70.1	72.0	88.5	44.8	58.4	71.0	76.9	33.3	37.1	62.1	62.9	64.2	66.4
Feb	62.5	70.2	73.3	89.0	44.2	58.5	70.6	77.2	33.3	37.4	62.1	63.3	65.1	66.9
Mar	62.6	70.5	74.4	89.1	44.3	58.5	69.5	77.2	33.5	37.3	62.2	64.0	64.8	66.8
Apr	62.6	70.3	71.9	89.1	44.1	58.6	69.8	77.5	33.5	37.0	62.3	62.9	64.8	66.8
May	62.6	70.3	72.9	89.1	44.0	58.7	69.9	77.6	33.5	36.7	62.3	63.1	65.0	66.8
June	62.6	70.5	73.0	89.2	44.2	58.6	68.9	77.8	33.4	36.4	62.3	62.7	65.4	67.3
July	62.6	70.5	72.3	89.4	44.0	58.7	68.9	77.5	33.9	35.8	62.3	62.8	65.5	67.3
Aug	62.8	70.5	72.6	89.3	44.0	58.9	69.7	77.7	34.1	37.0	62.5	62.7	65.6	67.1
Sept	62.8	70.6	72.0	89.6	44.2	58.8	70.7	77.4	33.9	36.6	62.4	63.0	65.7	67.2
Oct	62.7	70.2	71.1	89.0	44.0	58.8	70.5	77.6	33.8	37.9	62.3	63.0	65.3	67.0
Nov	62.8	70.6	72.4	89.3	44.6	58.7	70.9	77.3	33.7	37.5	62.3	63.7	65.0	66.9
Dec	62.5	70.4	71.7	89.2	44.3	58.4	70.9	77.1	33.2	37.0	62.1	63.4	63.9	66.7
2024: Jan	62.5	70.2	73.8	89.2	44.1	58.8	71.5	77.4	33.5	36.5	62.1	63.3	64.5	66.8
Feb	62.5	70.0	72.3	89.3	43.9	59.0	71.1	77.7	33.8	36.6	62.1	63.7	64.5	67.1
Mar	62.7	70.2	72.8	89.2	44.3	58.9	71.4	77.7	33.6	38.2	62.3	63.6	64.1	66.8
Apr	62.7	70.1	73.9	89.1	43.7	59.0	70.7	78.0	33.7	37.6	62.3	63.2	64.7	67.3
May	62.5	69.9	72.5	89.2	43.4	58.8	69.1	78.1	33.6	38.1	62.2	62.9	65.3	67.3
June	62.6	70.4	73.3	89.6	43.6	58.6	68.8	77.9	33.5	37.4	62.2	62.7	65.9	67.5
July	62.7	70.5	72.6	90.0	43.7	58.9	70.0	78.1	33.5	36.4	62.3	63.2	65.7	67.3
Aug	62.7	70.3	72.0	89.5	43.8	59.2	69.1	78.4	33.9	35.7	62.3	62.7	65.4	67.8
Sept	62.7	70.4	72.6	89.5	44.0	58.9	68.6	78.1	33.8	37.2	62.4	62.9	65.3	67.4
Oct	62.6	70.5	73.6	89.3	44.4	58.7	70.0	77.8	33.5	35.8	62.2	62.9	65.5	66.9
Nov	62.5	70.3	73.3	89.3	44.0	58.7	69.7	77.7	33.5	36.2	62.1	62.4	64.7	66.9

[1] Civilian labor force as percent of civilian noninstitutional population in group specified.
[2] See footnote 1, Table B–23.

Note: Data relate to persons 16 years of age and over, except as noted.

See footnote 5 and Note, Table B–22.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–26. Civilian employment/population ratio, 1978–2024

[Percent [1]; monthly data seasonally adjusted]

Year or month	All civilian workers	Men: 20 years and over	Men: 20–24 years	Men: 25–54 years	Men: 55 years and over	Women: 20 years and over	Women: 20–24 years	Women: 25–54 years	Women: 55 years and over	Both sexes 16–19 years	By race or ethnicity [2]: White	Black or African American	Asian	Hispanic or Latino ethnicity
1978	59.3	76.4	78.0	91.0	45.7	46.6	61.4	57.3	22.3	48.3	60.0	53.6	....	57.2
1979	59.9	76.5	78.9	91.1	45.2	47.7	62.4	59.0	22.5	48.5	60.6	53.8	....	58.3
1980	59.2	74.6	75.1	89.4	44.1	48.1	61.8	60.1	22.1	46.6	60.0	52.3	....	57.6
1981	59.0	74.0	74.2	89.0	42.9	48.6	61.8	61.2	21.9	44.6	60.0	51.3	....	57.4
1982	57.8	71.8	71.0	86.5	41.6	48.4	60.6	61.2	21.6	41.5	58.8	49.4	....	54.9
1983	57.9	71.4	71.3	86.1	40.6	48.8	60.9	62.0	21.4	41.5	58.9	49.5	....	55.1
1984	59.5	73.2	74.9	88.4	39.8	50.1	62.7	63.9	21.3	43.7	60.5	52.3	....	57.9
1985	60.1	73.3	75.3	88.7	39.3	51.0	64.1	65.3	21.1	44.4	61.0	53.4	....	57.8
1986	60.7	73.3	76.3	88.5	38.8	52.0	64.9	66.6	21.3	44.6	61.5	54.1	....	58.5
1987	61.5	73.8	76.8	89.0	39.0	53.1	66.1	68.2	21.3	45.5	62.3	55.6	....	60.5
1988	62.3	74.2	77.5	89.5	38.6	54.0	66.6	69.3	21.7	46.8	63.1	56.3	....	61.9
1989	63.0	74.5	77.8	89.9	38.3	54.9	66.4	70.4	22.4	47.5	63.8	56.9	....	62.2
1990	62.8	74.3	76.7	89.1	38.0	55.2	65.2	70.6	22.2	45.3	63.7	56.7	....	61.9
1991	61.7	72.7	73.8	87.5	36.8	54.6	63.2	70.1	21.9	42.0	62.6	55.4	....	59.8
1992	61.5	72.1	73.1	86.8	36.4	54.8	63.6	70.1	21.8	41.0	62.4	54.9	....	59.1
1993	61.7	72.3	73.8	87.0	35.9	55.0	64.0	70.4	22.0	41.7	62.7	55.0	....	59.1
1994	62.5	72.6	74.6	87.2	36.2	56.2	64.5	71.5	23.1	43.4	63.5	56.1	....	59.5
1995	62.9	73.0	75.4	87.6	36.5	56.5	64.0	72.2	23.0	44.2	63.8	57.1	....	59.7
1996	63.2	73.2	74.7	87.9	37.0	57.0	64.9	72.8	23.1	43.5	64.1	57.4	....	60.6
1997	63.8	73.7	75.2	88.4	37.7	57.8	66.8	73.5	23.8	43.4	64.6	58.2	....	62.6
1998	64.1	73.9	75.4	88.8	38.0	58.0	67.3	73.6	24.4	45.1	64.7	59.7	....	63.1
1999	64.3	74.0	75.6	89.0	38.5	58.5	68.0	74.1	24.9	44.7	64.8	60.6	....	63.4
2000	64.4	74.2	76.6	89.0	39.1	58.4	67.9	74.2	25.5	45.2	64.9	60.9	64.8	65.7
2001	63.7	73.3	74.2	87.9	39.6	58.1	67.3	73.4	26.3	42.3	64.2	59.7	64.2	64.9
2002	62.7	72.3	72.5	86.6	40.3	57.5	65.6	72.3	27.5	39.6	63.4	58.1	63.2	63.9
2003	62.3	71.7	71.5	85.9	40.7	57.5	64.2	72.0	28.9	36.8	63.0	57.4	62.4	63.1
2004	62.3	71.9	71.6	86.3	41.5	57.4	64.3	71.8	29.4	36.4	63.1	57.2	63.0	63.8
2005	62.7	72.4	71.5	86.9	42.7	57.6	64.5	72.0	30.4	36.5	63.4	57.7	63.4	64.0
2006	63.1	72.9	72.7	87.3	43.5	58.0	64.2	72.5	31.4	36.9	63.8	58.4	64.2	65.2
2007	63.0	72.8	71.7	87.5	43.7	58.2	65.0	72.5	32.2	34.8	63.6	58.4	64.3	64.9
2008	62.2	71.6	69.7	86.0	44.2	57.9	63.8	72.3	32.7	32.6	62.8	57.3	64.3	63.3
2009	59.3	67.6	63.3	81.5	43.0	56.2	61.1	70.2	32.6	28.4	60.2	53.2	61.2	59.7
2010	58.5	66.8	61.3	81.0	42.8	55.5	59.4	69.3	32.9	25.9	59.4	52.3	59.9	59.0
2011	58.4	67.0	63.0	81.4	43.1	55.0	58.7	69.0	32.9	25.8	59.4	51.7	60.0	58.9
2012	58.6	67.5	63.8	82.5	43.8	55.0	59.2	69.2	33.1	26.1	59.4	53.0	60.1	59.5
2013	58.6	67.4	63.5	82.8	43.8	54.9	59.8	69.3	33.3	26.6	59.4	53.2	61.2	60.0
2014	59.0	67.8	64.9	83.6	43.9	55.2	60.9	70.0	33.4	27.3	59.7	54.3	60.4	61.2
2015	59.3	68.1	65.1	84.4	44.1	55.4	62.5	70.3	33.5	28.5	59.9	55.7	60.4	61.6
2016	59.7	68.5	66.2	85.0	44.4	55.7	63.0	71.1	33.5	29.7	60.2	56.4	60.9	62.0
2017	60.1	68.8	67.9	85.4	44.6	56.1	64.2	72.1	33.6	30.3	60.4	57.6	61.5	62.7
2018	60.4	69.0	67.6	86.2	44.7	56.4	64.7	72.8	33.7	30.6	60.7	58.3	61.6	63.2
2019	60.8	69.2	68.3	86.4	45.1	56.9	66.4	73.7	34.0	30.9	61.0	58.7	62.3	63.9
2020	56.8	64.8	61.3	81.8	42.2	53.0	58.2	69.6	31.5	28.3	57.3	53.6	57.3	58.7
2021	58.4	66.2	65.9	83.6	42.3	54.5	63.0	71.7	31.9	32.0	58.6	55.7	60.6	61.1
2022	60.0	67.9	67.5	85.9	43.5	56.2	64.4	74.0	32.7	32.8	60.0	58.4	62.7	63.5
2023	60.3	67.9	67.2	86.3	43.0	56.8	66.0	75.1	32.8	32.8	60.2	59.6	63.1	63.8
2023: Jan	60.2	67.8	66.4	85.8	43.7	56.6	66.5	74.7	32.5	33.2	60.2	59.5	62.3	63.3
Feb	60.2	67.9	67.5	86.2	43.1	56.6	66.4	74.9	32.4	33.3	60.1	59.7	62.9	63.3
Mar	60.4	68.1	69.2	86.4	43.1	56.7	65.3	75.0	32.7	33.6	60.2	60.7	63.0	63.7
Apr	60.4	68.0	67.5	86.3	43.0	56.8	66.5	75.1	32.7	33.6	60.3	59.9	63.0	63.8
May	60.3	67.9	67.7	86.3	42.8	56.7	66.1	75.1	32.6	32.9	60.2	59.6	63.1	64.1
June	60.3	68.1	68.0	86.5	42.8	56.8	65.2	75.2	32.7	32.3	60.4	58.9	63.4	64.4
July	60.4	68.1	67.1	86.6	43.0	56.9	64.6	75.3	33.1	31.8	60.3	59.2	64.0	64.3
Aug	60.4	68.0	66.5	86.4	42.8	57.1	65.6	75.3	33.2	32.4	60.4	59.4	63.5	63.9
Sept	60.4	68.0	66.0	86.4	43.1	57.0	66.8	75.3	33.0	32.3	60.3	59.4	63.8	64.1
Oct	60.3	67.6	65.5	85.9	42.8	56.9	66.1	75.3	32.9	32.9	60.1	59.3	63.3	63.8
Nov	60.4	68.0	67.2	86.2	43.1	56.9	66.5	75.1	32.8	33.2	60.3	60.0	62.7	63.9
Dec	60.1	67.9	67.1	86.1	43.0	56.5	66.4	74.8	32.3	32.6	59.9	60.1	61.9	63.4
2024: Jan	60.2	67.7	68.7	86.2	42.7	56.9	68.0	75.0	32.7	32.6	60.0	60.0	62.6	63.5
Feb	60.1	67.6	66.6	86.3	42.7	56.9	66.5	75.2	32.8	32.0	59.9	60.1	62.3	63.7
Mar	60.3	67.8	67.6	86.4	43.1	56.8	66.3	75.0	32.8	33.4	60.2	59.5	62.5	63.8
Apr	60.2	67.6	69.0	86.1	42.4	57.0	66.0	75.5	32.8	33.2	60.2	59.6	62.9	64.1
May	60.1	67.3	66.5	86.0	42.3	56.8	64.0	75.7	32.7	33.4	60.0	59.1	63.3	64.0
June	60.1	67.8	67.4	86.5	42.4	56.5	64.0	75.1	32.5	32.9	60.0	58.8	63.2	64.2
July	60.0	67.7	66.9	86.6	42.3	56.6	64.8	75.3	32.5	31.9	60.0	59.2	63.3	63.7
Aug	60.0	67.5	66.0	86.3	42.4	57.0	64.0	75.6	33.0	30.6	60.0	58.9	62.7	64.1
Sept	60.2	67.8	67.3	86.4	42.7	56.8	64.1	75.5	32.9	31.9	60.1	59.3	62.6	64.0
Oct	60.0	67.8	66.9	86.3	42.9	56.6	65.6	74.9	32.6	30.9	59.8	59.3	62.9	63.5
Nov	59.8	67.5	66.7	86.1	42.6	56.4	65.1	74.8	32.5	31.4	59.8	58.5	62.3	63.3

[1] Civilian employment as percent of civilian noninstitutional population in group specified.
[2] See footnote 1, Table B–23.

Note: Data relate to persons 16 years of age and over, except as noted.

See footnote 5 and Note, Table B–22.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–27. Civilian unemployment rate, 1978–2024

[Percent [1]; monthly data seasonally adjusted]

Year or month	All civilian workers	By sex and age			By race or ethnicity [2]				U-6 measure of labor under-utilization [3]	By educational attainment (25 years & over)			
		Men 20 years and over	Women 20 years and over	Both sexes 16–19	White	Black or African American	Asian	Hispanic or Latino ethnicity		Less than a high school diploma	High school graduates, no college	Some college or associate degree	Bachelor's degree and higher [4]
1978	6.1	4.3	6.0	16.4	5.2	12.8	....	9.1	....	....	....	....	....
1979	5.8	4.2	5.7	16.1	5.1	12.3	....	8.3	....	....	....	....	....
1980	7.1	5.9	6.4	17.8	6.3	14.3	....	10.1	....	....	....	....	....
1981	7.6	6.3	6.8	19.6	6.7	15.6	....	10.4	....	....	....	....	....
1982	9.7	8.8	8.3	23.2	8.6	18.9	....	13.8	....	....	....	....	....
1983	9.6	8.9	8.1	22.4	8.4	19.5	....	13.7	....	....	....	....	....
1984	7.5	6.6	6.8	18.9	6.5	15.9	....	10.7	....	....	....	....	....
1985	7.2	6.2	6.6	18.6	6.2	15.1	....	10.5	....	....	....	....	....
1986	7.0	6.1	6.2	18.3	6.0	14.5	....	10.6	....	....	....	....	....
1987	6.2	5.4	5.4	16.9	5.3	13.0	....	8.8	....	....	....	....	....
1988	5.5	4.8	4.9	15.3	4.7	11.7	....	8.2	....	....	....	....	....
1989	5.3	4.5	4.7	15.0	4.5	11.4	....	8.0	....	....	....	....	....
1990	5.6	5.0	4.9	15.5	4.8	11.4	....	8.2	....	....	....	....	....
1991	6.8	6.4	5.7	18.7	6.1	12.5	....	10.0	....	....	....	....	....
1992	7.5	7.1	6.3	20.1	6.6	14.2	....	11.6	....	11.5	6.8	5.6	3.2
1993	6.9	6.4	5.9	19.0	6.1	13.0	....	10.8	....	10.8	6.3	5.2	2.9
1994	6.1	5.4	5.4	17.6	5.3	11.5	....	9.9	10.9	9.8	5.4	4.5	2.6
1995	5.6	4.8	4.9	17.3	4.9	10.4	....	9.3	10.1	9.0	4.8	4.0	2.4
1996	5.4	4.6	4.8	16.7	4.7	10.5	....	8.9	9.7	8.7	4.7	3.7	2.2
1997	4.9	4.2	4.4	16.0	4.2	10.0	....	7.7	8.9	8.1	4.3	3.3	2.0
1998	4.5	3.7	4.1	14.6	3.9	8.9	....	7.2	8.0	7.1	4.0	3.0	1.8
1999	4.2	3.5	3.8	13.9	3.7	8.0	....	6.4	7.4	6.7	3.5	2.8	1.8
2000	4.0	3.3	3.6	13.1	3.5	7.6	3.6	5.7	7.0	6.3	3.4	2.7	1.7
2001	4.7	4.2	4.1	14.7	4.2	8.6	4.5	6.6	8.1	7.2	4.2	3.3	2.3
2002	5.8	5.3	5.1	16.5	5.1	10.2	5.9	7.5	9.6	8.4	5.3	4.5	2.9
2003	6.0	5.6	5.1	17.5	5.2	10.8	6.0	7.7	10.1	8.8	5.5	4.8	3.1
2004	5.5	5.0	4.9	17.0	4.8	10.4	4.4	7.0	9.6	8.5	5.0	4.2	2.7
2005	5.1	4.4	4.6	16.6	4.4	10.0	4.0	6.0	8.9	7.6	4.7	3.9	2.3
2006	4.6	4.0	4.1	15.4	4.0	8.9	3.0	5.2	8.2	6.8	4.3	3.6	2.0
2007	4.6	4.1	4.0	15.7	4.1	8.3	3.2	5.6	8.3	7.1	4.4	3.6	2.0
2008	5.8	5.4	4.9	18.7	5.2	10.1	4.0	7.6	10.5	9.0	5.7	4.6	2.6
2009	9.3	9.6	7.5	24.3	8.5	14.8	7.3	12.1	16.2	14.6	9.7	8.0	4.6
2010	9.6	9.8	8.0	25.9	8.7	16.0	7.5	12.5	16.7	14.9	10.3	8.4	4.7
2011	8.9	8.7	7.9	24.4	7.9	15.8	7.0	11.5	15.9	14.1	9.4	8.0	4.3
2012	8.1	7.5	7.3	24.0	7.2	13.8	5.9	10.3	14.7	12.4	8.3	7.1	4.0
2013	7.4	7.0	6.5	22.9	6.5	13.1	5.2	9.1	13.8	11.0	7.5	6.4	3.7
2014	6.2	5.7	5.6	19.6	5.3	11.3	5.0	7.4	12.0	9.0	6.0	5.4	3.2
2015	5.3	4.9	4.8	16.9	4.6	9.6	3.8	6.6	10.4	8.0	5.4	4.5	2.6
2016	4.9	4.5	4.4	15.7	4.3	8.4	3.6	5.8	9.6	7.4	5.2	4.1	2.5
2017	4.4	4.0	4.0	14.0	3.8	7.5	3.4	5.1	8.5	6.5	4.6	3.8	2.3
2018	3.9	3.6	3.5	12.9	3.5	6.5	3.0	4.7	7.7	5.6	4.1	3.3	2.1
2019	3.7	3.4	3.3	12.7	3.3	6.1	2.7	4.3	7.2	5.4	3.7	3.0	2.1
2020	8.1	7.4	8.0	17.9	7.3	11.4	8.7	10.4	13.6	11.7	9.0	7.8	4.8
2021	5.3	5.2	5.0	11.7	4.7	8.6	5.0	6.8	9.4	8.3	6.2	5.1	3.1
2022	3.6	3.4	3.3	10.8	3.2	6.1	2.8	4.3	6.9	5.5	4.0	3.1	2.0
2023	3.6	3.5	3.2	11.2	3.3	5.5	3.0	4.6	6.9	5.6	3.9	3.0	2.1
2023: Jan	3.4	3.2	3.1	10.5	3.1	5.4	2.9	4.7	6.7	4.5	3.8	2.9	2.0
Feb	3.6	3.3	3.3	11.1	3.2	5.7	3.4	5.4	6.8	5.8	3.6	3.3	2.1
Mar	3.5	3.4	3.2	9.9	3.2	5.1	2.8	4.6	6.7	4.8	4.0	3.0	2.0
Apr	3.4	3.3	3.1	9.3	3.1	4.8	2.8	4.4	6.6	5.4	3.9	2.9	1.9
May	3.7	3.5	3.3	10.3	3.3	5.7	3.0	4.1	6.8	5.7	3.9	3.2	2.0
June	3.6	3.4	3.1	11.2	3.1	6.0	3.1	4.2	6.9	6.0	3.9	3.0	2.0
July	3.5	3.4	3.1	11.3	3.1	5.7	2.3	4.4	6.7	5.3	3.3	3.1	2.0
Aug	3.8	3.7	3.2	12.3	3.4	5.3	3.2	4.9	7.1	5.4	3.9	3.1	2.2
Sept	3.8	3.8	3.1	11.8	3.4	5.7	2.9	4.6	7.0	5.5	4.1	3.0	2.2
Oct	3.8	3.7	3.2	13.1	3.5	5.8	3.1	4.8	7.2	5.8	4.0	3.1	2.1
Nov	3.7	3.7	3.1	11.4	3.3	5.8	3.5	4.6	7.0	6.3	4.1	2.8	2.1
Dec	3.7	3.5	3.3	11.9	3.5	5.2	3.1	5.0	7.1	6.0	4.2	3.1	2.1
2024: Jan	3.7	3.6	3.2	10.6	3.4	5.3	2.9	5.0	7.2	6.0	4.3	3.3	2.1
Feb	3.9	3.5	3.5	12.5	3.4	5.6	3.4	5.0	7.3	6.1	4.2	3.1	2.2
Mar	3.8	3.3	3.6	12.6	3.4	6.4	2.5	4.5	7.3	4.9	4.1	3.4	2.1
Apr	3.9	3.6	3.5	11.7	3.5	5.6	2.8	4.8	7.4	6.0	4.0	3.3	2.2
May	4.0	3.8	3.4	12.3	3.5	6.1	3.1	5.0	7.4	5.9	4.3	3.1	2.1
June	4.1	3.8	3.7	12.1	3.5	6.3	4.1	4.9	7.4	5.9	4.2	3.4	2.4
July	4.3	4.0	3.8	12.4	3.8	6.3	3.7	5.3	7.8	6.7	4.6	3.5	2.3
Aug	4.2	4.0	3.7	14.1	3.8	6.1	4.1	5.5	7.9	7.1	4.0	3.4	2.5
Sept	4.1	3.7	3.6	14.3	3.6	5.7	4.1	5.1	7.7	6.8	4.0	3.4	2.3
Oct	4.1	3.9	3.6	13.8	3.8	5.7	3.9	5.1	7.7	6.6	4.0	3.4	2.5
Nov	4.2	3.9	3.9	13.2	3.8	6.4	3.8	5.3	7.8	6.0	4.6	3.6	2.4

[1] Unemployed as percent of civilian labor force in group specified.
[2] See footnote 1, Table B–23.
[3] Total unemployed, plus all persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all persons marginally attached to the labor force.
[4] Includes persons with bachelor's, master's, professional, and doctoral degrees.

Note: Data relate to persons 16 years of age and over, except as noted.

See Note, Table B–22.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–28. Unemployment by duration and reason, 1978–2024

[Thousands of persons, except as noted; monthly data seasonally adjusted [1]]

Year or month	Unemployment	Duration of unemployment: Less than 5 weeks	5–14 weeks	15–26 weeks	27 weeks and over	Average (mean) duration (weeks) [2]	Median duration (weeks)	Reason for unemployment: Job losers [3]: Total	On layoff	Other	Job leavers	Re-entrants	New entrants
1978	6,202	2,865	1,923	766	648	11.9	5.9	2,585	712	1,873	874	1,857	885
1979	6,137	2,950	1,946	706	535	10.8	5.4	2,635	851	1,784	880	1,806	817
1980	7,637	3,295	2,470	1,052	820	11.9	6.5	3,947	1,488	2,459	891	1,927	872
1981	8,273	3,449	2,539	1,122	1,162	13.7	6.9	4,267	1,430	2,837	923	2,102	981
1982	10,678	3,883	3,311	1,708	1,776	15.6	8.7	6,268	2,127	4,141	840	2,384	1,185
1983	10,717	3,570	2,937	1,652	2,559	20.0	10.1	6,258	1,780	4,478	830	2,412	1,216
1984	8,539	3,350	2,451	1,104	1,634	18.2	7.9	4,421	1,171	3,250	823	2,184	1,110
1985	8,312	3,498	2,509	1,025	1,280	15.6	6.8	4,139	1,157	2,982	877	2,256	1,039
1986	8,237	3,448	2,557	1,045	1,187	15.0	6.9	4,033	1,090	2,943	1,015	2,160	1,029
1987	7,425	3,246	2,196	943	1,040	14.5	6.5	3,566	943	2,623	965	1,974	920
1988	6,701	3,084	2,007	801	809	13.5	5.9	3,092	851	2,241	983	1,809	816
1989	6,528	3,174	1,978	730	646	11.9	4.8	2,983	850	2,133	1,024	1,843	677
1990	7,047	3,265	2,257	822	703	12.0	5.3	3,387	1,028	2,359	1,041	1,930	688
1991	8,628	3,480	2,791	1,246	1,111	13.7	6.8	4,694	1,292	3,402	1,004	2,139	792
1992	9,613	3,376	2,830	1,453	1,954	17.7	8.7	5,389	1,260	4,129	1,002	2,285	937
1993	8,940	3,262	2,584	1,297	1,798	18.0	8.3	4,848	1,115	3,733	976	2,198	919
1994	7,996	2,728	2,408	1,237	1,623	18.8	9.2	3,815	977	2,838	791	2,786	604
1995	7,404	2,700	2,342	1,085	1,278	16.6	8.3	3,476	1,030	2,446	824	2,525	579
1996	7,236	2,633	2,287	1,053	1,262	16.7	8.3	3,370	1,021	2,349	774	2,512	580
1997	6,739	2,538	2,138	995	1,067	15.8	8.0	3,037	931	2,106	795	2,338	569
1998	6,210	2,622	1,950	763	875	14.5	6.7	2,822	866	1,957	734	2,132	520
1999	5,880	2,568	1,832	755	725	13.4	6.4	2,622	848	1,774	783	2,005	469
2000	5,692	2,558	1,815	669	649	12.6	5.9	2,517	852	1,664	780	1,961	434
2001	6,801	2,853	2,196	951	801	13.1	6.8	3,476	1,067	2,409	835	2,031	459
2002	8,378	2,893	2,580	1,369	1,535	16.6	9.1	4,607	1,124	3,483	866	2,368	536
2003	8,774	2,785	2,612	1,442	1,936	19.2	10.1	4,838	1,121	3,717	818	2,477	641
2004	8,149	2,696	2,382	1,293	1,779	19.6	9.8	4,197	998	3,199	858	2,408	686
2005	7,591	2,667	2,304	1,130	1,490	18.4	8.9	3,667	933	2,734	872	2,386	666
2006	7,001	2,614	2,121	1,031	1,235	16.8	8.3	3,321	921	2,400	827	2,237	616
2007	7,078	2,542	2,232	1,061	1,243	16.8	8.5	3,515	976	2,539	793	2,142	627
2008	8,924	2,932	2,804	1,427	1,761	17.9	9.4	4,789	1,176	3,614	896	2,472	766
2009	14,265	3,165	3,828	2,775	4,496	24.4	15.1	9,160	1,630	7,530	882	3,187	1,035
2010	14,825	2,771	3,267	2,371	6,415	33.0	21.4	9,250	1,431	7,819	889	3,466	1,220
2011	13,747	2,677	2,993	2,061	6,016	39.3	21.4	8,106	1,230	6,876	956	3,401	1,284
2012	12,506	2,644	2,866	1,859	5,136	39.4	19.3	6,877	1,183	5,694	967	3,345	1,316
2013	11,460	2,584	2,759	1,807	4,310	36.5	17.0	6,073	1,136	4,937	932	3,207	1,247
2014	9,617	2,471	2,432	1,497	3,218	33.7	14.0	4,878	1,007	3,871	824	2,829	1,086
2015	8,296	2,399	2,302	1,267	2,328	29.2	11.6	4,063	974	3,089	819	2,535	879
2016	7,751	2,362	2,226	1,158	2,005	27.5	10.6	3,740	966	2,774	858	2,330	823
2017	6,982	2,270	2,008	1,017	1,687	25.0	10.0	3,434	956	2,479	778	2,079	690
2018	6,314	2,170	1,876	917	1,350	22.7	9.3	2,990	852	2,138	794	1,928	602
2019	6,001	2,086	1,789	860	1,266	21.6	9.1	2,786	823	1,963	814	1,810	591
2020	12,947	3,708	4,728	2,516	1,995	16.5	9.7	9,770	6,371	3,399	683	1,969	526
2021	8,623	2,140	1,981	1,164	3,337	28.7	16.5	5,099	1,582	3,516	803	2,204	518
2022	5,996	2,216	1,711	756	1,314	22.6	8.7	2,767	830	1,936	857	1,891	482
2023	6,080	2,112	1,866	925	1,177	20.6	8.9	2,870	811	2,059	822	1,831	556
2023: Jan	5,719	1,942	1,795	929	1,073	20.4	9.8	2,568	763	1,804	883	1,799	526
Feb	5,962	2,294	1,838	812	1,051	19.3	8.9	2,766	807	1,959	888	1,844	521
Mar	5,866	2,279	1,765	797	1,050	19.5	8.4	2,884	781	2,104	841	1,683	506
Apr	5,715	1,867	1,920	748	1,089	20.8	8.7	2,676	760	1,916	786	1,778	519
May	6,117	2,080	1,863	911	1,132	21.2	8.9	2,999	782	2,218	764	1,851	527
June	5,997	2,065	1,850	905	1,117	20.7	8.8	2,790	781	2,009	796	1,776	559
July	5,904	2,007	1,741	956	1,205	20.6	8.9	2,703	723	1,980	854	1,868	534
Aug	6,340	2,224	1,913	970	1,326	20.4	8.8	2,946	813	2,132	804	1,931	592
Sept	6,347	2,053	2,043	985	1,303	21.4	9.1	2,869	813	2,056	797	2,024	586
Oct	6,443	2,269	1,836	1,079	1,291	21.6	8.6	3,120	904	2,217	801	1,869	603
Nov	6,262	2,069	2,060	931	1,220	19.5	9.0	3,058	889	2,169	821	1,771	582
Dec	6,268	2,191	1,791	1,104	1,245	22.3	9.7	3,058	917	2,140	833	1,741	609
2024: Jan	6,124	2,140	1,848	867	1,277	20.8	9.6	3,028	876	2,151	794	1,834	550
Feb	6,458	2,326	1,933	974	1,203	20.9	9.3	3,216	827	2,389	711	1,946	611
Mar	6,429	2,189	1,979	982	1,246	21.6	9.5	3,042	779	2,263	823	1,920	678
Apr	6,492	2,262	1,987	869	1,250	19.9	8.7	3,241	871	2,370	785	1,929	574
May	6,649	2,309	1,918	955	1,350	21.2	8.9	3,220	836	2,384	717	2,046	630
June	6,811	2,128	2,102	1,087	1,516	20.7	9.8	3,176	813	2,362	752	2,094	708
July	7,163	2,351	2,141	1,087	1,535	20.6	9.4	3,490	1,062	2,427	855	2,160	650
Aug	7,115	2,468	2,019	1,167	1,533	21.0	9.4	3,328	872	2,456	845	2,132	718
Sept	6,834	2,146	1,982	1,119	1,630	22.6	9.9	3,233	894	2,340	818	2,046	662
Oct	6,984	2,112	2,080	1,234	1,608	22.9	10.0	3,400	846	2,554	801	2,154	602
Nov	7,145	2,209	2,067	1,232	1,661	23.7	10.5	3,407	780	2,627	853	2,193	693

[1] Because of independent seasonal adjustment of the various series, detail will not sum to totals.
[2] Beginning with 2011, includes unemployment durations of up to 5 years; prior data are for up to 2 years.
[3] Beginning with 1994, job losers and persons who completed temporary jobs.

Note: Data relate to persons 16 years of age and over.

See Note, Table B–22.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–29. Employees on nonagricultural payrolls, by major industry, 1978–2024

[Thousands of jobs; monthly data seasonally adjusted]

Year or month	Total nonagricultural employment	Private industries: Total private	Goods-producing industries: Total	Goods-producing: Mining and logging	Goods-producing: Construction	Manufacturing: Total	Manufacturing: Durable goods	Manufacturing: Nondurable goods	Private service-providing industries: Total	Trade, transportation, and utilities[1]: Total	Trade, transportation, and utilities[1]: Retail trade
1978	86,826	71,014	24,156	902	4,322	18,932	11,770	7,162	46,858	17,633	9,882
1979	89,933	73,865	24,997	1,008	4,562	19,426	12,220	7,206	48,869	18,276	10,185
1980	90,533	74,158	24,263	1,077	4,454	18,733	11,679	7,054	49,895	18,387	10,249
1981	91,297	75,117	24,118	1,180	4,304	18,634	11,611	7,023	50,999	18,577	10,369
1982	89,689	73,706	22,550	1,163	4,024	17,363	10,610	6,753	51,156	18,430	10,377
1983	90,295	74,284	22,110	997	4,065	17,048	10,326	6,722	52,174	18,642	10,640
1984	94,548	78,389	23,435	1,014	4,501	17,920	11,050	6,870	54,954	19,624	11,227
1985	97,532	81,000	23,585	974	4,793	17,819	11,034	6,784	57,415	20,350	11,738
1986	99,500	82,661	23,318	829	4,937	17,552	10,795	6,757	59,343	20,765	12,082
1987	102,116	84,960	23,470	771	5,090	17,609	10,767	6,842	61,490	21,271	12,422
1988	105,378	87,838	23,909	770	5,233	17,906	10,969	6,938	63,929	21,942	12,812
1989	108,051	90,124	24,045	750	5,309	17,985	11,004	6,981	66,079	22,477	13,112
1990	109,527	91,112	23,723	765	5,263	17,695	10,737	6,958	67,389	22,632	13,185
1991	108,425	89,879	22,588	739	4,780	17,068	10,220	6,848	67,292	22,243	12,896
1992	108,799	90,012	22,095	689	4,608	16,799	9,946	6,853	67,917	22,085	12,826
1993	110,931	91,942	22,219	666	4,779	16,774	9,901	6,872	69,723	22,335	13,016
1994	114,393	95,118	22,774	659	5,095	17,020	10,132	6,889	72,344	23,081	13,485
1995	117,401	97,968	23,156	641	5,274	17,241	10,373	6,868	74,813	23,782	13,889
1996	119,828	100,289	23,409	637	5,536	17,237	10,486	6,751	76,880	24,183	14,133
1997	122,941	103,278	23,886	654	5,813	17,419	10,705	6,714	79,392	24,640	14,377
1998	126,146	106,237	24,354	645	6,149	17,560	10,911	6,649	81,883	25,122	14,596
1999	129,228	108,921	24,465	598	6,545	17,322	10,831	6,491	84,456	25,703	14,955
2000	132,011	111,222	24,649	599	6,787	17,263	10,877	6,386	86,573	26,153	15,262
2001	132,073	110,955	23,873	606	6,826	16,441	10,336	6,105	87,082	25,908	15,219
2002	130,634	109,121	22,557	583	6,716	15,259	9,485	5,774	86,564	25,417	15,003
2003	130,330	108,747	21,816	572	6,735	14,509	8,964	5,546	86,931	25,200	14,894
2004	131,769	110,148	21,882	591	6,976	14,315	8,925	5,390	88,266	25,440	15,033
2005	134,033	112,229	22,190	628	7,336	14,227	8,956	5,271	90,039	25,861	15,253
2006	136,435	114,462	22,530	684	7,691	14,155	8,981	5,174	91,931	26,172	15,325
2007	137,981	115,763	22,233	724	7,630	13,879	8,808	5,071	93,530	26,520	15,490
2008	137,224	114,714	21,334	766	7,162	13,406	8,463	4,943	93,380	26,181	15,251
2009	131,296	108,741	18,557	694	6,016	11,847	7,284	4,564	90,184	24,794	14,488
2010	130,345	107,854	17,751	705	5,518	11,528	7,064	4,464	90,104	24,523	14,404
2011	131,914	109,828	18,048	788	5,533	11,726	7,273	4,453	91,780	24,947	14,630
2012	134,157	112,237	18,420	848	5,646	11,927	7,470	4,457	93,817	25,353	14,801
2013	136,363	114,511	18,738	863	5,856	12,020	7,548	4,472	95,773	25,735	15,037
2014	138,939	117,058	19,226	891	6,151	12,185	7,674	4,512	97,831	26,253	15,313
2015	141,824	119,795	19,610	813	6,461	12,336	7,765	4,571	100,185	26,754	15,559
2016	144,335	122,111	19,749	668	6,728	12,354	7,714	4,640	102,362	27,124	15,777
2017	146,607	124,257	20,084	676	6,969	12,439	7,741	4,699	104,173	27,336	15,789
2018	148,908	126,454	20,704	727	7,288	12,688	7,946	4,742	105,750	27,549	15,728
2019	150,904	128,291	21,037	727	7,493	12,817	8,039	4,778	107,254	27,662	15,560
2020	142,186	120,200	20,023	600	7,257	12,167	7,573	4,594	100,177	26,624	14,809
2021	146,285	124,311	20,350	560	7,436	12,354	7,681	4,673	103,961	27,653	15,253
2022	152,520	130,329	21,179	605	7,763	12,812	7,968	4,844	109,150	28,632	15,489
2023	156,051	133,269	21,598	640	8,018	12,940	8,102	4,838	111,671	28,847	15,590
2023: Jan	154,773	132,283	21,494	631	7,921	12,942	8,075	4,867	110,789	28,771	15,518
Feb	155,060	132,509	21,520	633	7,947	12,940	8,075	4,865	110,989	28,851	15,607
Mar	155,206	132,600	21,508	635	7,941	12,932	8,074	4,858	111,092	28,819	15,580
Apr	155,484	132,831	21,541	639	7,961	12,941	8,084	4,857	111,290	28,834	15,586
May	155,787	133,085	21,555	642	7,977	12,936	8,085	4,851	111,530	28,875	15,599
June	156,027	133,270	21,597	642	8,010	12,945	8,104	4,841	111,673	28,860	15,594
July	156,211	133,418	21,604	644	8,021	12,939	8,113	4,826	111,814	28,869	15,599
Aug	156,421	133,568	21,637	644	8,052	12,941	8,116	4,825	111,931	28,840	15,594
Sept	156,667	133,764	21,664	645	8,065	12,954	8,125	4,829	112,100	28,882	15,612
Oct	156,832	133,862	21,654	644	8,087	12,923	8,092	4,831	112,208	28,888	15,613
Nov	157,014	134,014	21,690	640	8,102	12,948	8,129	4,819	112,324	28,843	15,570
Dec	157,304	134,228	21,723	643	8,120	12,960	8,148	4,812	112,505	28,867	15,603
2024: Jan	157,560	134,424	21,753	641	8,146	12,966	8,144	4,822	112,671	28,874	15,619
Feb	157,796	134,605	21,768	641	8,170	12,957	8,141	4,816	112,837	28,928	15,643
Mar	158,106	134,837	21,801	643	8,207	12,951	8,140	4,811	113,036	28,962	15,662
Apr	158,214	134,945	21,798	638	8,202	12,958	8,143	4,815	113,147	29,003	15,676
May	158,430	135,151	21,810	634	8,215	12,961	8,142	4,819	113,341	29,037	15,684
June	158,548	135,248	21,812	634	8,233	12,945	8,125	4,820	113,436	29,036	15,665
July	158,692	135,347	21,833	635	8,247	12,951	8,130	4,821	113,514	29,036	15,661
Aug	158,770	135,384	21,835	635	8,275	12,925	8,100	4,825	113,549	29,039	15,647
Sept	159,025	135,606	21,850	636	8,301	12,913	8,096	4,817	113,756	29,059	15,654
Oct	159,061	135,604	21,806	638	8,303	12,865	8,052	4,813	113,798	29,055	15,650
Nov ^{p}	159,288	135,798	21,840	640	8,313	12,887	8,078	4,809	113,958	29,032	15,622

[1] Includes wholesale trade, transportation and warehousing, and utilities, not shown separately.

Note: Data in Tables B–29 and B–30 are based on reports from employing establishments and relate to full- and part-time wage and salary workers in nonagricultural establishments who received pay for any part of the pay period that includes the 12th of the month. Not comparable with labor force data (Tables B–22 through B–28), which include proprietors, self-employed persons, unpaid family workers, and private household workers; which count persons as

See next page for continuation of table.

Table B–29. Employees on nonagricultural payrolls, by major industry, 1978–2024—*Continued*

[Thousands of jobs; monthly data seasonally adjusted]

Year or month	Private industries—Continued						Government			
	Private service-providing industries—Continued						Total	Federal	State	Local
	Information	Financial activities	Professional and business services	Education and health services	Leisure and hospitality	Other services				
1978	2,287	4,599	6,997	6,427	6,411	2,505	15,812	2,893	3,474	9,446
1979	2,375	4,843	7,339	6,768	6,631	2,637	16,068	2,894	3,541	9,633
1980	2,361	5,025	7,571	7,077	6,721	2,755	16,375	3,000	3,610	9,765
1981	2,382	5,163	7,809	7,364	6,840	2,865	16,180	2,922	3,640	9,619
1982	2,317	5,209	7,875	7,526	6,874	2,924	15,982	2,884	3,640	9,458
1983	2,253	5,334	8,065	7,781	7,078	3,021	16,011	2,915	3,662	9,434
1984	2,398	5,553	8,493	8,211	7,489	3,186	16,159	2,943	3,734	9,482
1985	2,437	5,815	8,900	8,679	7,869	3,366	16,533	3,014	3,832	9,687
1986	2,445	6,128	9,241	9,086	8,156	3,523	16,838	3,044	3,893	9,901
1987	2,507	6,385	9,639	9,543	8,446	3,699	17,156	3,089	3,967	10,100
1988	2,585	6,500	10,121	10,096	8,778	3,907	17,540	3,124	4,076	10,339
1989	2,622	6,562	10,588	10,652	9,062	4,116	17,927	3,136	4,182	10,609
1990	2,688	6,614	10,882	11,024	9,288	4,261	18,415	3,196	4,305	10,914
1991	2,678	6,561	10,750	11,556	9,256	4,249	18,545	3,110	4,355	11,081
1992	2,641	6,559	11,007	11,948	9,437	4,240	18,787	3,111	4,408	11,267
1993	2,668	6,742	11,534	12,362	9,732	4,350	18,989	3,063	4,488	11,438
1994	2,738	6,910	12,216	12,872	10,100	4,428	19,275	3,018	4,576	11,682
1995	2,844	6,866	12,889	13,360	10,501	4,572	19,432	2,949	4,635	11,849
1996	2,940	7,018	13,510	13,761	10,777	4,690	19,539	2,877	4,606	12,056
1997	3,084	7,255	14,386	14,185	11,018	4,825	19,664	2,806	4,582	12,276
1998	3,218	7,566	15,200	14,570	11,232	4,976	19,909	2,772	4,612	12,525
1999	3,419	7,753	16,013	14,939	11,543	5,087	20,307	2,769	4,709	12,829
2000	3,630	7,783	16,725	15,252	11,862	5,168	20,790	2,865	4,786	13,139
2001	3,629	7,900	16,537	15,814	12,036	5,258	21,118	2,764	4,905	13,449
2002	3,395	7,956	16,041	16,398	11,986	5,372	21,513	2,766	5,029	13,718
2003	3,188	8,078	16,057	16,835	12,173	5,401	21,583	2,761	5,002	13,820
2004	3,118	8,105	16,470	17,230	12,493	5,409	21,621	2,730	4,982	13,909
2005	3,061	8,197	17,034	17,676	12,816	5,395	21,804	2,732	5,032	14,041
2006	3,038	8,367	17,652	18,154	13,110	5,438	21,974	2,732	5,075	14,167
2007	3,032	8,348	18,034	18,676	13,427	5,494	22,218	2,734	5,122	14,362
2008	2,984	8,206	17,830	19,228	13,436	5,515	22,509	2,762	5,177	14,571
2009	2,804	7,838	16,674	19,630	13,077	5,367	22,555	2,832	5,169	14,554
2010	2,707	7,695	16,824	19,975	13,049	5,330	22,490	2,977	5,137	14,376
2011	2,674	7,697	17,433	20,318	13,353	5,360	22,086	2,859	5,078	14,150
2012	2,676	7,783	18,037	20,769	13,768	5,430	21,920	2,820	5,055	14,045
2013	2,706	7,886	18,623	21,086	14,254	5,483	21,853	2,769	5,046	14,037
2014	2,726	7,977	19,174	21,439	14,696	5,567	21,882	2,733	5,050	14,098
2015	2,750	8,123	19,747	22,029	15,160	5,622	22,029	2,757	5,077	14,195
2016	2,794	8,287	20,168	22,639	15,660	5,691	22,224	2,795	5,110	14,319
2017	2,814	8,451	20,563	23,188	16,051	5,770	22,350	2,805	5,165	14,379
2018	2,839	8,590	21,008	23,638	16,295	5,831	22,455	2,800	5,173	14,481
2019	2,864	8,754	21,334	24,163	16,586	5,891	22,613	2,831	5,206	14,576
2020	2,721	8,704	20,376	23,275	13,148	5,329	21,986	2,930	5,135	13,921
2021	2,856	8,806	21,386	23,652	14,151	5,457	21,973	2,886	5,156	13,931
2022	3,063	9,062	22,537	24,336	15,827	5,694	22,191	2,867	5,111	14,213
2023	3,027	9,197	22,840	25,342	16,593	5,826	22,782	2,925	5,304	14,552
2023: Jan	3,067	9,145	22,771	24,906	16,345	5,784	22,490	2,882	5,206	14,402
Feb	3,049	9,146	22,779	24,968	16,412	5,784	22,551	2,892	5,229	14,430
Mar	3,054	9,150	22,797	25,030	16,447	5,795	22,606	2,900	5,249	14,457
Apr	3,053	9,179	22,827	25,109	16,489	5,799	22,653	2,908	5,263	14,482
May	3,050	9,192	22,876	25,200	16,528	5,809	22,702	2,914	5,280	14,508
June	3,043	9,201	22,883	25,277	16,588	5,821	22,757	2,920	5,301	14,536
July	3,015	9,219	22,866	25,386	16,629	5,830	22,793	2,928	5,301	14,564
Aug	2,997	9,223	22,865	25,479	16,681	5,846	22,853	2,939	5,329	14,585
Sept	3,008	9,223	22,864	25,560	16,708	5,855	22,903	2,945	5,346	14,612
Oct	2,982	9,223	22,859	25,637	16,765	5,854	22,970	2,953	5,375	14,642
Nov	2,999	9,227	22,869	25,747	16,775	5,864	23,000	2,952	5,383	14,665
Dec	3,012	9,233	22,882	25,831	16,816	5,864	23,076	2,961	5,404	14,711
2024: Jan	3,020	9,229	22,930	25,931	16,813	5,874	23,136	2,974	5,420	14,742
Feb	3,017	9,222	22,936	26,011	16,839	5,884	23,191	2,981	5,434	14,776
Mar	3,019	9,226	22,953	26,087	16,893	5,896	23,269	2,993	5,444	14,832
Apr	3,016	9,223	22,936	26,185	16,884	5,900	23,269	2,993	5,448	14,828
May	3,015	9,235	22,991	26,254	16,902	5,907	23,279	2,994	5,429	14,856
June	3,015	9,248	22,980	26,336	16,906	5,915	23,300	2,996	5,436	14,868
July	2,999	9,244	22,976	26,403	16,944	5,912	23,345	2,996	5,459	14,890
Aug	2,991	9,251	22,929	26,470	16,953	5,916	23,386	2,997	5,473	14,916
Sept	2,992	9,257	22,951	26,561	17,014	5,922	23,419	3,001	5,495	14,923
Oct	2,986	9,263	22,928	26,628	17,016	5,922	23,457	3,003	5,514	14,940
Nov [p]	2,986	9,280	22,954	26,707	17,069	5,930	23,490	3,001	5,534	14,955

Note (cont'd): employed when they are not at work because of industrial disputes, bad weather, etc., even if they are not paid for the time off; which are based on a sample of the working-age population; and which count persons only once—as employed, unemployed, or not in the labor force. In the data shown here, persons who work at more than one job are counted each time they appear on a payroll.

Establishment data for employment, hours, and earnings are classified based on the 2022 North American Industry Classification System (NAICS).

For further description and details see *Employment and Earnings*.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–30. Hours and earnings in private nonagricultural industries, 1978–2024

[Monthly data seasonally adjusted]

Year or month	All employees							Production and nonsupervisory employees [1]						
	Average weekly hours	Average hourly earnings		Average weekly earnings				Average weekly hours	Average hourly earnings		Average weekly earnings			
				Level		Percent change from year earlier					Level		Percent change from year earlier	
		Current dollars	1982–84 dollars [2]	Current dollars	1982–84 dollars [2]	Current dollars	1982–84 dollars [2]		Current dollars	1982–84 dollars [3]	Current dollars	1982–84 dollars [3]	Current dollars	1982–84 dollars [3]
1978	....	....	....	....	....	....	....	35.8	$5.88	$8.96	$210.17	$320.38	7.6	–0.1
1979	....	....	....	....	....	....	....	35.6	6.34	8.67	225.46	308.43	7.3	–3.7
1980	....	....	....	....	....	....	....	35.2	6.84	8.25	240.83	290.51	6.8	–5.8
1981	....	....	....	....	....	....	....	35.2	7.43	8.13	261.29	285.88	8.5	–1.6
1982	....	....	....	....	....	....	....	34.7	7.86	8.11	272.98	281.71	4.5	–1.5
1983	....	....	....	....	....	....	....	34.9	8.20	8.22	286.34	286.91	4.9	1.8
1984	....	....	....	....	....	....	....	35.1	8.49	8.22	298.08	288.56	4.1	.6
1985	....	....	....	....	....	....	....	34.9	8.73	8.17	304.37	284.72	2.1	–1.3
1986	....	....	....	....	....	....	....	34.7	8.92	8.21	309.69	285.17	1.7	.2
1987	....	....	....	....	....	....	....	34.7	9.14	8.12	317.33	282.07	2.5	–1.1
1988	....	....	....	....	....	....	....	34.6	9.44	8.07	326.50	279.06	2.9	–1.1
1989	....	....	....	....	....	....	....	34.5	9.81	8.00	338.42	276.04	3.7	–1.1
1990	....	....	....	....	....	....	....	34.3	10.20	7.91	349.63	271.03	3.3	–1.8
1991	....	....	....	....	....	....	....	34.1	10.51	7.83	358.46	266.91	2.5	–1.5
1992	....	....	....	....	....	....	....	34.2	10.77	7.79	368.17	266.40	2.7	–.2
1993	....	....	....	....	....	....	....	34.3	11.04	7.77	378.80	266.57	2.9	.1
1994	....	....	....	....	....	....	....	34.5	11.33	7.78	391.11	268.62	3.2	.8
1995	....	....	....	....	....	....	....	34.3	11.65	7.78	399.93	266.98	2.3	–.6
1996	....	....	....	....	....	....	....	34.3	12.04	7.81	413.17	268.12	3.3	.4
1997	....	....	....	....	....	....	....	34.5	12.51	7.94	431.67	273.90	4.5	2.2
1998	....	....	....	....	....	....	....	34.5	13.01	8.15	448.47	280.82	3.9	2.5
1999	....	....	....	....	....	....	....	34.3	13.48	8.26	463.07	283.74	3.3	1.0
2000	....	....	....	....	....	....	....	34.3	14.01	8.29	480.90	284.72	3.9	.3
2001	....	....	....	....	....	....	....	33.9	14.54	8.38	493.53	284.46	2.6	–.1
2002	....	....	....	....	....	....	....	33.9	14.96	8.50	506.48	287.94	2.6	1.2
2003	....	....	....	....	....	....	....	33.7	15.36	8.54	517.65	287.90	2.2	.0
2004	....	....	....	....	....	....	....	33.7	15.68	8.50	528.65	286.53	2.1	–.5
2005	....	....	....	....	....	....	....	33.8	16.11	8.43	543.91	284.77	2.9	–.6
2006	....	....	....	....	....	....	....	33.9	16.75	8.50	567.00	287.67	4.2	1.0
2007	34.4	$20.92	$10.09	$719.74	$347.13	....	....	33.8	17.41	8.59	589.09	290.53	3.9	1.0
2008	34.3	21.56	10.01	738.96	343.22	2.7	–1.1	33.6	18.06	8.56	607.10	287.65	3.1	–1.0
2009	33.8	22.17	10.33	749.92	349.55	1.5	1.8	33.1	18.60	8.87	615.82	293.77	1.4	2.1
2010	34.1	22.56	10.35	769.57	352.92	2.6	1.0	33.4	19.04	8.90	635.86	297.18	3.3	1.2
2011	34.3	23.03	10.24	790.79	351.56	2.8	–.4	33.6	19.43	8.77	652.75	294.60	2.7	–.9
2012	34.5	23.49	10.23	809.43	352.55	2.4	.3	33.7	19.73	8.72	665.56	294.20	2.0	–.1
2013	34.4	23.95	10.28	825.08	354.18	1.9	.5	33.7	20.13	8.78	677.62	295.49	1.8	.4
2014	34.5	24.46	10.33	844.77	356.84	2.4	.8	33.7	20.60	8.85	694.74	298.47	2.5	1.0
2015	34.5	25.02	10.56	864.10	364.57	2.3	2.2	33.7	21.03	9.07	708.73	305.74	2.0	2.4
2016	34.4	25.64	10.68	881.09	367.11	2.0	.7	33.6	21.53	9.20	723.20	308.96	2.0	1.1
2017	34.4	26.32	10.74	906.19	369.69	2.8	.7	33.7	22.05	9.22	742.42	310.57	2.7	.5
2018	34.5	27.11	10.80	936.37	372.90	3.3	.9	33.8	22.71	9.26	767.01	312.88	3.3	.7
2019	34.4	27.99	10.95	963.06	376.70	2.9	1.0	33.6	23.51	9.43	790.64	317.24	3.1	1.4
2020	34.6	29.35	11.34	1,014.38	391.94	5.3	4.0	33.9	24.68	9.78	837.39	331.97	5.9	4.6
2021	34.7	30.60	11.29	1,063.08	392.32	4.8	.1	34.2	25.90	9.75	886.54	333.90	5.9	.6
2022	34.5	32.26	11.02	1,114.30	380.76	4.8	–2.9	34.0	27.56	9.57	937.44	325.52	5.7	–2.5
2023	34.4	33.73	11.07	1,160.96	381.01	4.2	.1	33.9	28.94	9.68	979.95	327.75	4.5	.7
2023: Jan	34.6	33.07	11.01	1,144.22	380.95	4.9	–1.4	34.0	28.31	9.60	962.54	326.40	5.6	–.6
Feb	34.5	33.15	10.99	1,143.68	379.32	4.1	–1.7	33.9	28.42	9.61	963.44	325.62	4.5	–1.1
Mar	34.4	33.31	11.04	1,145.86	379.75	3.7	–1.2	33.9	28.58	9.65	968.86	327.28	4.5	.0
Apr	34.3	33.44	11.04	1,146.99	378.50	3.5	–1.4	33.8	28.68	9.65	969.38	326.01	4.2	–.4
May	34.4	33.54	11.06	1,153.78	380.33	3.9	–.2	33.8	28.79	9.68	973.10	327.05	4.2	.5
June	34.4	33.70	11.09	1,159.28	381.34	4.1	1.0	33.8	28.90	9.69	976.82	327.56	4.1	1.5
July	34.3	33.84	11.11	1,160.71	381.03	3.8	.5	33.8	29.03	9.72	981.21	328.46	4.3	1.5
Aug	34.4	33.91	11.07	1,166.50	380.98	4.2	.5	33.8	29.09	9.68	983.24	327.11	4.2	.7
Sept	34.4	34.01	11.07	1,169.94	380.73	3.9	.2	33.8	29.18	9.67	986.28	326.95	4.1	.5
Oct	34.3	34.10	11.09	1,169.63	380.33	3.4	.1	33.8	29.29	9.70	990.00	327.99	4.0	.9
Nov	34.4	34.23	11.11	1,177.51	382.28	4.0	.8	33.7	29.42	9.74	991.45	328.07	4.0	1.0
Dec	34.4	34.34	11.12	1,181.30	382.62	4.3	.9	33.8	29.51	9.74	997.44	329.26	4.5	1.2
2024: Jan	34.2	34.51	11.14	1,180.24	381.11	3.1	.0	33.6	29.64	9.76	995.90	328.09	3.5	.5
Feb	34.3	34.56	11.11	1,185.41	381.09	3.6	.5	33.7	29.70	9.73	1,000.89	328.00	3.9	.7
Mar	34.4	34.69	11.11	1,193.34	382.20	4.1	.6	33.8	29.79	9.72	1,006.90	328.49	3.9	.4
Apr	34.3	34.75	11.09	1,191.93	380.56	3.9	.5	33.7	29.83	9.70	1,005.27	326.92	3.7	.3
May	34.3	34.88	11.14	1,196.38	381.96	3.7	.4	33.7	29.95	9.75	1,009.32	328.42	3.7	.4
June	34.3	34.99	11.18	1,200.16	383.38	3.5	.5	33.7	30.07	9.80	1,013.36	330.14	3.7	.8
July	34.2	35.07	11.19	1,199.39	382.54	3.3	.4	33.7	30.16	9.81	1,016.39	330.62	3.6	.7
Aug	34.3	35.22	11.21	1,208.05	384.58	3.6	.9	33.7	30.26	9.83	1,019.76	331.25	3.7	1.3
Sept	34.3	35.33	11.23	1,211.82	385.09	3.6	1.1	33.7	30.36	9.85	1,023.13	331.89	3.7	1.5
Oct	34.2	35.48	11.25	1,213.42	384.66	3.7	1.1	33.7	30.48	9.86	1,027.18	332.41	3.8	1.3
Nov [p]	34.3	35.61	11.25	1,221.42	385.99	3.7	1.0	33.7	30.57	9.87	1,030.21	332.45	3.9	1.3

[1] Production employees in goods-producing industries and nonsupervisory employees in service-providing industries. These groups account for four-fifths of the total employment on private nonfarm payrolls.
[2] Current dollars divided by the consumer price index for all urban consumers (CPI-U) on a 1982–84=100 base.
[3] Current dollars divided by the consumer price index for urban wage earners and clerical workers (CPI-W) on a 1982–84=100 base.

Note: See Note, Table B–29.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–31. Employment cost index, private industry, 2006–2024

Year and month	Total private			Goods-producing			Service-providing [1]			Manufacturing		
	Total compen-sation	Wages and salaries	Benefits [2]	Total compen-sation	Wages and salaries	Benefits [2]	Total compen-sation	Wages and salaries	Benefits [2]	Total compen-sation	Wages and salaries	Benefits [2]
	Indexes on NAICS basis, December 2005=100; not seasonally adjusted											
December:												
2006	103.2	103.2	103.1	102.5	102.9	101.7	103.4	103.3	103.7	101.8	102.3	100.8
2007	106.3	106.6	105.6	105.0	106.0	103.2	106.7	106.8	106.6	103.8	104.9	101.7
2008	108.9	109.4	107.7	107.5	109.0	104.7	109.4	109.6	108.9	105.9	107.7	102.5
2009	110.2	110.8	108.7	108.6	110.0	105.8	110.8	111.1	109.9	107.0	108.9	103.6
2010	112.5	112.8	111.9	111.1	111.6	110.1	113.0	113.1	112.6	110.0	110.7	108.8
2011	115.0	114.6	115.9	113.8	113.5	114.4	115.3	114.9	116.4	113.1	112.7	113.9
2012	117.1	116.6	118.2	115.6	115.4	116.0	117.6	117.0	119.1	114.9	114.8	115.0
2013	119.4	119.0	120.5	117.7	117.6	118.0	120.0	119.4	121.5	117.0	117.2	116.6
2014	122.2	121.6	123.5	120.3	120.1	120.7	122.8	122.1	124.6	119.8	119.8	119.8
2015	124.5	124.2	125.1	123.2	123.2	123.1	124.9	124.5	125.9	122.8	123.0	122.5
2016	127.2	127.1	127.3	125.8	126.2	124.9	127.7	127.4	128.3	125.5	126.2	124.3
2017	130.5	130.6	130.2	128.9	129.3	128.0	131.0	131.0	131.2	128.9	129.3	128.0
2018	134.4	134.7	133.6	131.9	133.0	129.6	135.2	135.2	135.1	131.6	132.9	129.1
2019	138.0	138.7	136.2	135.8	137.5	132.5	138.7	139.1	137.6	135.3	137.1	131.9
2020	141.6	142.6	139.1	138.9	141.0	134.9	142.4	143.1	140.6	138.5	140.7	134.3
2021	147.8	149.7	143.2	144.0	146.6	138.7	148.9	150.5	144.8	143.5	146.4	138.2
2022	155.3	157.4	150.1	150.6	153.9	143.9	156.6	158.3	152.3	150.3	153.9	143.5
2023	161.6	164.1	155.5	156.3	160.2	148.6	163.1	165.2	157.9	155.8	159.7	148.3
2024: Mar	163.8	166.3	157.9	158.3	162.4	150.3	165.4	167.4	160.4	158.1	162.3	150.1
June	165.4	167.9	159.4	159.5	163.3	151.9	167.0	169.0	161.9	159.6	163.7	151.9
Sept	166.4	169.1	160.1	160.5	164.5	152.4	168.1	170.2	162.7	160.4	164.8	152.3
	Indexes on NAICS basis, December 2005=100; seasonally adjusted											
2023: Mar	157.3	159.4	152.3	152.5	156.0	145.3	158.6	160.3	154.6	152.1	155.9	144.9
June	158.9	161.1	153.7	153.7	157.3	146.6	160.3	162.1	156.1	153.5	157.3	146.2
Sept	160.4	162.7	155.0	155.1	158.7	147.9	161.9	163.8	157.3	154.7	158.5	147.5
Dec	161.9	164.4	156.1	156.6	160.4	148.9	163.4	165.4	158.5	156.1	160.1	148.6
2024: Mar	163.7	166.2	157.7	158.3	162.4	150.2	165.2	167.2	160.2	158.0	162.2	149.9
June	165.1	167.6	159.0	159.1	162.8	151.6	166.7	168.8	161.5	159.4	163.4	151.6
Sept	166.3	168.9	160.1	160.6	164.6	152.4	167.8	170.0	162.6	160.6	164.9	152.5
	Percent change from 12 months earlier, not seasonally adjusted											
December:												
2006	3.2	3.2	3.1	2.5	2.9	1.7	3.4	3.3	3.7	1.8	2.3	0.8
2007	3.0	3.3	2.4	2.4	3.0	1.5	3.2	3.4	2.8	2.0	2.5	.9
2008	2.4	2.6	2.0	2.4	2.8	1.5	2.5	2.6	2.2	2.0	2.7	.8
2009	1.2	1.3	.9	1.0	.9	1.1	1.3	1.4	.9	1.0	1.1	1.1
2010	2.1	1.8	2.9	2.3	1.5	4.1	2.0	1.8	2.5	2.8	1.7	5.0
2011	2.2	1.6	3.6	2.4	1.7	3.9	2.0	1.6	3.4	2.8	1.8	4.7
2012	1.8	1.7	2.0	1.6	1.7	1.4	2.0	1.8	2.3	1.6	1.9	1.0
2013	2.0	2.1	1.9	1.8	1.9	1.7	2.0	2.1	2.0	1.8	2.1	1.4
2014	2.3	2.2	2.5	2.2	2.1	2.3	2.3	2.3	2.6	2.4	2.2	2.7
2015	1.9	2.1	1.3	2.4	2.6	2.0	1.7	2.0	1.0	2.5	2.7	2.3
2016	2.2	2.3	1.8	2.1	2.4	1.5	2.2	2.3	1.9	2.2	2.6	1.5
2017	2.6	2.8	2.3	2.5	2.5	2.5	2.6	2.8	2.3	2.7	2.5	3.0
2018	3.0	3.1	2.6	2.3	2.9	1.3	3.2	3.2	3.0	2.1	2.8	.9
2019	2.7	3.0	1.9	3.0	3.4	2.2	2.6	2.9	1.9	2.8	3.2	2.2
2020	2.6	2.8	2.1	2.3	2.5	1.8	2.7	2.9	2.2	2.4	2.6	1.8
2021	4.4	5.0	2.9	3.7	4.0	2.8	4.6	5.2	3.0	3.6	4.1	2.9
2022	5.1	5.1	4.8	4.6	5.0	3.7	5.2	5.2	5.2	4.7	5.1	3.8
2023	4.1	4.3	3.6	3.8	4.1	3.3	4.2	4.4	3.7	3.7	3.8	3.3
2024: Mar	4.1	4.3	3.6	3.8	4.1	3.4	4.2	4.4	3.6	3.8	4.0	3.4
June	3.9	4.1	3.5	3.5	3.6	3.4	4.0	4.1	3.5	3.8	3.9	3.6
Sept	3.6	3.8	3.3	3.5	3.7	3.0	3.7	3.8	3.4	3.8	4.0	3.3
	Percent change from 3 months earlier, seasonally adjusted											
2023: Mar	1.2	1.1	1.1	1.1	1.2	0.8	1.1	1.1	1.2	1.0	1.1	0.8
June	1.0	1.1	.9	.8	.8	.9	1.1	1.1	1.0	.9	.9	.9
Sept	.9	1.0	.8	.9	.9	.9	1.0	1.0	.8	.8	.8	.9
Dec	.9	1.0	.7	1.0	1.1	.7	.9	1.0	.8	.9	1.0	.7
2024: Mar	1.1	1.1	1.0	1.1	1.2	.9	1.1	1.1	1.1	1.2	1.3	.9
June	.9	.8	.8	.5	.2	.9	.9	1.0	.8	.9	.7	1.1
Sept	.7	.8	.7	.9	1.1	.5	.7	.7	.7	.8	.9	.6

[1] On Standard Industrial Classification (SIC) basis, data are for service-producing industries.
[2] Employer costs for employee benefits.

Note: Changes effective with the release of March 2006 data (in April 2006) include changing industry classification to NAICS from SIC and rebasing data to December 2005=100. Historical SIC data are available through December 2005.

Data exclude farm and household workers.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–32. Productivity and related data, business and nonfarm business sectors, 1973–2024

[Index numbers, 2017=100; quarterly data seasonally adjusted]

Year or quarter	Labor productivity (output per hour)		Output [1]		Hours of all persons [2]		Compensation per hour [3]		Real compensation per hour [4]		Unit labor costs		Value-added output price deflator [5]	
	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector
1973	44.524	45.895	27.397	27.508	61.534	59.936	13.148	13.260	66.271	66.834	29.530	28.891	26.724	25.717
1974	43.753	45.132	26.979	27.097	61.662	60.040	14.372	14.508	65.239	65.860	32.847	32.147	29.341	28.384
1975	45.273	46.344	26.723	26.653	59.026	57.511	15.897	16.024	66.130	66.655	35.114	34.576	32.178	31.408
1976	46.780	47.957	28.529	28.560	60.985	59.553	17.167	17.271	67.520	67.929	36.697	36.013	33.857	33.120
1977	47.633	48.787	30.162	30.198	63.322	61.898	18.541	18.688	68.473	69.015	38.926	38.306	35.862	35.181
1978	48.202	49.483	32.086	32.225	66.566	65.124	20.101	20.289	69.370	70.020	41.701	41.002	38.342	37.471
1979	48.260	49.377	33.226	33.319	68.848	67.479	22.042	22.217	69.481	70.034	45.674	44.996	41.550	40.603
1980	48.240	49.355	32.925	33.038	68.253	66.940	24.400	24.600	69.167	69.737	50.580	49.844	45.243	44.461
1981	49.266	50.075	33.886	33.790	68.781	67.479	26.692	26.959	69.138	69.830	54.179	53.838	49.415	48.721
1982	48.987	49.663	32.913	32.756	67.187	65.956	28.668	28.924	70.027	70.652	58.521	58.240	52.231	51.728
1983	50.655	51.701	34.658	34.791	68.419	67.292	29.927	30.214	70.109	70.781	59.080	58.439	54.106	53.531
1984	52.101	52.855	37.732	37.731	72.421	71.386	31.251	31.515	70.285	70.880	59.982	59.626	55.636	55.011
1985	53.290	53.772	39.491	39.395	74.106	73.263	32.843	33.049	71.457	71.906	61.630	61.462	57.106	56.689
1986	54.790	55.370	40.926	40.882	74.696	73.834	34.697	34.952	74.235	74.782	63.327	63.125	57.878	57.494
1987	55.086	55.672	42.392	42.365	76.955	76.098	35.997	36.269	74.495	75.058	65.346	65.147	58.970	58.571
1988	55.915	56.588	44.208	44.292	79.062	78.272	37.906	38.130	75.664	76.113	67.791	67.383	60.847	60.365
1989	56.554	57.088	45.900	45.915	81.162	80.429	39.045	39.235	74.710	75.074	69.040	68.727	63.087	62.569
1990	57.676	58.055	46.635	46.606	80.857	80.279	41.480	41.583	75.634	75.821	71.920	71.626	65.182	64.706
1991	58.593	59.004	46.351	46.316	79.106	78.496	43.399	43.557	76.350	76.629	74.068	73.821	67.070	66.723
1992	61.314	61.641	48.313	48.196	78.797	78.188	46.066	46.264	79.073	79.413	75.131	75.053	68.158	67.845
1993	61.372	61.710	49.691	49.682	80.967	80.509	46.739	46.830	78.253	78.405	76.157	75.887	69.732	69.429
1994	61.723	62.136	52.087	51.970	84.389	83.639	47.079	47.287	77.207	77.550	76.274	76.103	70.974	70.714
1995	62.154	62.806	53.688	53.756	86.379	85.590	48.218	48.458	77.214	77.597	77.579	77.154	72.240	71.965
1996	63.669	64.121	56.181	56.171	88.239	87.602	49.936	50.127	77.887	78.186	78.430	78.176	73.376	72.963
1997	65.043	65.362	59.130	59.071	90.909	90.375	51.938	52.079	79.294	79.509	79.852	79.678	74.462	74.227
1998	67.266	67.551	62.383	62.381	92.740	92.346	55.001	55.091	82.847	82.982	81.766	81.555	74.660	74.496
1999	70.004	70.196	65.984	66.009	94.257	94.035	57.657	57.645	85.068	85.051	82.361	82.120	75.075	75.017
2000	72.206	72.292	68.945	68.896	95.484	95.303	61.670	61.688	87.998	88.025	85.409	85.333	76.453	76.473
2001	74.108	74.153	69.359	69.354	93.592	93.528	64.481	64.367	89.459	89.300	87.010	86.803	77.750	77.715
2002	77.244	77.331	70.545	70.524	91.327	91.198	65.916	65.846	90.029	89.934	85.335	85.149	78.325	78.364
2003	80.188	80.184	72.768	72.711	90.747	90.681	68.392	68.299	91.333	91.209	85.290	85.178	79.490	79.439
2004	82.706	82.567	75.964	75.850	91.848	91.865	71.588	71.411	93.116	92.886	86.556	86.488	81.489	81.299
2005	84.553	84.372	78.948	78.818	93.370	93.417	74.177	74.018	93.317	93.116	87.728	87.727	84.018	84.034
2006	85.388	85.203	81.535	81.446	95.487	95.591	77.010	76.853	93.834	93.643	90.188	90.200	86.390	86.479
2007	86.788	86.680	83.268	83.298	95.944	96.099	80.450	80.188	95.317	95.007	92.697	92.511	88.394	88.235
2008	87.977	87.928	82.533	82.557	93.812	93.892	82.943	82.750	94.630	94.411	94.278	94.112	89.700	89.543
2009	91.572	91.459	79.524	79.405	86.844	86.820	83.935	83.786	96.097	95.927	91.660	91.611	89.709	89.814
2010	94.524	94.443	82.078	82.004	86.833	86.829	85.409	85.319	96.225	96.124	90.357	90.339	90.818	90.787
2011	94.352	94.315	83.709	83.697	88.720	88.742	87.058	87.006	95.052	94.994	92.270	92.250	92.862	92.526
2012	95.009	95.083	86.413	86.490	90.952	90.962	89.177	89.051	95.371	95.236	93.861	93.656	94.538	94.177
2013	96.028	95.797	88.793	88.762	92.466	92.656	90.468	90.167	95.309	94.992	94.210	94.123	95.903	95.432
2014	96.760	96.690	91.754	91.783	94.827	94.925	92.688	92.538	96.047	95.892	95.792	95.706	97.307	96.958
2015	97.927	97.934	95.182	95.166	97.197	97.174	95.372	95.397	98.657	98.684	97.391	97.410	97.743	97.637
2016	98.689	98.687	97.148	97.089	98.438	98.381	96.643	96.684	98.698	98.740	97.927	97.971	98.394	98.471
2017	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
2018	101.477	101.371	103.445	103.441	101.939	102.042	103.388	103.361	100.923	100.897	101.883	101.963	102.071	102.138
2019	103.652	103.627	106.529	106.630	102.776	102.898	107.332	107.312	102.905	102.885	103.551	103.555	103.467	103.561
2020	109.073	109.178	103.636	103.714	95.015	94.995	116.052	116.150	109.805	109.897	106.399	106.386	103.814	103.933
2021	111.440	111.396	111.508	111.581	100.061	100.166	122.030	122.028	110.139	110.137	109.503	109.544	109.084	108.923
2022	109.874	109.734	114.263	114.373	103.995	104.228	126.535	126.313	105.656	105.470	115.164	115.108	117.766	117.327
2023	111.741	111.544	117.580	117.680	105.225	105.501	131.510	131.250	105.459	105.251	117.691	117.667	121.799	121.560
2021: I	111.356	111.460	108.937	108.985	97.827	97.779	119.110	119.277	110.578	110.733	106.963	107.013	106.201	106.209
II	111.503	111.503	110.919	111.001	99.476	99.550	121.116	121.167	110.244	110.290	108.621	108.667	108.107	107.874
III	110.912	110.813	111.845	111.936	100.841	101.013	122.837	122.766	110.058	109.995	110.751	110.786	109.876	109.612
IV	111.752	111.580	114.329	114.404	102.306	102.531	124.661	124.500	109.381	109.239	111.551	111.579	112.006	111.848
2022: I	110.209	110.148	113.727	113.819	103.193	103.333	125.080	124.975	107.343	107.253	113.494	113.461	114.624	114.323
II	109.446	109.321	113.615	113.723	103.809	104.026	125.406	125.181	105.054	104.865	114.582	114.507	117.618	117.165
III	109.405	109.269	114.337	114.457	104.508	104.748	127.594	127.378	105.513	105.334	116.625	116.573	118.861	118.376
IV	110.279	110.041	115.371	115.491	104.617	104.953	127.834	127.490	104.671	104.389	115.919	115.857	119.925	119.407
2023: I	110.346	110.130	116.082	116.200	105.198	105.512	129.029	128.699	104.674	104.406	116.931	116.861	121.007	120.577
II	111.333	111.135	116.815	116.888	104.924	105.177	130.920	130.707	105.425	105.253	117.593	117.611	121.407	121.152
III	112.351	112.180	118.217	118.320	105.221	105.473	132.551	132.335	105.831	105.659	117.979	117.966	122.254	122.051
IV	113.258	113.053	119.207	119.310	105.253	105.535	133.942	133.668	106.236	106.018	118.263	118.235	122.502	122.432
2024: I	113.501	113.250	119.614	119.700	105.386	105.696	136.954	136.668	107.618	107.394	120.663	120.679	123.183	123.206
II	114.122	113.845	120.581	120.602	105.659	105.936	137.267	137.013	107.117	106.919	120.281	120.351	123.856	123.911
III p	114.608	114.478	121.537	121.629	106.046	106.247	138.185	138.048	107.506	107.399	120.572	120.589	124.253	124.239

[1] Output refers to real gross domestic product in the sector.
[2] Hours at work of all persons engaged in sector, including hours of employees, proprietors, and unpaid family workers. Estimates based primarily on establishment data.
[3] Wages and salaries of employees plus employers' contributions for social insurance and private benefit plans. Also includes an estimate of wages, salaries, and supplemental payments for the self-employed.
[4] Hourly compensation divided by consumer price series. The trend for 1978-2023 is based on the consumer price index retroactive series (CPI-U-RS). The change for prior years and recent quarters is based on the consumer price index for all urban consumers (CPI-U).
[5] Current dollar output divided by the output index.

Source: Department of Labor (Bureau of Labor Statistics).

TABLE B–33. Changes in productivity and related data, business and nonfarm business sectors, 1973–2024

[Percent change from preceding period; quarterly data at seasonally adjusted annual rates]

Year or quarter	Labor productivity (output per hour)		Output [1]		Hours of all persons [2]		Compensation per hour [3]		Real compensation per hour [4]		Unit labor costs		Value-added output price deflator [5]	
	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector	Business sector	Nonfarm business sector
1973	3.0	3.1	6.9	7.2	3.8	4.1	7.9	7.6	1.6	1.3	4.8	4.4	5.2	3.6
1974	–1.7	–1.7	–1.5	–1.5	.2	.2	9.3	9.4	–1.6	–1.5	11.2	11.3	9.8	10.4
1975	3.5	2.7	–.9	–1.6	–4.3	–4.2	10.6	10.4	1.4	1.2	6.9	7.6	9.7	10.7
1976	3.3	3.5	6.8	7.2	3.3	3.6	8.0	7.8	2.1	1.9	4.5	4.2	5.2	5.5
1977	1.8	1.7	5.7	5.7	3.8	3.9	8.0	8.2	1.4	1.6	6.1	6.4	5.9	6.2
1978	1.2	1.4	6.4	6.7	5.1	5.2	8.4	8.6	1.3	1.5	7.1	7.0	6.9	6.5
1979	.1	–.2	3.6	3.4	3.4	3.6	9.7	9.5	.2	.0	9.5	9.7	8.4	8.4
1980	.0	.0	–.9	–.8	–.9	–.8	10.7	10.7	–.5	–.4	10.7	10.8	8.9	9.5
1981	2.1	1.5	2.9	2.3	.8	.8	9.4	9.6	.0	.1	7.1	8.0	9.2	9.6
1982	–.6	–.8	–2.9	–3.1	–2.3	–2.3	7.4	7.3	1.3	1.2	8.0	8.2	5.7	6.2
1983	3.4	4.1	5.3	6.2	1.8	2.0	4.4	4.5	.1	.2	1.0	.3	3.6	3.5
1984	2.9	2.2	8.9	8.5	5.8	6.1	4.4	4.3	.3	.1	1.5	2.0	2.8	2.8
1985	2.3	1.7	4.7	4.4	2.3	2.6	5.1	4.9	1.7	1.4	2.7	3.1	2.6	3.1
1986	2.8	3.0	3.6	3.8	.8	.8	5.6	5.8	3.9	4.0	2.8	2.7	1.4	1.4
1987	.5	.5	3.6	3.6	3.0	3.1	3.7	3.8	.4	.4	3.2	3.2	1.9	1.9
1988	1.5	1.6	4.3	4.5	2.7	2.9	5.3	5.1	1.6	1.4	3.7	3.4	3.2	3.1
1989	1.1	.9	3.8	3.7	2.7	2.8	3.0	2.9	–1.3	–1.4	1.8	2.0	3.7	3.7
1990	2.0	1.7	1.6	1.5	–.4	–.2	6.2	6.0	1.2	1.0	4.2	4.2	3.3	3.4
1991	1.6	1.6	–.6	–.6	–2.2	–2.2	4.6	4.7	.9	1.1	3.0	3.1	2.9	3.1
1992	4.6	4.5	4.2	4.1	–.4	–.4	6.1	6.2	3.6	3.6	1.4	1.7	1.6	1.7
1993	.1	.1	2.9	3.1	2.8	3.0	1.5	1.2	–1.0	–1.3	1.4	1.1	2.3	2.3
1994	.6	.7	4.8	4.6	4.2	3.9	.7	1.0	–1.3	–1.1	.2	.3	1.8	1.9
1995	.7	1.1	3.1	3.4	2.4	2.3	2.4	2.5	.0	.1	1.7	1.4	1.8	1.8
1996	2.4	2.1	4.6	4.5	2.2	2.4	3.6	3.4	.9	.8	1.1	1.3	1.6	1.4
1997	2.2	1.9	5.2	5.2	3.0	3.2	4.0	3.9	1.8	1.7	1.8	1.9	1.5	1.7
1998	3.4	3.3	5.5	5.6	2.0	2.2	5.9	5.8	4.5	4.4	2.4	2.4	.3	.4
1999	4.1	3.9	5.8	5.8	1.6	1.8	4.8	4.6	2.7	2.5	.7	.7	.6	.7
2000	3.1	3.0	4.5	4.4	1.3	1.3	7.0	7.0	3.4	3.5	3.7	3.9	1.8	1.9
2001	2.6	2.6	.6	.7	–2.0	–1.9	4.6	4.3	1.7	1.4	1.9	1.7	1.7	1.6
2002	4.2	4.3	1.7	1.7	–2.4	–2.5	2.2	2.3	.6	.7	–1.9	–1.9	.7	.8
2003	3.8	3.7	3.2	3.1	–.6	–.6	3.8	3.7	1.4	1.4	–.1	.0	1.5	1.4
2004	3.1	3.0	4.4	4.3	1.2	1.3	4.7	4.6	2.0	1.8	1.5	1.5	2.5	2.3
2005	2.2	2.2	3.9	3.9	1.7	1.7	3.6	3.7	.2	.2	1.4	1.4	3.1	3.4
2006	1.0	1.0	3.3	3.3	2.3	2.3	3.8	3.8	.6	.6	2.8	2.8	2.8	2.9
2007	1.6	1.7	2.1	2.3	.5	.5	4.5	4.3	1.6	1.5	2.8	2.6	2.3	2.0
2008	1.4	1.4	–.9	–.9	–2.2	–2.3	3.1	3.2	–.7	–.6	1.7	1.7	1.5	1.5
2009	4.1	4.0	–3.6	–3.8	–7.4	–7.5	1.2	1.3	1.6	1.6	–2.8	–2.7	.0	.3
2010	3.2	3.3	3.2	3.3	.0	.0	1.8	1.8	.1	.2	–1.4	–1.4	1.2	1.1
2011	–.2	–.1	2.0	2.1	2.2	2.2	1.9	2.0	–1.2	–1.2	2.1	2.1	2.3	1.9
2012	.7	.8	3.2	3.3	2.5	2.5	2.4	2.4	.3	.3	1.7	1.5	1.8	1.8
2013	1.1	.8	2.8	2.6	1.7	1.9	1.4	1.3	–.1	–.3	.4	.5	1.4	1.3
2014	.8	.9	3.3	3.4	2.6	2.4	2.5	2.6	.8	.9	1.7	1.7	1.5	1.6
2015	1.2	1.3	3.7	3.7	2.5	2.4	2.9	3.1	2.7	2.9	1.7	1.8	.4	.7
2016	.8	.8	2.1	2.0	1.3	1.2	1.3	1.3	.0	.1	.6	.6	.7	.9
2017	1.3	1.3	2.9	3.0	1.6	1.6	3.5	3.4	1.3	1.3	2.1	2.1	1.6	1.6
2018	1.5	1.4	3.4	3.4	1.9	2.0	3.4	3.4	.9	.9	1.9	2.0	2.1	2.1
2019	2.1	2.2	3.0	3.1	.8	.8	3.8	3.8	2.0	2.0	1.6	1.6	1.4	1.4
2020	5.2	5.4	–2.7	–2.7	–7.6	–7.7	8.1	8.2	6.7	6.8	2.8	2.7	.3	.4
2021	2.2	2.0	7.6	7.6	5.3	5.4	5.2	5.1	.3	.2	2.9	3.0	5.1	4.8
2022	–1.4	–1.5	2.5	2.5	3.9	4.1	3.7	3.5	–4.1	–4.2	5.2	5.1	8.0	7.7
2023	1.7	1.6	2.9	2.9	1.2	1.2	3.9	3.9	–.2	–.2	2.2	2.2	3.4	3.6
2021: I	3.3	3.2	7.3	7.2	3.9	3.9	.8	.9	–3.3	–3.2	–2.4	–2.3	6.4	6.2
II	.5	.2	7.5	7.6	6.9	7.4	6.9	6.5	–1.2	–1.6	6.3	6.3	7.4	6.4
III	–2.1	–2.5	3.4	3.4	5.6	6.0	5.8	5.4	–.7	–1.1	8.1	8.0	6.7	6.6
IV	3.1	2.8	9.2	9.1	5.9	6.1	6.1	5.8	–2.4	–2.7	2.9	2.9	8.0	8.4
2022: I	–5.4	–5.0	–2.1	–2.0	3.5	3.2	1.4	1.5	–7.2	–7.1	7.2	6.9	9.7	9.1
II	–2.7	–3.0	–.4	–.3	2.4	2.7	1.0	.7	–8.3	–8.6	3.9	3.7	10.9	10.3
III	–.1	–.2	2.6	2.6	2.7	2.8	7.2	7.2	1.8	1.8	7.3	7.4	4.3	4.2
IV	3.2	2.9	3.7	3.7	.4	.8	.8	.4	–3.2	–3.5	–2.4	–2.4	3.6	3.5
2023: I	.2	.3	2.5	2.5	2.2	2.1	3.8	3.8	.0	.1	3.5	3.5	3.7	4.0
II	3.6	3.7	2.5	2.4	–1.0	–1.3	6.0	6.4	2.9	3.3	2.3	2.6	1.3	1.9
III	3.7	3.8	4.9	5.0	1.1	1.1	5.1	5.1	1.5	1.6	1.3	1.2	2.8	3.0
IV	3.3	3.1	3.4	3.4	.1	.2	4.3	4.1	1.5	1.4	1.0	.9	.8	1.3
2024: I	.9	.7	1.4	1.3	.5	.6	9.3	9.3	5.3	5.3	8.4	8.5	2.2	2.6
II	2.2	2.1	3.3	3.0	1.0	.9	.9	1.0	–1.8	–1.8	–1.3	–1.1	2.2	2.3
III p	1.7	2.2	3.2	3.5	1.5	1.2	2.7	3.1	1.5	1.8	1.0	.8	1.3	1.1

[1] Output refers to real gross domestic product in the sector.
[2] Hours at work of all persons engaged in the sector. See footnote 2, Table B–32.
[3] Wages and salaries of employees plus employers' contributions for social insurance and private benefit plans. Also includes an estimate of wages, salaries, and supplemental payments for the self-employed.
[4] Hourly compensation divided by a consumer price index. See footnote 4, Table B–32.
[5] Current dollar output divided by the output index.

Note: Percent changes are calculated using index numbers to three decimal places.

Source: Department of Labor (Bureau of Labor Statistics).

TABLE B–34. Industrial production indexes, major industry divisions, 1978–2024

[2017=100, except as noted; monthly data seasonally adjusted]

Year or month	Total industrial production [1]		Manufacturing					Mining	Utilities
	Index, 2017=100	Percent change from year earlier [2]	Total [1]	Percent change from year earlier [2]	Durable	Nondurable	Other (non-NAICS) [1]		
1978	50.1	5.5	48.5	6.1	30.9	75.6	159.7	89.0	55.7
1979	51.6	3.0	50.0	3.1	32.4	76.1	163.0	91.8	56.9
1980	50.3	–2.6	48.2	–3.6	31.0	73.8	168.6	93.5	57.3
1981	51.0	1.3	48.7	1.0	31.3	74.4	172.7	96.1	58.1
1982	48.3	–5.2	46.0	–5.5	28.6	73.3	174.7	91.4	56.1
1983	49.6	2.7	48.2	4.8	30.0	76.7	179.7	86.5	56.5
1984	54.1	8.9	52.9	9.8	34.3	80.3	188.0	92.1	59.9
1985	54.7	1.2	53.8	1.6	35.0	80.7	195.3	90.4	61.4
1986	55.3	1.0	55.0	2.2	35.6	83.0	199.4	83.8	61.9
1987	58.2	5.2	58.1	5.7	37.7	87.5	210.8	84.7	64.9
1988	61.2	5.2	61.2	5.3	40.5	90.4	209.8	86.9	68.9
1989	61.7	.9	61.7	.8	41.0	91.0	206.9	86.0	71.0
1990	62.3	1.0	62.2	.8	41.1	92.5	204.4	87.1	72.4
1991	61.4	–1.5	61.0	–1.9	39.9	92.1	196.1	85.3	74.2
1992	63.2	2.9	63.2	3.7	41.9	94.6	192.1	83.7	74.2
1993	65.3	3.3	65.5	3.6	44.3	95.9	193.4	83.5	76.7
1994	68.7	5.3	69.4	5.9	48.1	99.2	191.7	85.0	78.3
1995	71.9	4.6	72.9	5.1	52.1	101.0	191.7	85.0	81.1
1996	75.2	4.5	76.5	4.9	56.8	101.3	189.9	86.5	83.4
1997	80.6	7.2	82.9	8.4	63.6	105.1	205.9	88.1	83.2
1998	85.3	5.9	88.5	6.7	70.3	106.7	218.2	86.5	85.5
1999	89.0	4.4	92.9	5.1	76.3	107.4	224.5	82.1	88.1
2000	92.5	3.9	96.7	4.1	81.8	107.9	223.8	83.9	90.7
2001	89.7	–3.0	93.3	–3.6	78.6	104.8	209.3	84.1	90.3
2002	90.0	.3	93.7	.5	78.9	106.0	202.3	80.2	93.0
2003	91.1	1.3	95.0	1.4	81.0	106.2	196.5	80.4	94.5
2004	93.6	2.7	97.9	3.1	84.9	107.9	197.4	80.3	95.9
2005	96.7	3.4	101.9	4.1	89.9	110.6	196.7	79.3	98.0
2006	98.9	2.3	104.6	2.6	94.2	111.2	194.5	81.2	97.7
2007	101.5	2.6	107.5	2.8	98.9	112.5	183.4	81.9	100.8
2008	97.9	–3.5	102.3	–4.8	95.5	105.8	167.4	83.0	100.4
2009	86.8	–11.4	88.2	–13.8	77.7	97.7	140.0	78.7	97.5
2010	91.6	5.6	93.5	6.0	86.2	99.8	129.4	82.5	101.2
2011	94.5	3.1	96.2	2.9	91.5	100.0	123.4	87.7	100.8
2012	97.4	3.0	98.7	2.6	96.5	100.0	116.3	94.8	98.5
2013	99.3	2.0	99.6	.9	98.6	100.0	110.6	100.6	100.7
2014	102.3	3.0	100.7	1.1	101.5	99.3	109.2	111.3	102.0
2015	100.9	–1.4	100.2	–.5	100.4	99.7	105.2	104.6	101.2
2016	98.7	–2.1	99.4	–.8	98.4	100.5	102.5	91.5	100.8
2017	100.0	1.3	100.0	.6	100.0	100.0	100.0	100.0	100.0
2018	103.2	3.2	101.3	1.3	103.1	99.6	96.7	113.3	104.9
2019	102.4	–.7	99.3	–2.0	100.2	98.7	92.5	120.8	104.0
2020	95.1	–7.1	92.8	–6.5	91.3	94.9	85.3	103.1	101.0
2021	99.3	4.4	97.4	4.9	96.8	98.5	87.7	106.4	103.0
2022	102.7	3.4	100.0	2.7	100.7	100.0	88.3	114.4	106.2
2023	102.9	.2	99.5	–.5	100.9	99.1	82.4	119.9	104.1
2023: Jan	102.7	1.5	99.9	1.1	101.1	99.4	87.7	119.7	99.7
Feb	102.8	.9	99.8	.1	101.0	99.5	86.4	118.8	101.8
Mar	102.8	.1	99.2	–1.4	100.2	99.1	84.5	119.3	106.0
Apr	103.2	.3	99.9	–.7	101.2	99.6	82.1	120.2	104.0
May	103.0	.0	99.8	–.6	101.5	99.1	81.6	119.5	103.3
June	102.4	–.4	99.2	–.9	100.9	98.5	81.4	120.1	101.7
July	103.1	.0	99.4	–.7	101.5	98.4	80.6	120.4	105.9
Aug	103.1	–.1	99.5	–.9	101.0	99.0	80.9	119.9	106.2
Sept	103.3	–.2	99.6	–1.0	101.0	99.2	82.2	120.9	106.2
Oct	102.6	–.8	98.9	–1.8	99.6	99.1	83.0	120.0	105.8
Nov	102.9	–.2	99.3	–.6	101.0	98.8	79.9	119.8	105.6
Dec	102.6	.8	99.2	1.1	100.6	99.1	78.0	120.5	103.1
2024: Jan	101.5	–1.2	97.9	–2.0	99.4	97.6	80.0	115.3	107.5
Feb	102.7	–.1	99.3	–.5	100.9	98.9	80.3	120.3	103.6
Mar	102.5	–.3	99.5	.3	101.0	99.2	79.7	119.6	101.0
Apr	102.4	–.8	98.8	–1.1	100.3	98.4	78.6	119.5	104.7
May	103.0	–.0	99.5	–.3	100.8	99.3	79.1	118.3	107.0
June	103.3	.9	99.4	.3	100.3	99.7	78.9	119.5	108.9
July [p]	102.5	–.5	98.8	–.6	99.2	99.7	76.2	118.5	107.5
Aug [p]	103.0	–.0	99.4	–.1	100.4	99.6	77.1	120.0	106.3
Sept [p]	102.5	–.7	99.0	–.6	99.7	99.7	77.0	117.8	106.7
Oct [p]	102.3	–.3	98.5	–.3	98.5	99.8	77.5	118.2	107.4

[1] Total industry and total manufacturing series include manufacturing as defined in the North American Industry Classification System (NAICS) plus those industries—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be manufacturing and included in the industrial sector.

[2] Percent changes based on unrounded indexes.

Note: Data based on NAICS; see footnote 1.

Source: Board of Governors of the Federal Reserve System.

Table B–35. Capacity utilization rates, 1978–2024

[Percent [1]; monthly data seasonally adjusted]

Year or month	Total industry [2]	Manufacturing				Mining	Utilities	Stage-of-process		
		Total [2]	Durable goods	Nondurable goods	Other (non-NAICS) [2]			Crude	Primary and semi-finished	Finished
1978	85.1	84.4	83.9	85.4	81.3	89.5	87.2	88.6	86.0	82.5
1979	84.9	83.9	84.0	84.0	82.4	91.1	87.2	89.9	85.8	81.6
1980	80.7	78.6	77.6	79.8	82.9	91.3	85.5	89.3	78.7	79.3
1981	79.7	77.2	75.5	78.9	86.5	90.9	84.4	89.3	77.4	77.7
1982	73.7	71.0	66.7	76.4	85.3	84.1	80.0	82.3	70.6	73.2
1983	74.9	73.5	69.0	79.4	84.1	79.9	79.3	79.9	74.4	73.2
1984	80.5	79.4	77.1	82.1	85.6	86.0	81.9	85.9	81.0	77.3
1985	79.3	78.2	75.9	80.5	89.2	84.7	81.8	84.0	79.8	76.7
1986	78.5	78.4	75.5	81.9	86.4	76.6	80.9	78.5	79.6	77.2
1987	81.1	80.9	77.6	84.9	88.8	80.3	83.5	83.0	82.7	78.7
1988	84.3	84.0	81.9	86.3	88.8	84.1	86.8	86.4	85.9	81.7
1989	83.7	83.2	81.6	85.1	85.6	85.1	86.9	86.9	84.6	81.6
1990	82.3	81.4	79.1	84.3	81.7	86.9	86.6	88.0	82.3	80.5
1991	79.8	78.5	75.5	82.4	77.3	85.4	87.8	85.7	79.6	78.5
1992	80.6	79.6	77.2	82.8	77.5	85.2	86.4	86.0	81.1	78.5
1993	81.4	80.3	78.6	82.8	78.6	85.7	88.2	85.9	82.9	78.5
1994	83.3	82.5	81.4	84.6	78.2	86.7	88.3	88.0	85.9	79.1
1995	83.8	83.0	81.9	84.6	81.1	87.6	89.4	89.1	86.2	79.6
1996	83.3	82.0	81.2	83.2	81.0	90.5	90.8	89.1	85.4	79.2
1997	84.0	82.9	82.2	83.8	83.5	91.8	90.1	90.4	85.8	80.3
1998	82.7	81.5	80.8	82.2	83.4	89.2	92.6	87.0	84.0	80.3
1999	81.8	80.6	80.6	80.1	84.1	86.2	94.2	86.1	84.3	78.0
2000	81.5	79.8	80.1	78.9	84.4	90.5	94.3	88.6	84.0	76.9
2001	76.2	73.9	71.9	75.7	80.1	89.8	90.1	85.5	77.5	72.6
2002	75.0	73.1	70.4	76.0	78.9	85.9	87.6	83.2	77.6	70.5
2003	76.1	74.1	71.5	77.0	78.8	87.7	85.6	85.0	78.4	71.4
2004	78.3	76.6	74.3	79.0	81.4	88.2	84.4	86.6	80.6	73.3
2005	80.3	78.7	76.6	80.7	82.3	88.4	85.0	86.8	82.2	75.6
2006	80.6	78.9	77.7	80.3	79.5	90.1	83.6	88.2	81.6	76.3
2007	80.8	79.0	78.3	80.0	76.9	89.4	85.8	88.8	81.1	77.2
2008	77.8	74.7	74.6	74.5	78.5	90.0	84.1	87.7	77.1	73.7
2009	68.5	65.3	61.4	69.9	66.1	80.8	80.5	78.5	65.7	67.8
2010	73.4	70.4	68.8	73.2	61.6	84.2	82.9	83.7	71.6	70.9
2011	76.1	73.3	72.7	74.9	62.7	86.5	81.4	85.2	74.4	73.3
2012	77.0	74.5	75.3	74.7	61.7	87.9	78.4	86.1	74.8	74.5
2013	77.3	74.7	75.4	75.0	62.1	86.9	80.0	86.1	76.0	73.7
2014	78.9	76.0	77.2	75.5	64.9	89.6	80.9	87.7	77.6	74.9
2015	77.3	76.4	76.6	76.8	66.3	80.8	80.0	79.6	77.5	76.0
2016	75.6	75.7	74.9	77.1	68.1	71.6	78.9	74.0	76.8	74.8
2017	76.8	76.6	76.0	77.6	70.3	78.0	77.3	78.4	77.5	75.4
2018	79.8	78.4	78.7	78.6	71.3	87.5	80.6	85.9	80.1	76.8
2019	78.6	77.2	76.8	77.8	72.2	87.5	79.1	85.4	78.7	75.8
2020	72.9	72.7	70.1	75.8	70.6	72.1	75.2	73.1	73.5	72.2
2021	77.7	77.2	74.9	79.8	76.5	82.5	75.3	82.1	77.6	75.9
2022	80.7	79.4	77.5	81.3	81.5	89.8	76.3	87.9	79.7	77.8
2023	79.0	78.2	76.7	79.6	80.1	90.0	72.4	87.7	77.4	77.1
2023: Jan	79.8	79.0	77.3	80.6	83.3	91.3	70.5	88.2	77.6	78.2
Feb	79.6	78.8	77.1	80.5	82.5	90.2	71.8	88.1	77.8	77.7
Mar	79.4	78.3	76.4	80.1	80.9	90.3	74.5	88.2	78.0	77.0
Apr	79.6	78.7	77.1	80.4	79.0	90.6	72.9	88.3	77.7	77.9
May	79.2	78.5	77.3	79.8	78.9	89.8	72.2	87.6	77.5	77.7
June	78.6	78.0	76.8	79.2	79.0	89.9	70.8	87.6	76.8	76.9
July	79.0	78.1	77.2	79.0	78.5	90.0	73.5	87.7	77.4	77.2
Aug	78.9	78.1	76.8	79.4	79.2	89.5	73.6	87.5	77.4	77.1
Sept	78.9	78.1	76.7	79.4	80.8	90.1	73.3	88.1	77.6	76.8
Oct	78.3	77.4	75.6	79.2	81.9	89.4	72.8	87.1	77.0	76.2
Nov	78.4	77.7	76.5	78.9	79.1	89.2	72.5	87.0	77.0	76.6
Dec	78.1	77.6	76.2	79.0	77.6	89.7	70.6	87.6	76.5	76.3
2024: Jan	77.2	76.5	75.1	77.7	79.9	85.9	73.4	83.9	76.5	75.3
Feb	78.1	77.5	76.2	78.7	80.5	89.7	70.5	86.8	76.5	76.3
Mar	77.8	77.5	76.1	78.9	80.2	89.2	68.6	86.9	76.1	76.2
Apr	77.7	76.9	75.6	78.2	79.4	89.3	70.8	86.6	76.2	75.7
May	78.1	77.3	75.8	78.8	80.2	88.5	72.2	86.7	76.9	75.8
June	78.2	77.2	75.4	79.0	80.3	89.4	73.3	87.8	76.9	75.7
July ^{p}	77.6	76.7	74.4	79.0	77.9	88.8	72.1	86.9	76.2	75.2
Aug ^{p}	77.9	77.0	75.2	78.8	79.1	90.0	71.1	87.8	76.3	75.5
Sept ^{p}	77.4	76.7	74.5	78.8	79.3	88.4	71.1	86.6	76.4	74.7
Oct ^{p}	77.1	76.2	73.6	78.8	80.1	88.7	71.4	86.7	76.2	74.1

[1] Output as percent of capacity.
[2] See footnote 1 and Note, Table B–34.

Source: Board of Governors of the Federal Reserve System.

Table B–36. New private housing units started, authorized, and completed and houses sold, 1978–2024

[Thousands; monthly data at seasonally adjusted annual rates]

Year or month	New housing units started				New housing units authorized [1]				New housing units completed	New houses sold
	Total	Type of structure			Total	Type of structure				
		1 unit	2 to 4 units [2]	5 units or more		1 unit	2 to 4 units	5 units or more		
1978	2,020.3	1,433.3	125.1	462.0	1,800.5	1,182.6	130.6	487.3	1,867.5	817
1979	1,745.1	1,194.1	122.0	429.0	1,551.8	981.5	125.4	444.8	1,870.8	709
1980	1,292.2	852.2	109.5	330.5	1,190.6	710.4	114.5	365.7	1,501.6	545
1981	1,084.2	705.4	91.2	287.7	985.5	564.3	101.8	319.4	1,265.7	436
1982	1,062.2	662.6	80.1	319.6	1,000.5	546.4	88.3	365.8	1,005.5	412
1983	1,703.0	1,067.6	113.5	522.0	1,605.2	901.5	133.7	570.1	1,390.3	623
1984	1,749.5	1,084.2	121.4	543.9	1,681.8	922.4	142.6	616.8	1,652.2	639
1985	1,741.8	1,072.4	93.5	576.0	1,733.3	956.6	120.1	656.6	1,703.3	688
1986	1,805.4	1,179.4	84.0	542.0	1,769.4	1,077.6	108.4	583.5	1,756.4	750
1987	1,620.5	1,146.4	65.1	408.7	1,534.8	1,024.4	89.3	421.1	1,668.8	671
1988	1,488.1	1,081.3	58.7	348.0	1,455.6	993.8	75.7	386.1	1,529.8	676
1989	1,376.1	1,003.3	55.3	317.6	1,338.4	931.7	66.9	339.8	1,422.8	650
1990	1,192.7	894.8	37.6	260.4	1,110.8	793.9	54.3	262.6	1,308.0	534
1991	1,013.9	840.4	35.6	137.9	948.8	753.5	43.1	152.1	1,090.8	509
1992	1,199.7	1,029.9	30.9	139.0	1,094.9	910.7	45.8	138.4	1,157.5	610
1993	1,287.6	1,125.7	29.4	132.6	1,199.1	986.5	52.4	160.2	1,192.7	666
1994	1,457.0	1,198.4	35.2	223.5	1,371.6	1,068.5	62.2	241.0	1,346.9	670
1995	1,354.1	1,076.2	33.8	244.1	1,332.5	997.3	63.8	271.5	1,312.6	667
1996	1,476.8	1,160.9	45.3	270.8	1,425.6	1,069.5	65.8	290.3	1,412.9	757
1997	1,474.0	1,133.7	44.5	295.8	1,441.1	1,062.4	68.4	310.3	1,400.5	804
1998	1,616.9	1,271.4	42.6	302.9	1,612.3	1,187.6	69.2	355.5	1,474.2	886
1999	1,640.9	1,302.4	31.9	306.6	1,663.5	1,246.7	65.8	351.1	1,604.9	880
2000	1,568.7	1,230.9	38.7	299.1	1,592.3	1,198.1	64.9	329.3	1,573.7	877
2001	1,602.7	1,273.3	36.6	292.8	1,636.7	1,235.6	66.0	335.2	1,570.8	908
2002	1,704.9	1,358.6	38.5	307.9	1,747.7	1,332.6	73.7	341.4	1,648.4	973
2003	1,847.7	1,499.0	33.5	315.2	1,889.2	1,460.9	82.5	345.8	1,678.7	1,086
2004	1,955.8	1,610.5	42.3	303.0	2,070.1	1,613.4	90.4	366.2	1,841.9	1,203
2005	2,068.3	1,715.8	41.1	311.4	2,155.3	1,682.0	84.0	389.3	1,931.4	1,283
2006	1,800.9	1,465.4	42.7	292.8	1,838.9	1,378.2	76.6	384.1	1,979.4	1,051
2007	1,355.0	1,046.0	31.7	277.3	1,398.4	979.9	59.6	359.0	1,502.8	776
2008	905.5	622.0	17.5	266.0	905.4	575.6	34.4	295.4	1,119.7	485
2009	554.0	445.1	11.6	97.3	583.0	441.1	20.7	121.1	794.4	375
2010	586.9	471.2	11.4	104.3	604.6	447.3	22.0	135.3	651.7	323
2011	608.8	430.6	10.9	167.3	624.1	418.5	21.6	184.0	584.9	306
2012	780.6	535.3	11.4	233.9	829.7	518.7	25.9	285.1	649.2	368
2013	924.9	617.6	13.6	293.7	990.8	620.8	29.0	341.1	764.4	429
2014	1,003.3	647.9	13.7	341.7	1,052.1	640.3	29.9	382.0	883.8	437
2015	1,111.8	714.5	11.5	385.8	1,182.6	696.0	32.1	454.5	968.2	501
2016	1,173.8	781.5	11.5	380.8	1,206.6	750.8	34.8	421.1	1,059.7	561
2017	1,203.0	848.9	11.4	342.7	1,282.0	820.0	37.2	424.8	1,152.9	613
2018	1,249.9	875.8	13.9	360.3	1,328.8	855.3	39.7	433.8	1,184.9	617
2019	1,290.0	887.7	13.4	388.9	1,386.0	862.1	42.6	481.4	1,255.1	683
2020	1,379.6	990.5	12.3	376.8	1,471.1	979.4	47.2	444.5	1,286.9	822
2021	1,601.0	1,127.2	11.7	462.1	1,737.0	1,115.4	52.9	568.8	1,341.0	771
2022	1,552.6	1,005.2	16.4	531.0	1,680.4	973.9	55.2	651.3	1,390.5	641
2023	1,420.0	947.7	13.4	458.8	1,511.1	920.0	54.7	536.4	1,448.8	666
2023: Jan	1,361	834	....	516	1,443	763	58	622	1,389	639
Feb	1,404	827	....	564	1,620	807	50	763	1,540	625
Mar	1,342	822	....	498	1,493	848	55	590	1,516	644
Apr	1,368	876	....	480	1,470	876	64	530	1,416	687
May	1,583	999	....	575	1,532	918	57	557	1,499	741
June	1,415	930	....	470	1,493	946	55	492	1,480	666
July	1,473	999	....	464	1,501	953	49	499	1,343	700
Aug	1,305	943	....	355	1,578	972	64	542	1,373	652
Sept	1,363	973	....	376	1,515	982	51	482	1,466	694
Oct	1,365	975	....	373	1,534	986	51	497	1,382	673
Nov	1,510	1,126	....	371	1,508	999	50	459	1,466	611
Dec	1,568	1,078	....	471	1,530	1,017	51	462	1,557	654
2024: Jan	1,376	1,011	....	347	1,508	1,031	51	426	1,504	664
Feb	1,546	1,134	....	396	1,563	1,027	57	479	1,698	643
Mar	1,299	1,041	....	251	1,485	984	52	449	1,491	683
Apr	1,377	1,037	....	334	1,440	977	56	407	1,659	736
May	1,315	992	....	305	1,399	956	57	386	1,557	672
June	1,329	983	....	329	1,454	939	49	466	1,725	672
July	1,262	861	....	376	1,406	941	49	416	1,640	707
Aug	1,379	1,006	....	339	1,470	967	57	446	1,763	690
Sept ^{p}	1,353	1,042	....	297	1,425	963	57	405	1,688	738
Oct ^{p}	1,311	970	....	326	1,419	971	54	394	1,614	610

[1] Authorized by issuance of local and building permits in permit-issuing places: beginning with 2023, annually updated universe of approximately 20,000 places; 20,100 for 2014–2022; 19,300 for 2004–2013; 19,000 for 1994–2003; 17,000 for 1984–93; and 16,000 for 1978–83.

[2] Monthly data do not meet publication standards because tests for identifiable and stable seasonality do not meet reliability standards.

Note: One-unit estimates prior to 1999, for new housing units started and completed and for new houses sold, include an upward adjustment of 3.3 percent to account for structures in permit-issuing areas that did not have permit authorization.

Source: Department of Commerce (Bureau of the Census).

Table B–37. Manufacturing and trade sales and inventories, 1981–2024

[Amounts in millions of dollars; monthly data seasonally adjusted]

Year or month	Total manufacturing and trade			Manufacturing			Merchant wholesalers [1]			Retail trade			Retail and food services sales
	Sales [2]	Inventories [3]	Ratio [4]	Sales [2]	Inventories [3]	Ratio [4]	Sales [2]	Inventories [3]	Ratio [4]	Sales [2, 5]	Inventories [3]	Ratio [4]	
SIC: [6]													
1981	355,822	545,786	1.53	168,129	283,413	1.69	101,180	129,654	1.28	86,514	132,719	1.53	....
1982	347,625	573,908	1.67	163,351	311,852	1.95	95,211	127,428	1.36	89,062	134,628	1.49	....
1983	369,286	590,287	1.56	172,547	312,379	1.78	99,225	130,075	1.28	97,514	147,833	1.44	....
1984	410,124	649,780	1.53	190,682	339,516	1.73	112,199	142,452	1.23	107,243	167,812	1.49	....
1985	422,583	664,039	1.56	194,538	334,749	1.73	113,459	147,409	1.28	114,586	181,881	1.52	....
1986	430,419	662,738	1.55	194,657	322,654	1.68	114,960	153,574	1.32	120,803	186,510	1.56	....
1987	457,735	709,848	1.50	206,326	338,109	1.59	122,968	163,903	1.29	128,442	207,836	1.55	....
1988	497,157	767,222	1.49	224,619	369,374	1.57	134,521	178,801	1.30	138,017	219,047	1.54	....
1989	527,039	815,455	1.52	236,698	391,212	1.63	143,760	187,009	1.28	146,581	237,234	1.58	....
1990	545,909	840,594	1.52	242,686	405,073	1.65	149,506	195,833	1.29	153,718	239,688	1.56	....
1991	542,815	834,609	1.53	239,847	390,950	1.65	148,306	200,448	1.33	154,661	243,211	1.54	....
1992	567,176	842,809	1.48	250,394	382,510	1.54	154,150	208,302	1.32	162,632	251,997	1.52	....
NAICS: [6]													
1992	540,199	835,800	1.53	242,002	378,609	1.57	147,261	196,914	1.31	150,936	260,277	1.67	167,842
1993	567,195	863,125	1.50	251,708	379,806	1.50	154,018	204,842	1.30	161,469	278,477	1.68	179,425
1994	609,854	926,395	1.46	269,843	399,934	1.44	164,575	221,978	1.29	175,436	304,483	1.66	194,186
1995	654,689	985,385	1.48	289,973	424,802	1.44	179,915	238,392	1.29	184,801	322,191	1.72	204,219
1996	686,923	1,004,646	1.45	299,766	430,366	1.44	190,362	241,058	1.27	196,796	333,222	1.67	216,983
1997	723,443	1,045,495	1.42	319,558	443,227	1.37	198,154	258,454	1.26	205,731	343,814	1.64	227,178
1998	742,391	1,077,183	1.44	324,984	448,373	1.39	202,260	272,297	1.32	215,147	356,513	1.62	237,746
1999	786,178	1,137,260	1.40	335,991	463,004	1.35	216,597	290,182	1.30	233,591	384,074	1.59	257,249
2000	833,868	1,195,894	1.41	350,715	480,748	1.35	234,546	309,191	1.29	248,606	405,955	1.59	273,961
2001	818,160	1,118,552	1.42	330,875	427,353	1.38	232,096	297,536	1.32	255,189	393,663	1.58	281,576
2002	823,234	1,139,523	1.36	326,227	423,028	1.29	236,294	301,310	1.26	260,713	415,185	1.55	288,256
2003	854,700	1,147,795	1.34	334,616	408,302	1.25	248,190	308,274	1.22	271,894	431,219	1.56	301,038
2004	926,002	1,241,744	1.30	359,081	441,222	1.19	277,501	340,128	1.17	289,421	460,394	1.56	320,550
2005	1,005,821	1,314,161	1.27	395,173	474,639	1.17	303,208	367,822	1.17	307,440	471,700	1.51	340,479
2006	1,069,032	1,408,680	1.28	417,963	523,476	1.20	328,438	398,792	1.17	322,631	486,412	1.49	357,863
2007	1,128,176	1,488,223	1.28	443,288	563,043	1.22	351,956	424,602	1.17	332,932	500,578	1.49	369,978
2008	1,160,778	1,465,714	1.31	455,750	543,273	1.26	377,085	445,745	1.20	327,943	476,696	1.52	365,965
2009	988,905	1,331,497	1.38	368,648	505,025	1.39	319,217	398,058	1.29	301,039	428,414	1.47	338,706
2010	1,089,044	1,450,371	1.27	409,273	553,726	1.28	361,600	443,258	1.15	318,171	453,387	1.39	357,081
2011	1,206,873	1,567,171	1.26	457,658	607,035	1.29	407,302	488,893	1.15	341,913	471,243	1.35	383,192
2012	1,267,540	1,658,022	1.28	474,727	625,245	1.30	434,294	525,589	1.18	358,519	507,188	1.38	402,199
2013	1,306,220	1,727,113	1.29	484,511	631,955	1.30	450,122	550,312	1.19	371,587	544,846	1.41	416,887
2014	1,346,110	1,789,576	1.32	490,751	642,832	1.31	468,666	585,479	1.22	386,694	561,265	1.43	434,766
2015	1,303,169	1,822,793	1.39	461,086	638,229	1.40	448,277	596,937	1.33	393,805	587,627	1.46	445,849
2016	1,295,591	1,857,230	1.42	446,966	635,803	1.42	444,712	611,409	1.35	403,913	610,018	1.50	458,743
2017	1,357,498	1,917,272	1.39	462,400	659,025	1.39	475,081	632,608	1.31	420,018	625,639	1.47	477,739
2018	1,437,438	2,001,961	1.36	490,889	677,549	1.37	508,768	671,067	1.28	437,782	653,345	1.46	498,707
2019	1,434,972	2,042,803	1.42	477,871	707,662	1.46	506,978	679,805	1.35	450,123	655,336	1.47	514,480
2020	1,381,735	1,991,890	1.44	433,655	702,416	1.62	484,270	666,011	1.37	463,809	623,463	1.34	518,310
2021	1,633,430	2,257,524	1.28	506,634	808,491	1.49	583,475	785,340	1.24	543,320	663,693	1.15	613,705
2022	1,834,934	2,529,366	1.34	576,843	859,100	1.47	671,342	922,988	1.31	586,750	747,278	1.24	668,429
2023	1,837,800	2,534,336	1.37	577,637	856,182	1.48	660,152	898,541	1.37	600,011	779,613	1.27	691,185
2023: Jan	1,857,864	2,527,240	1.36	584,913	860,078	1.47	669,455	916,744	1.37	603,496	750,418	1.24	693,826
Feb	1,844,710	2,523,989	1.37	578,183	858,759	1.49	668,253	915,265	1.37	598,274	749,965	1.25	686,434
Mar	1,819,075	2,522,573	1.39	574,975	851,923	1.48	653,494	915,732	1.40	590,606	754,918	1.28	679,067
Apr	1,822,598	2,520,942	1.38	573,283	855,017	1.49	654,353	911,195	1.39	594,962	754,730	1.27	683,698
May	1,824,192	2,517,951	1.38	573,155	852,708	1.49	654,349	906,386	1.39	596,688	758,857	1.27	686,672
June	1,817,570	2,515,043	1.38	573,441	851,754	1.49	646,123	902,011	1.40	598,006	761,278	1.27	688,810
July	1,828,313	2,511,946	1.37	576,861	852,256	1.48	652,182	899,737	1.38	599,270	759,953	1.27	690,641
Aug	1,852,225	2,521,778	1.36	584,412	855,172	1.46	663,626	899,125	1.35	604,187	767,481	1.27	696,238
Sept	1,872,609	2,530,405	1.35	585,941	856,349	1.46	677,538	900,668	1.33	609,130	773,388	1.27	702,109
Oct	1,850,897	2,526,625	1.37	576,419	856,209	1.49	668,810	896,628	1.34	605,668	773,788	1.28	698,956
Nov	1,849,411	2,523,556	1.36	579,280	855,757	1.48	664,096	894,166	1.35	606,035	773,633	1.28	700,707
Dec	1,855,254	2,534,336	1.37	578,735	856,182	1.48	667,789	898,541	1.35	608,730	779,613	1.28	703,256
2024: Jan	1,834,816	2,533,958	1.38	574,543	855,052	1.49	658,352	896,497	1.36	601,921	782,409	1.30	695,631
Feb	1,860,134	2,540,743	1.37	581,885	857,285	1.47	671,529	898,704	1.34	606,720	784,754	1.29	700,519
Mar	1,857,124	2,537,490	1.37	584,267	857,397	1.47	662,797	894,435	1.35	610,060	785,658	1.29	703,738
Apr	1,861,389	2,546,223	1.37	589,029	858,304	1.46	663,902	896,304	1.35	608,458	791,615	1.30	702,681
May	1,860,554	2,558,827	1.38	584,836	859,416	1.47	665,708	901,184	1.35	610,010	798,227	1.31	704,309
June	1,860,120	2,565,930	1.38	588,438	858,851	1.46	663,696	901,488	1.36	607,986	805,591	1.33	702,350
July	1,880,483	2,574,892	1.37	593,195	859,018	1.45	671,328	903,730	1.35	615,960	812,144	1.32	710,851
Aug	1,876,300	2,583,708	1.38	589,180	859,939	1.46	672,585	905,386	1.35	614,535	818,383	1.33	710,038
Sept	1,881,922	2,584,108	1.37	586,598	857,285	1.46	675,913	903,300	1.34	619,411	823,523	1.33	716,026
Oct [p]	1,882,034	2,586,523	1.37	585,376	856,844	1.46	675,068	905,023	1.34	621,590	824,656	1.33	718,867

[1] Excludes manufacturers' sales branches and offices.
[2] Annual data are averages of monthly not seasonally adjusted figures.
[3] Seasonally adjusted, end of period. Inventories beginning with January 1982 for manufacturing are not comparable with earlier periods.
[4] Inventory/sales ratio. Monthly inventories are inventories at the end of the month to sales for the month. Annual data beginning with 1982 are the average of monthly ratios for the year. Annual data for 1981 are the ratio of December inventories to monthly average sales for the year.
[5] Food services included on Standard Industrial Classification (SIC) basis and excluded on North American Industry Classification System (NAICS) basis. See last column for retail and food services sales.
[6] Effective in 2001, data classified based on NAICS. Data on NAICS basis available beginning with 1992. Earlier data based on SIC. Data on both NAICS and SIC basis include semiconductors.

Source: Department of Commerce (Bureau of the Census).

Table B–38. Changes in consumer price indexes, 1981–2024

[For all urban consumers; percent change]

Year or month	All items	All items less food and energy					Food			Energy[4]		C-CPI-U[5]
		Total[1]	Shelter[2]	Medical care[3]	Apparel	New vehicles	Total[1]	At home	Away from home	Total[1, 3]	Gasoline	
	December to December, NSA											
1981	8.9	9.5	9.9	12.5	3.5	6.8	4.3	2.9	7.1	11.9	9.4	....
1982	3.8	4.5	2.4	11.0	1.6	1.4	3.1	2.3	5.1	1.3	–6.7	....
1983	3.8	4.8	4.7	6.4	2.9	3.3	2.7	1.8	4.1	–.5	–1.6	....
1984	3.9	4.7	5.2	6.1	2.0	2.5	3.8	3.6	4.2	.2	–2.5	....
1985	3.8	4.3	6.0	6.8	2.8	3.6	2.6	2.0	3.8	1.8	3.0	....
1986	1.1	3.8	4.6	7.7	.9	5.6	3.8	3.7	4.3	–19.7	–30.7	....
1987	4.4	4.2	4.8	5.8	4.8	1.8	3.5	3.5	3.7	8.2	18.6	....
1988	4.4	4.7	4.5	6.9	4.7	2.2	5.2	5.6	4.4	.5	–1.8	....
1989	4.6	4.4	4.9	8.5	1.0	2.4	5.6	6.2	4.6	5.1	6.5	....
1990	6.1	5.2	5.2	9.6	5.1	2.0	5.3	5.8	4.5	18.1	36.8	....
1991	3.1	4.4	3.9	7.9	3.4	3.2	1.9	1.3	2.9	–7.4	–16.2	....
1992	2.9	3.3	2.9	6.6	1.4	2.3	1.5	1.5	1.4	2.0	2.0	....
1993	2.7	3.2	3.0	5.4	.9	3.3	2.9	3.5	1.9	–1.4	–5.9	....
1994	2.7	2.6	3.0	4.9	–1.6	3.3	2.9	3.5	1.9	2.2	6.4	....
1995	2.5	3.0	3.5	3.9	.1	1.9	2.1	2.0	2.2	–1.3	–4.2	....
1996	3.3	2.6	2.9	3.0	–.2	1.8	4.3	4.9	3.1	8.6	12.4	....
1997	1.7	2.2	3.4	2.8	1.0	–.9	1.5	1.0	2.6	–3.4	–6.1	....
1998	1.6	2.4	3.3	3.4	–.7	.0	2.3	2.1	2.5	–8.8	–15.4	....
1999	2.7	1.9	2.5	3.7	–.5	–.3	1.9	1.7	2.3	13.4	30.1	....
2000	3.4	2.6	3.4	4.2	–1.8	.0	2.8	2.9	2.4	14.2	13.9	2.6
2001	1.6	2.7	4.2	4.7	–3.2	–.1	2.8	2.6	3.0	–13.0	–24.9	1.3
2002	2.4	1.9	3.1	5.0	–1.8	–2.0	1.5	.8	2.3	10.7	24.8	2.0
2003	1.9	1.1	2.2	3.7	–2.1	–1.8	3.6	4.5	2.3	6.9	6.8	1.7
2004	3.3	2.2	2.7	4.2	–.2	.6	2.7	2.4	3.0	16.6	26.1	3.2
2005	3.4	2.2	2.6	4.3	–1.1	–.4	2.3	1.7	3.2	17.1	16.1	2.9
2006	2.5	2.6	4.2	3.6	.9	–.9	2.1	1.4	3.2	2.9	6.4	2.3
2007	4.1	2.4	3.1	5.2	–.3	–.3	4.9	5.6	4.0	17.4	29.6	3.7
2008	.1	1.8	1.9	2.6	–1.0	–3.2	5.9	6.6	5.0	–21.3	–43.1	.2
2009	2.7	1.8	.3	3.4	1.9	4.9	–.5	–2.4	1.9	18.2	53.5	2.5
2010	1.5	.8	.4	3.3	–1.1	–.2	1.5	1.7	1.3	7.7	13.8	1.3
2011	3.0	2.2	1.9	3.5	4.6	3.2	4.7	6.0	2.9	6.6	9.9	2.9
2012	1.7	1.9	2.2	3.2	1.8	1.6	1.8	1.3	2.5	.5	1.7	1.5
2013	1.5	1.7	2.5	2.0	.6	.4	1.1	.4	2.1	.5	–1.0	1.3
2014	.8	1.6	2.9	3.0	–2.0	.5	3.4	3.7	3.0	–10.6	–21.0	.5
2015	.7	2.1	3.2	2.6	–.9	.2	.8	–.4	2.6	–12.6	–19.7	.4
2016	2.1	2.2	3.6	4.1	–.1	.3	–.2	–2.0	2.3	5.4	9.1	1.8
2017	2.1	1.8	3.2	1.8	–1.6	–.5	1.6	.9	2.5	6.9	10.7	1.7
2018	1.9	2.2	3.2	2.0	–.1	–.3	1.6	.6	2.8	–.3	–2.1	1.5
2019	2.3	2.3	3.2	4.6	–1.2	.1	1.8	.7	3.1	3.4	7.9	1.8
2020	1.4	1.6	1.8	1.8	–3.9	2.0	3.9	3.9	3.9	–7.0	–15.2	1.5
2021	7.0	5.5	4.1	2.2	5.8	11.8	6.3	6.5	6.0	29.3	49.6	6.5
2022	6.5	5.7	7.5	4.0	2.9	5.9	10.4	11.8	8.3	7.3	–1.5	6.4
2023	3.4	3.9	6.2	.5	1.0	1.0	2.7	1.3	5.2	–2.0	–1.9	2.9
	Change from year earlier, NSA											
2023: Jan	6.4	5.6	7.9	3.1	3.1	5.8	10.1	11.3	8.2	8.7	1.5	6.4
Feb	6.0	5.5	8.1	2.3	3.3	5.8	9.5	10.2	8.4	5.2	–2.0	6.0
Mar	5.0	5.6	8.2	1.5	3.3	6.1	8.5	8.4	8.8	–6.4	–17.4	4.8
Apr	4.9	5.5	8.1	1.1	3.6	5.4	7.7	7.1	8.6	–5.1	–12.2	4.7
May	4.0	5.3	8.0	.7	3.5	4.7	6.7	5.8	8.3	–11.7	–19.7	3.8
June	3.0	4.8	7.8	.1	3.1	4.1	5.7	4.7	7.7	–16.7	–26.5	2.9
July	3.2	4.7	7.7	–.5	3.2	3.5	4.9	3.6	7.1	–12.5	–19.9	3.0
Aug	3.7	4.3	7.3	–1.0	3.1	2.9	4.3	3.0	6.5	–3.6	–3.3	3.5
Sept	3.7	4.1	7.2	–1.4	2.3	2.5	3.7	2.4	6.0	–.5	3.0	3.4
Oct	3.2	4.0	6.7	–.8	2.6	1.9	3.3	2.1	5.4	–4.5	–5.3	2.9
Nov	3.1	4.0	6.5	.2	1.1	1.3	2.9	1.7	5.3	–5.4	–8.9	2.7
Dec	3.4	3.9	6.2	.5	1.0	1.0	2.7	1.3	5.2	–2.0	–1.9	2.9
2024: Jan	3.1	3.9	6.0	1.1	.1	.7	2.6	1.2	5.1	–4.6	–6.4	2.6
Feb	3.2	3.8	5.7	1.4	.0	.4	2.2	1.0	4.5	–1.9	–3.9	2.8
Mar	3.5	3.8	5.7	2.2	.4	–.1	2.2	1.2	4.2	2.1	1.3	3.2
Apr	3.4	3.6	5.5	2.6	1.3	–.4	2.2	1.1	4.1	2.6	1.2	3.0
May	3.3	3.4	5.4	3.1	.8	–.8	2.1	1.0	4.0	3.7	2.2	3.0
June	3.0	3.3	5.2	3.3	.8	–.9	2.2	1.1	4.1	1.0	–2.5	2.6
July	2.9	3.2	5.1	3.2	.2	–1.0	2.2	1.1	4.1	1.1	–2.2	2.7
Aug	2.5	3.2	5.2	3.0	.3	–1.2	2.1	.9	4.0	–4.0	–10.3	2.3
Sept	2.4	3.3	4.9	3.3	1.8	–1.3	2.3	1.3	3.9	–6.8	–15.3	2.2
Oct	2.6	3.3	4.9	3.3	.3	–1.3	2.1	1.1	3.8	–4.9	–12.2	2.4
Nov	2.7	3.3	4.7	3.1	1.1	–.7	2.4	1.6	3.6	–3.2	–8.1	2.6

[1] Includes other items not shown separately.
[2] Data beginning with 1983 incorporate a rental equivalence measure for homeowners' costs.
[3] Commodities and services.
[4] Household energy--electricity, utility (piped) gas service, fuel oil, etc.--and motor fuel.
[5] Chained consumer price index (C-CPI-U) introduced in 2002. Reflects the effect of substitution that consumers make across item categories in response to changes in relative prices. Data for 2024 are subject to revision.

Source: Department of Labor (Bureau of Labor Statistics).

Table B–39. Price indexes for personal consumption expenditures, and percent changes, 1973–2024

[Chain-type price index numbers, 2017=100; monthly data seasonally adjusted]

Year or month	Personal consumption expenditures (PCE): Total	Goods	Services	Food [1]	Energy goods and services [2]	PCE less food and energy	Percent change from year earlier: Total	Goods	Services	Food [1]	Energy goods and services [2]	PCE less food and energy
1973	22.455	37.970	16.389	24.492	14.317	23.003	5.4	6.0	4.8	12.7	8.6	3.8
1974	24.793	42.709	17.778	28.217	18.667	24.825	10.4	12.5	8.5	15.2	30.4	7.9
1975	26.860	46.159	19.302	30.338	20.507	26.899	8.3	8.1	8.6	7.5	9.9	8.4
1976	28.333	47.966	20.641	30.902	21.883	28.534	5.5	3.9	6.9	1.9	6.7	6.1
1977	30.176	50.526	22.203	32.722	23.732	30.369	6.5	5.3	7.6	5.9	8.4	6.4
1978	32.276	53.626	23.910	35.853	25.068	32.382	7.0	6.1	7.7	9.6	5.6	6.6
1979	35.143	58.698	25.915	39.374	31.260	34.743	8.9	9.5	8.4	9.8	24.7	7.3
1980	38.928	65.271	28.610	42.685	40.840	37.936	10.8	11.2	10.4	8.4	30.6	9.2
1981	42.415	70.120	31.541	45.726	46.332	41.260	9.0	7.4	10.2	7.1	13.4	8.8
1982	44.771	72.031	34.017	46.929	47.141	43.942	5.6	2.7	7.9	2.6	1.7	6.5
1983	46.676	73.331	36.106	47.468	47.582	46.191	4.3	1.8	6.1	1.1	.9	5.1
1984	48.439	74.718	37.985	48.894	48.182	48.106	3.8	1.9	5.2	3.0	1.3	4.1
1985	50.128	75.917	39.843	49.426	48.690	50.060	3.5	1.6	4.9	1.1	1.1	4.1
1986	51.219	75.562	41.480	50.589	42.663	51.788	2.2	–.5	4.1	2.4	–12.4	3.5
1987	52.802	77.992	42.726	52.186	43.135	53.460	3.1	3.2	3.0	3.2	1.1	3.2
1988	54.865	80.048	44.769	53.742	43.465	55.732	3.9	2.6	4.8	3.0	.8	4.2
1989	57.261	83.128	46.880	56.576	46.033	58.045	4.4	3.8	4.7	5.3	5.9	4.2
1990	59.775	86.532	49.029	59.340	49.925	60.397	4.4	4.1	4.6	4.9	8.5	4.1
1991	61.774	88.647	50.946	61.203	50.146	62.554	3.3	2.4	3.9	3.1	.4	3.6
1992	63.420	89.717	52.758	61.673	50.380	64.456	2.7	1.2	3.6	.8	.5	3.0
1993	65.000	90.496	54.582	62.535	50.838	66.206	2.5	.9	3.5	1.4	.9	2.7
1994	66.356	91.417	56.066	63.582	51.036	67.688	2.1	1.0	2.7	1.7	.4	2.2
1995	67.754	92.271	57.632	64.960	51.438	69.163	2.1	.9	2.8	2.2	.8	2.2
1996	69.203	93.285	59.214	66.942	53.846	70.474	2.1	1.1	2.7	3.1	4.7	1.9
1997	70.407	93.177	60.883	68.218	54.411	71.718	1.7	–.1	2.8	1.9	1.0	1.8
1998	70.967	91.777	62.172	69.075	49.818	72.630	.8	–1.5	2.1	1.3	–8.4	1.3
1999	72.001	92.258	63.409	70.206	51.836	73.583	1.5	.5	2.0	1.6	4.1	1.3
2000	73.822	94.089	65.210	71.850	61.307	74.898	2.5	2.0	2.8	2.3	18.3	1.8
2001	75.302	94.018	67.292	73.946	62.839	76.317	2.0	–.1	3.2	2.9	2.5	1.9
2002	76.291	93.122	69.033	75.063	59.176	77.593	1.3	–1.0	2.6	1.5	–5.8	1.7
2003	77.894	93.003	71.336	76.484	66.654	78.845	2.1	–.1	3.3	1.9	12.6	1.6
2004	79.827	94.311	73.528	78.870	74.217	80.396	2.5	1.4	3.1	3.1	11.3	2.0
2005	82.127	96.203	75.998	80.248	87.026	82.158	2.9	2.0	3.4	1.7	17.3	2.2
2006	84.440	97.494	78.750	81.597	96.940	84.126	2.8	1.3	3.6	1.7	11.4	2.4
2007	86.607	98.576	81.388	84.781	102.776	86.001	2.6	1.1	3.3	3.9	6.0	2.2
2008	89.170	101.524	83.783	89.944	117.422	87.688	3.0	3.0	2.9	6.1	14.3	2.0
2009	88.921	99.084	84.432	91.013	95.195	88.503	–.3	–2.4	.8	1.2	–18.9	.9
2010	90.514	100.533	86.077	91.285	104.698	89.785	1.8	1.5	1.9	.3	10.0	1.4
2011	92.804	104.325	87.742	94.930	121.281	91.209	2.5	3.8	1.9	4.0	15.8	1.6
2012	94.534	105.620	89.648	97.183	123.001	92.897	1.9	1.2	2.2	2.4	1.4	1.9
2013	95.781	105.049	91.659	98.140	121.900	94.285	1.3	–.5	2.2	1.0	–.9	1.5
2014	97.121	104.542	93.795	100.016	120.890	95.697	1.4	–.5	2.3	1.9	–.8	1.5
2015	97.299	101.350	95.462	101.141	99.190	96.874	.2	–3.1	1.8	1.1	–18.0	1.2
2016	98.284	99.710	97.629	100.130	91.982	98.426	1.0	–1.6	2.3	–1.0	–7.3	1.6
2017	100.000	100.000	100.000	100.000	100.000	100.000	1.7	.3	2.4	–.1	8.7	1.6
2018	102.047	100.811	102.626	100.517	108.054	101.897	2.0	.8	2.6	.5	8.1	1.9
2019	103.509	100.426	104.965	101.528	105.725	103.573	1.4	–.4	2.3	1.0	–2.2	1.6
2020	104.641	99.656	107.055	104.892	96.753	104.951	1.1	–.8	2.0	3.3	–8.5	1.3
2021	108.972	104.597	111.045	108.159	116.900	108.705	4.1	5.0	3.7	3.1	20.8	3.6
2022	116.111	113.638	117.146	119.324	146.923	114.521	6.6	8.6	5.5	10.3	25.7	5.4
2023	120.491	115.030	123.067	125.334	138.935	119.268	3.8	1.2	5.1	5.0	–5.4	4.1
2023: Jan	119.007	114.837	120.915	124.674	142.114	117.526	5.5	4.6	6.0	10.7	8.0	4.9
Feb	119.401	115.092	121.382	124.952	141.654	117.963	5.2	3.7	6.0	9.5	4.3	4.9
Mar	119.553	114.910	121.707	124.823	137.741	118.304	4.4	2.0	5.7	8.0	–7.7	4.8
Apr	119.970	115.216	122.182	124.839	139.120	118.715	4.5	2.2	5.6	7.0	–5.7	4.8
May	120.140	115.094	122.502	125.057	134.791	119.063	4.0	1.2	5.4	5.9	–12.2	4.7
June	120.435	115.023	122.985	125.039	135.440	119.370	3.3	–.4	5.1	4.8	–17.6	4.4
July	120.598	114.732	123.383	125.305	135.355	119.536	3.4	–.2	5.2	3.7	–13.2	4.3
Aug	120.965	115.419	123.584	125.580	141.965	119.658	3.4	.8	4.7	3.2	–3.7	3.8
Sept	121.387	115.622	124.120	125.811	143.778	120.040	3.4	1.0	4.6	2.8	–.1	3.7
Oct	121.421	115.310	124.332	126.065	140.249	120.200	3.0	.3	4.3	2.5	–4.7	3.4
Nov	121.415	114.679	124.649	125.901	137.704	120.309	2.7	–.2	4.2	1.9	–5.9	3.2
Dec	121.602	114.430	125.060	125.960	137.314	120.528	2.7	.1	4.0	1.5	–2.0	3.0
2024: Jan	122.115	114.245	125.930	126.550	135.416	121.128	2.6	–.5	4.1	1.5	–4.7	3.1
Feb	122.494	114.783	126.225	126.711	138.513	121.418	2.6	–.3	4.0	1.4	–2.2	2.9
Mar	122.912	114.950	126.771	126.659	140.103	121.829	2.8	.0	4.2	1.5	1.7	3.0
Apr	123.234	115.201	127.128	126.445	141.783	122.140	2.7	.0	4.0	1.3	1.9	2.9
May	123.224	114.784	127.326	126.527	138.801	122.239	2.6	–.3	3.9	1.2	3.0	2.7
June	123.369	114.587	127.646	126.612	135.875	122.510	2.4	–.4	3.8	1.3	.3	2.6
July	123.564	114.558	127.956	126.819	135.904	122.710	2.5	–.2	3.7	1.2	.4	2.7
Aug [p]	123.708	114.387	128.261	126.900	134.876	122.904	2.3	–.9	3.8	1.1	–5.0	2.7
Sept [p]	123.931	114.247	128.670	127.346	132.111	123.225	2.1	–1.2	3.7	1.2	–8.1	2.7
Oct [p]	124.226	114.177	129.153	127.370	131.913	123.561	2.3	–1.0	3.9	1.0	–5.9	2.8

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

[2] Consists of gasoline and other energy goods and of electricity and gas services.

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

Table B–40. Money stock and debt measures, 1986–2024

[Averages of daily figures, except debt end-of-period basis; billions of dollars, seasonally adjusted]

Year and month	M1: Sum of currency, demand deposits, travelers checks, and other checkable deposits; includes savings deposits beginning May 2020 [1]	M2: M1 plus savings deposits, retail MMMF balances, and small time deposits [2]	Debt: Debt of domestic nonfinancial sectors [3]	Percent change: From year or 6 months earlier [4]: M1	Percent change: From year or 6 months earlier [4]: M2	Percent change: From previous period [5]: Debt
December:						
1986	724.7	2,728.0	8,227.1	16.9	9.5	12.0
1987	750.2	2,826.4	8,979.4	3.5	3.6	9.0
1988	786.7	2,988.2	9,803.7	4.9	5.7	9.2
1989	792.9	3,152.5	10,556.8	.8	5.5	7.5
1990	824.7	3,271.8	11,276.3	4.0	3.8	6.6
1991	897.0	3,372.2	11,807.4	8.8	3.1	4.7
1992	1,024.9	3,424.7	12,360.1	14.3	1.6	4.7
1993	1,129.6	3,474.5	13,088.5	10.2	1.5	5.8
1994	1,150.7	3,486.4	13,784.5	1.9	.3	5.3
1995	1,127.5	3,629.5	14,478.7	–2.0	4.1	4.9
1996	1,081.3	3,818.6	15,246.6	–4.1	5.2	5.3
1997	1,072.3	4,032.9	16,126.4	–.8	5.6	5.8
1998	1,095.0	4,375.6	17,266.0	2.1	8.5	7.1
1999	1,122.2	4,639.3	18,447.2	2.5	6.0	6.6
2000	1,088.6	4,927.7	19,305.4	–3.0	6.2	4.7
2001	1,183.2	5,440.7	20,412.8	8.7	10.4	5.8
2002	1,220.2	5,779.5	21,790.5	3.1	6.2	6.7
2003	1,306.2	6,074.0	23,534.3	7.0	5.1	7.8
2004	1,376.0	6,424.7	26,467.1	5.3	5.8	9.1
2005	1,374.3	6,688.0	28,791.2	–.1	4.1	8.8
2006	1,366.6	7,080.4	31,251.4	–.6	5.9	8.5
2007	1,373.4	7,484.2	33,761.9	.5	5.7	8.1
2008	1,601.7	8,205.0	35,591.2	16.6	9.6	5.8
2009	1,692.8	8,512.5	36,565.1	5.7	3.7	3.6
2010	1,836.7	8,822.9	37,943.5	8.5	3.6	4.2
2011	2,165.7	9,677.4	39,205.5	17.9	9.7	3.7
2012	2,460.7	10,474.4	40,852.4	13.6	8.2	4.7
2013	2,674.2	11,047.8	42,492.0	8.7	5.5	4.3
2014	2,955.8	11,701.9	44,081.9	10.5	5.9	3.9
2015	3,104.1	12,361.5	45,890.5	5.0	5.6	4.5
2016	3,345.1	13,215.3	47,848.1	7.8	6.9	4.3
2017	3,613.3	13,860.3	50,009.5	8.0	4.9	4.3
2018	3,764.3	14,369.9	52,685.9	4.2	3.7	4.7
2019	4,008.4	15,334.3	55,143.9	6.5	6.7	4.7
2020	17,803.0	19,109.9	61,935.9	.....	24.6	12.3
2021	20,436.2	21,507.8	66,410.5	14.8	12.5	6.3
2022	19,724.2	21,273.2	70,100.0	–3.5	–1.1	5.6
2023	17,971.3	20,725.5	73,683.2	–8.9	–2.6	5.1
2023: Jan	19,512.8	21,188.1	.....	–10.0	–4.2	.....
Feb	19,321.1	21,117.6	.....	–11.1	–4.7	.....
Mar	18,927.7	20,870.5	70,759.7	–13.2	–5.9	3.8
Apr	18,606.4	20,711.9	.....	–14.9	–6.7	.....
May	18,554.8	20,804.6	.....	–13.8	–5.3	.....
June	18,444.4	20,788.4	71,870.4	–13.0	–4.6	6.3
July	18,340.5	20,762.6	.....	–12.0	–4.0	.....
Aug	18,230.1	20,735.1	.....	–11.3	–3.6	.....
Sept	18,110.3	20,681.4	72,826.8	–8.6	–1.8	5.3
Oct	18,028.9	20,662.5	.....	–6.2	–.5	.....
Nov	17,967.7	20,675.8	.....	–6.3	–1.2	.....
Dec	17,971.3	20,725.5	73,683.2	–5.1	–.6	4.7
2024: Jan	17,934.5	20,726.0	.....	–4.4	–.4	.....
Feb	17,923.5	20,762.0	.....	–3.4	.3	.....
Mar	17,990.1	20,863.0	74,510.1	–1.3	1.8	4.5
Apr	17,975.0	20,881.2	.....	–.6	2.1	.....
May	18,011.6	20,959.5	.....	.5	2.7	.....
June	18,045.2	21,020.1	75,388.5	.8	2.8	4.7
July	18,031.8	21,039.4	.....	1.1	3.0	.....
Aug	18,094.5	21,141.3	.....	1.9	3.7	.....
Sept	18,152.6	21,222.7	.....	1.8	3.4	.....
Oct [p]	18,237.4	21,311.2	.....	2.9	4.1	.....

[1] Beginning May 2020, M1 includes savings deposits. Prior to May 2020, savings deposits were not included in M1. See the H.6 statistical release for additional details.

[2] Money market mutual fund (MMMF). Savings deposits include money market deposit accounts.

[3] Consists of outstanding debt securities and loans of the U.S. Government, State and local governments, and private nonfinancial sectors. Quarterly data shown in last month of quarter. End-of-year data are for fourth quarter.

[4] Annual changes are from December to December; monthly changes are from six months earlier at an annual rate.

[5] Debt growth of domestic nonfinancial sectors is the seasonally adjusted borrowing flow divided by the seasonally adjusted level of debt outstanding in the previous period. Annual changes are from fourth quarter to fourth quarter; quarterly changes are from previous quarter at an annual rate.

Note: For further information on the composition of M1 and M2, see the H.6 release.

For further information on the debt of domestic nonfinancial sectors and the derivation of debt growth, see the Z.1 release.

Source: Board of Governors of the Federal Reserve System.

Table B–41. Consumer credit outstanding, 1973–2024

[Amount outstanding (end of month); millions of dollars, seasonally adjusted]

Year and month	Total consumer credit [1]	Revolving	Nonrevolving [2]
December:			
1973	190,086.31	11,342.22	178,744.09
1974	198,917.84	13,241.26	185,676.58
1975	204,002.00	14,495.27	189,506.73
1976	225,721.59	16,489.05	209,232.54
1977	260,562.70	37,414.82	223,147.88
1978	306,100.39	45,690.95	260,409.43
1979	348,589.11	53,596.43	294,992.67
1980	351,920.05	54,970.05	296,950.00
1981	371,301.44	60,928.00	310,373.44
1982	389,848.74	66,348.30	323,500.44
1983	437,068.86	79,027.25	358,041.61
1984	517,278.98	100,385.63	416,893.35
1985	599,711.23	124,465.80	475,245.43
1986	654,750.24	141,068.15	513,682.08
1987	686,318.77	160,853.91	525,464.86
1988 [3]	731,917.76	184,593.12	547,324.64
1989	794,612.18	211,229.83	583,382.34
1990	808,230.57	238,642.62	569,587.95
1991	798,028.97	263,768.55	534,260.42
1992	806,118.69	278,449.67	527,669.02
1993	865,650.58	309,908.02	555,742.56
1994	997,301.74	365,569.56	631,732.19
1995	1,140,744.36	443,920.09	696,824.27
1996	1,253,437.09	507,516.57	745,920.52
1997	1,324,757.33	540,005.56	784,751.77
1998	1,420,996.44	581,414.78	839,581.66
1999	1,531,105.96	610,696.47	920,409.49
2000	1,716,969.72	682,646.37	1,034,323.35
2001	1,867,852.87	714,840.73	1,153,012.14
2002	1,972,112.21	750,947.45	1,221,164.76
2003	2,077,360.69	768,258.31	1,309,102.38
2004	2,192,246.17	799,552.18	1,392,693.99
2005 [3]	2,290,928.13	829,518.36	1,461,409.78
2006	2,456,715.70	923,876.78	1,532,838.92
2007	2,609,476.53	1,001,625.30	1,607,851.24
2008	2,643,788.96	1,003,997.04	1,639,791.92
2009	2,555,016.64	916,076.63	1,638,940.01
2010 [3]	2,646,811.26	839,102.67	1,807,708.59
2011	2,756,224.85	840,164.23	1,916,060.62
2012	2,912,905.02	839,980.84	2,072,924.19
2013	3,090,467.79	854,138.80	2,236,328.98
2014	3,309,539.83	887,381.64	2,422,158.19
2015 [3]	3,400,223.22	898,082.65	2,502,140.57
2016	3,636,435.65	960,095.49	2,676,340.16
2017	3,830,751.63	1,016,806.67	2,813,944.95
2018	4,007,041.92	1,053,847.42	2,953,194.50
2019	4,192,191.45	1,091,988.96	3,100,202.49
2020	4,184,852.53	974,594.44	3,210,258.08
2021	4,548,529.88	1,053,523.79	3,495,006.09
2022	4,894,243.59	1,212,599.87	3,681,643.72
2023	5,023,696.41	1,318,813.24	3,704,883.17
2023: Jan	4,912,509.90	1,221,135.83	3,691,374.07
Feb	4,924,094.62	1,226,513.53	3,697,581.09
Mar	4,943,543.57	1,240,618.20	3,702,925.37
Apr	4,957,277.43	1,252,098.39	3,705,179.04
May	4,962,664.73	1,259,996.69	3,702,668.05
June	4,986,482.03	1,266,325.98	3,720,156.04
July	4,999,503.29	1,276,251.31	3,723,251.97
Aug	4,981,690.62	1,287,789.32	3,693,901.30
Sept	4,991,355.14	1,294,539.20	3,696,815.94
Oct	4,999,659.91	1,299,020.49	3,700,639.41
Nov	5,016,854.50	1,312,506.16	3,704,348.34
Dec	5,023,696.41	1,318,813.24	3,704,883.17
2024: Jan	5,039,309.88	1,328,294.04	3,711,015.84
Feb	5,050,397.19	1,339,506.41	3,710,890.77
Mar	5,048,180.06	1,340,308.10	3,707,871.96
Apr	5,049,732.94	1,340,895.44	3,708,837.51
May	5,059,304.32	1,349,310.82	3,709,993.50
June	5,061,610.82	1,347,886.44	3,713,724.38
July	5,085,597.38	1,357,953.85	3,727,643.53
Aug	5,090,165.79	1,356,151.27	3,734,014.51
Sept	5,093,374.69	1,357,786.28	3,735,588.41
Oct [p]	5,112,614.12	1,373,502.45	3,739,111.66

[1] Covers most short- and intermediate-term credit extended to individuals. Credit secured by real estate is excluded.

[2] Includes automobile loans and all other loans not included in revolving credit, such as loans for mobile homes, education, boats, trailers, or vacations. These loans may be secured or unsecured. Beginning with 1977, includes student loans extended by the Federal Government and by SLM Holding Corporation.

[3] Data newly available result in breaks in these series between the prior period and subsequent months.

Source: Board of Governors of the Federal Reserve System.

TABLE B–42. Bond yields and interest rates, 1953–2024

[Percent per annum]

Year	U.S. Treasury securities					Corporate bonds (Moody's)		High-grade municipal bonds (Standard & Poor's)	Home mortgage yields [4]	Prime rate charged by banks [5]	Discount window (Federal Reserve Bank of New York) [5, 6]		Federal funds rate [7]
	Bills (at auction) [1]		Constant maturities [2]										
	3-month	6-month	3-year	10-year	30-year	Aaa [3]	Baa				Primary credit	Adjustment credit	
1953	1.931	....	2.47	2.85	....	3.20	3.74	2.72	....	3.17	....	1.99	....
1954	.953	....	1.63	2.40	....	2.90	3.51	2.37	....	3.05	....	1.60	....
1955	1.753	....	2.47	2.82	....	3.06	3.53	2.53	....	3.16	....	1.89	1.79
1956	2.658	....	3.19	3.18	....	3.36	3.88	2.93	....	3.77	....	2.77	2.73
1957	3.267	....	3.98	3.65	....	3.89	4.71	3.60	....	4.20	....	3.12	3.11
1958	1.839	....	2.84	3.32	....	3.79	4.73	3.56	....	3.83	....	2.15	1.57
1959	3.405	3.832	4.46	4.33	....	4.38	5.05	3.95	....	4.48	....	3.36	3.31
1960	2.93	3.25	3.98	4.12	....	4.41	5.19	3.73	....	4.82	....	3.53	3.21
1961	2.38	2.61	3.54	3.88	....	4.35	5.08	3.46	....	4.50	....	3.00	1.95
1962	2.78	2.91	3.47	3.95	....	4.33	5.02	3.18	....	4.50	....	3.00	2.71
1963	3.16	3.25	3.67	4.00	....	4.26	4.86	3.23	....	4.50	....	3.23	3.18
1964	3.56	3.69	4.03	4.19	....	4.40	4.83	3.22	....	4.50	....	3.55	3.50
1965	3.95	4.05	4.22	4.28	....	4.49	4.87	3.27	....	4.54	....	4.04	4.07
1966	4.88	5.08	5.23	4.93	....	5.13	5.67	3.82	....	5.63	....	4.50	5.11
1967	4.32	4.63	5.03	5.07	....	5.51	6.23	3.98	....	5.63	....	4.19	4.22
1968	5.34	5.47	5.68	5.64	....	6.18	6.94	4.51	....	6.31	....	5.17	5.66
1969	6.68	6.85	7.02	6.67	....	7.03	7.81	5.81	....	7.96	....	5.87	8.21
1970	6.43	6.53	7.29	7.35	....	8.04	9.11	6.51	....	7.91	....	5.95	7.17
1971	4.35	4.51	5.66	6.16	....	7.39	8.56	5.70	7.54	5.73	....	4.88	4.67
1972	4.07	4.47	5.72	6.21	....	7.21	8.16	5.27	7.38	5.25	....	4.50	4.44
1973	7.04	7.18	6.96	6.85	....	7.44	8.24	5.18	8.04	8.03	....	6.45	8.74
1974	7.89	7.93	7.84	7.56	....	8.57	9.50	6.09	9.19	10.81	....	7.83	10.51
1975	5.84	6.12	7.50	7.99	....	8.83	10.61	6.89	9.05	7.86	....	6.25	5.82
1976	4.99	5.27	6.77	7.61	....	8.43	9.75	6.49	8.87	6.84	....	5.50	5.05
1977	5.27	5.52	6.68	7.42	7.75	8.02	8.97	5.56	8.85	6.83	....	5.46	5.54
1978	7.22	7.58	8.29	8.41	8.49	8.73	9.49	5.90	9.64	9.06	....	7.46	7.94
1979	10.05	10.02	9.70	9.43	9.28	9.63	10.69	6.39	11.20	12.67	....	10.29	11.20
1980	11.51	11.37	11.51	11.43	11.27	11.94	13.67	8.51	13.74	15.26	....	11.77	13.35
1981	14.03	13.78	14.46	13.92	13.45	14.17	16.04	11.23	16.63	18.87	....	13.42	16.39
1982	10.69	11.08	12.93	13.01	12.76	13.79	16.11	11.57	16.04	14.85	....	11.01	12.24
1983	8.63	8.75	10.45	11.10	11.18	12.04	13.55	9.47	13.24	10.79	....	8.50	9.09
1984	9.53	9.77	11.92	12.46	12.41	12.71	14.19	10.15	13.88	12.04	....	8.80	10.23
1985	7.47	7.64	9.64	10.62	10.79	11.37	12.72	9.18	12.43	9.93	....	7.69	8.10
1986	5.98	6.03	7.06	7.67	7.78	9.02	10.39	7.38	10.19	8.33	....	6.32	6.80
1987	5.82	6.05	7.68	8.39	8.59	9.38	10.58	7.73	10.21	8.21	....	5.66	6.66
1988	6.69	6.92	8.26	8.85	8.96	9.71	10.83	7.76	10.34	9.32	....	6.20	7.57
1989	8.12	8.04	8.55	8.49	8.45	9.26	10.18	7.24	10.32	10.87	....	6.93	9.21
1990	7.51	7.47	8.26	8.55	8.61	9.32	10.36	7.25	10.13	10.01	....	6.98	8.10
1991	5.42	5.49	6.82	7.86	8.14	8.77	9.80	6.89	9.25	8.46	....	5.45	5.69
1992	3.45	3.57	5.30	7.01	7.67	8.14	8.98	6.41	8.39	6.25	....	3.25	3.52
1993	3.02	3.14	4.44	5.87	6.59	7.22	7.93	5.63	7.31	6.00	....	3.00	3.02
1994	4.29	4.66	6.27	7.09	7.37	7.96	8.62	6.19	8.38	7.15	....	3.60	4.21
1995	5.51	5.59	6.25	6.57	6.88	7.59	8.20	5.95	7.93	8.83	....	5.21	5.83
1996	5.02	5.09	5.99	6.44	6.71	7.37	8.05	5.75	7.81	8.27	....	5.02	5.30
1997	5.07	5.18	6.10	6.35	6.61	7.26	7.86	5.55	7.60	8.44	....	5.00	5.46
1998	4.81	4.85	5.14	5.26	5.58	6.53	7.22	5.12	6.94	8.35	....	4.92	5.35
1999	4.66	4.76	5.49	5.65	5.87	7.04	7.87	5.43	7.44	8.00	....	4.62	4.97
2000	5.85	5.92	6.22	6.03	5.94	7.62	8.36	5.77	8.05	9.23	....	5.73	6.24
2001	3.44	3.39	4.09	5.02	5.49	7.08	7.95	5.19	6.97	6.91	....	3.40	3.88
2002	1.62	1.69	3.10	4.61	5.43	6.49	7.80	5.05	6.54	4.67	....	1.17	1.67
2003	1.01	1.06	2.10	4.01	....	5.67	6.77	4.73	5.83	4.12	2.12	....	1.13
2004	1.38	1.57	2.78	4.27	....	5.63	6.39	4.63	5.84	4.34	2.34	....	1.35
2005	3.16	3.40	3.93	4.29	....	5.24	6.06	4.29	5.87	6.19	4.19	....	3.22
2006	4.73	4.80	4.77	4.80	4.91	5.59	6.48	4.42	6.41	7.96	5.96	....	4.97
2007	4.41	4.48	4.35	4.63	4.84	5.56	6.48	4.42	6.34	8.05	5.86	....	5.02
2008	1.48	1.71	2.24	3.66	4.28	5.63	7.45	4.80	6.03	5.09	2.39	....	1.92
2009	.16	.29	1.43	3.26	4.08	5.31	7.30	4.64	5.04	3.25	.50	....	.16
2010	.14	.20	1.11	3.22	4.25	4.94	6.04	4.16	4.69	3.25	.72	....	.18
2011	.06	.10	.75	2.78	3.91	4.64	5.66	4.29	4.45	3.25	.75	....	.10
2012	.09	.13	.38	1.80	2.92	3.67	4.94	3.14	3.66	3.25	.75	....	.14
2013	.06	.09	.54	2.35	3.45	4.24	5.10	3.96	3.98	3.25	.75	....	.11
2014	.03	.06	.90	2.54	3.34	4.16	4.85	3.78	4.17	3.25	.75	....	.09
2015	.06	.17	1.02	2.14	2.84	3.89	5.00	3.48	3.85	3.26	.76	....	.13
2016	.33	.46	1.00	1.84	2.59	3.67	4.72	3.07	3.65	3.51	1.01	....	.39
2017	.94	1.05	1.58	2.33	2.89	3.74	4.44	3.36	3.99	4.10	1.60	....	1.00
2018	1.94	2.10	2.63	2.91	3.11	3.93	4.80	3.53	4.54	4.91	2.41	....	1.83
2019	2.08	2.07	1.94	2.14	2.58	3.39	4.38	3.38	3.94	5.28	2.78	....	2.16
2020	.38	.39	.42	.89	1.56	2.48	3.60	2.41	3.11	3.54	.64	....	.37
2021	.04	.06	.46	1.45	2.06	2.70	3.39	2.00	2.96	3.25	.25	....	.08
2022	2.04	2.44	3.05	2.95	3.11	4.07	5.07	3.85	5.34	4.86	1.86	....	1.69
2023	5.08	5.08	4.30	3.96	4.09	4.81	5.86	4.31	6.81	8.20	5.20	....	5.03

[1] High bill rate at auction, issue date within period, bank-discount basis. On or after October 28, 1998, data are stop yields from uniform-price auctions. Before that date, they are weighted average yields from multiple-price auctions.

See next page for continuation of table.

Table B–42. Bond yields and interest rates, 1953–2024—*Continued*

[Percent per annum]

Year and month	U.S. Treasury securities: Bills (at auction)[1]: 3-month	U.S. Treasury securities: Bills (at auction)[1]: 6-month	U.S. Treasury securities: Constant maturities[2]: 3-year	U.S. Treasury securities: Constant maturities[2]: 10-year	U.S. Treasury securities: Constant maturities[2]: 30-year	Corporate bonds (Moody's): Aaa[3]	Corporate bonds (Moody's): Baa	High-grade municipal bonds (Standard & Poor's)	Home mortgage yields[4]	Prime rate charged by banks[5]	Discount window (Federal Reserve Bank of New York)[5, 6]: Primary credit	Discount window (Federal Reserve Bank of New York)[5, 6]: Adjustment credit	Federal funds rate[7]
										High-low	High-low	High-low	
2020: Jan	1.53	1.53	1.52	1.76	2.22	2.94	3.77	3.00	3.62	4.75–4.75	2.25–2.25	....	1.55
Feb	1.54	1.50	1.31	1.50	1.97	2.78	3.61	2.66	3.47	4.75–4.75	2.25–2.25	....	1.58
Mar	.46	.45	.50	.87	1.46	3.02	4.29	3.07	3.45	4.75–3.25	2.25–0.25	....	.65
Apr	.15	.17	.28	.66	1.27	2.43	4.13	2.86	3.31	3.25–3.25	0.25–0.25	....	.05
May	.12	.15	.22	.67	1.38	2.49	3.95	2.69	3.23	3.25–3.25	0.25–0.25	....	.05
June	.16	.18	.22	.73	1.49	2.41	3.65	2.69	3.16	3.25–3.25	0.25–0.25	....	.08
July	.13	.15	.17	.62	1.31	2.14	3.31	1.75	3.02	3.25–3.25	0.25–0.25	....	.09
Aug	.10	.12	.16	.65	1.36	2.25	3.27	1.88	2.94	3.25–3.25	0.25–0.25	....	.10
Sept	.11	.12	.16	.68	1.42	2.31	3.36	2.10	2.89	3.25–3.25	0.25–0.25	....	.09
Oct	.10	.11	.19	.79	1.57	2.35	3.44	2.15	2.83	3.25–3.25	0.25–0.25	....	.09
Nov	.09	.10	.22	.87	1.62	2.30	3.30	2.10	2.77	3.25–3.25	0.25–0.25	....	.09
Dec	.09	.09	.19	.93	1.67	2.26	3.16	1.97	2.68	3.25–3.25	0.25–0.25	....	.09
2021: Jan	.09	.09	.20	1.08	1.82	2.45	3.24	1.61	2.74	3.25–3.25	0.25–0.25	....	.09
Feb	.04	.06	.21	1.26	2.04	2.70	3.42	1.13	2.81	3.25–3.25	0.25–0.25	....	.08
Mar	.03	.05	.32	1.61	2.34	3.04	3.74	1.74	3.08	3.25–3.25	0.25–0.25	....	.07
Apr	.02	.04	.35	1.64	2.30	2.90	3.60	1.84	3.06	3.25–3.25	0.25–0.25	....	.07
May	.02	.03	.32	1.62	2.32	2.96	3.62	1.63	2.96	3.25–3.25	0.25–0.25	....	.06
June	.03	.04	.39	1.52	2.16	2.79	3.44	2.16	2.98	3.25–3.25	0.25–0.25	....	.08
July	.05	.05	.40	1.32	1.94	2.57	3.24	2.22	2.87	3.25–3.25	0.25–0.25	....	.10
Aug	.06	.05	.42	1.28	1.92	2.55	3.24	2.38	2.84	3.25–3.25	0.25–0.25	....	.09
Sept	.04	.05	.47	1.37	1.94	2.53	3.23	2.30	2.90	3.25–3.25	0.25–0.25	....	.08
Oct	.05	.06	.67	1.58	2.06	2.68	3.35	2.43	3.07	3.25–3.25	0.25–0.25	....	.08
Nov	.05	.07	.82	1.56	1.94	2.62	3.28	2.30	3.07	3.25–3.25	0.25–0.25	....	.08
Dec	.06	.14	.95	1.47	1.85	2.65	3.30	2.24	3.10	3.25–3.25	0.25–0.25	....	.08
2022: Jan	.14	.31	1.25	1.76	2.10	2.93	3.58	2.47	3.45	3.25–3.25	0.25–0.25	....	.08
Feb	.34	.64	1.65	1.93	2.25	3.25	3.97	2.78	3.76	3.25–3.25	0.25–0.25	....	.08
Mar	.46	.82	2.09	2.13	2.41	3.43	4.29	3.22	4.17	3.50–3.25	0.50–0.25	....	.20
Apr	.80	1.24	2.72	2.75	2.81	3.76	4.66	3.74	4.98	3.50–3.50	0.50–0.50	....	.33
May	.98	1.46	2.79	2.90	3.07	4.13	5.12	4.06	5.23	4.00–3.50	1.00–0.50	....	.77
June	1.48	2.07	3.15	3.14	3.25	4.24	5.27	4.01	5.52	4.75–4.00	1.75–1.00	....	1.21
July	2.24	2.75	3.03	2.90	3.10	4.06	5.21	3.96	5.41	5.50–4.75	2.50–1.75	....	1.68
Aug	2.61	3.01	3.23	2.90	3.13	4.07	5.15	3.99	5.22	5.50–5.50	2.50–2.50	....	2.33
Sept	3.09	3.53	3.88	3.52	3.56	4.59	5.69	4.53	6.11	6.25–5.50	3.25–2.50	....	2.56
Oct	3.67	4.13	4.38	3.98	4.04	5.10	6.26	4.70	6.90	6.25–6.25	3.25–3.25	....	3.08
Nov	4.14	4.47	4.34	3.89	4.00	4.90	6.07	4.52	6.81	7.00–6.25	4.00–3.25	....	3.78
Dec	4.29	4.58	4.05	3.62	3.66	4.43	5.59	4.19	6.36	7.50–7.00	4.50–4.00	....	4.10
2023: Jan	4.53	4.68	3.91	3.53	3.66	4.40	5.50	4.03	6.27	7.50–7.50	4.50–4.50	....	4.33
Feb	4.65	4.80	4.23	3.75	3.80	4.56	5.59	4.18	6.26	7.75–7.50	4.75–4.50	....	4.57
Mar	4.72	4.78	4.09	3.66	3.77	4.60	5.71	4.19	6.54	8.00–7.75	5.00–4.75	....	4.65
Apr	4.98	4.80	3.76	3.46	3.68	4.47	5.53	4.06	6.34	8.00–8.00	5.00–5.00	....	4.83
May	5.14	4.99	3.82	3.57	3.86	4.67	5.77	4.20	6.43	8.25–8.00	5.25–5.00	....	5.06
June	5.20	5.22	4.27	3.75	3.87	4.65	5.75	4.14	6.71	8.25–8.25	5.25–5.25	....	5.08
July	5.25	5.26	4.47	3.90	3.96	4.66	5.74	4.19	6.84	8.50–8.25	5.50–5.25	....	5.12
Aug	5.30	5.29	4.59	4.17	4.28	4.95	6.02	4.43	7.07	8.50–8.50	5.50–5.50	....	5.33
Sept	5.32	5.30	4.74	4.38	4.47	5.13	6.16	4.58	7.20	8.50–8.50	5.50–5.50	....	5.33
Oct	5.33	5.33	4.89	4.80	4.95	5.61	6.63	4.99	7.62	8.50–8.50	5.50–5.50	....	5.33
Nov	5.29	5.26	4.64	4.50	4.66	5.28	6.29	4.62	7.44	8.50–8.50	5.50–5.50	....	5.33
Dec	5.26	5.15	4.19	4.02	4.14	4.74	5.64	4.09	6.82	8.50–8.50	5.50–5.50	....	5.33
2024: Jan	5.23	5.02	4.11	4.06	4.26	4.87	5.68	4.24	6.64	8.50–8.50	5.50–5.50	....	5.33
Feb	5.23	5.07	4.33	4.21	4.38	5.03	5.77	4.16	6.78	8.50–8.50	5.50–5.50	....	5.33
Mar	5.24	5.11	4.38	4.21	4.36	5.01	5.75	4.17	6.82	8.50–8.50	5.50–5.50	....	5.33
Apr	5.24	5.14	4.71	4.54	4.66	5.28	6.00	4.36	6.99	8.50–8.50	5.50–5.50	....	5.33
May	5.25	5.16	4.66	4.48	4.62	5.25	5.95	4.28	7.06	8.50–8.50	5.50–5.50	....	5.33
June	5.25	5.15	4.50	4.31	4.44	5.13	5.82	4.21	6.92	8.50–8.50	5.50–5.50	....	5.33
July	5.21	5.04	4.29	4.25	4.46	5.12	5.84	4.21	6.85	8.50–8.50	5.50–5.50	....	5.33
Aug	5.07	4.78	3.79	3.87	4.15	4.87	5.60	4.16	6.50	8.50–8.50	5.50–5.50	....	5.33
Sept	4.79	4.46	3.51	3.72	4.04	4.68	5.42	4.09	6.18	8.50–8.00	5.50–5.00	....	5.13
Oct	4.51	4.29	3.90	4.10	4.38	4.95	5.63	4.21	6.43	8.00–8.00	5.00–5.00	....	4.83
Nov	4.42	4.31	4.21	4.36	4.54	5.14	5.78	4.19	6.81	8.00–7.75	5.00–4.75	....	4.64

[2] Yields on the more actively traded issues adjusted to constant maturities by the Department of the Treasury. The 30-year Treasury constant maturity series was discontinued on February 18, 2002, and reintroduced on February 9, 2006.
[3] Beginning with December 7, 2001, data for corporate Aaa series are industrial bonds only.
[4] Contract interest rate on commitments for 30-year first-lien prime conventional conforming home purchase mortgage with a loan-to-value of 80 percent.
[5] For monthly data, high and low for the period.
[6] Primary credit replaced adjustment credit as the Federal Reserve's principal discount window lending program effective January 9, 2003.
[7] Beginning March 1, 2016, the daily effective federal funds rate is a volume-weighted median of transaction-level data collected from depository institutions in the Report of Selected Money Market Rates (FR 2420). Between July 21, 1975 and February 29, 2016, the daily effective rate was a volume-weighted mean of rates on brokered trades. Prior to that, the daily effective rate was the rate considered most representative of the day's transactions, usually the one at which most transactions occurred.

Sources: Department of the Treasury, Board of Governors of the Federal Reserve System, Federal Home Loan Mortgage Corporation, Moody's Investors Service, Bloomberg, and Standard & Poor's.

TABLE B–43. Mortgage debt outstanding by type of property and of financing, 1964–2024

[Billions of dollars]

End of year or quarter	All properties	Farm properties	Nonfarm properties: Total	Nonfarm properties: 1- to 4-family houses	Nonfarm properties: Multi-family properties	Nonfarm properties: Commercial properties	Nonfarm properties by type of mortgage: Government underwritten: Total [1]	Government underwritten: 1- to 4-family houses: Total	Government underwritten: 1- to 4-family houses: FHA-insured	Government underwritten: 1- to 4-family houses: VA-guaranteed	Conventional [2]: Total	Conventional [2]: 1- to 4-family houses
1964	307.0	18.9	288.1	202.3	34.6	51.2	77.2	69.2	38.3	30.9	210.9	133.1
1965	334.5	21.2	313.3	219.4	38.2	55.7	81.2	73.1	42.0	31.1	232.2	146.3
1966	358.5	23.1	335.5	232.7	41.3	61.5	84.1	76.1	44.8	31.3	251.4	156.7
1967	382.1	25.0	357.0	246.0	44.8	66.2	88.2	79.9	47.4	32.5	268.9	166.0
1968	411.4	27.2	384.2	262.9	48.3	73.0	93.4	84.4	50.6	33.8	290.8	178.5
1969	439.9	29.0	410.9	278.7	53.2	79.1	100.2	90.2	54.5	35.7	310.7	188.5
1970	469.4	30.5	438.9	292.2	60.1	86.5	109.2	97.3	59.9	37.3	329.6	195.0
1971	517.9	32.4	485.5	318.4	70.1	97.0	120.7	105.2	65.7	39.5	364.8	213.2
1972	589.8	35.4	554.4	357.4	82.9	114.2	131.1	113.0	68.2	44.7	423.3	244.4
1973	666.5	39.8	626.7	399.8	93.2	133.7	135.0	116.2	66.2	50.0	491.7	283.6
1974	728.4	44.9	683.5	435.2	100.0	148.3	140.2	121.3	65.1	56.2	543.3	313.9
1975	785.6	49.9	735.7	474.0	100.7	161.0	147.0	127.7	66.1	61.6	588.7	346.3
1976	870.5	55.4	815.1	535.0	105.9	174.2	154.0	133.5	66.5	67.0	661.1	401.5
1977	999.2	63.9	935.3	627.7	114.3	193.3	161.7	141.6	68.0	73.6	773.5	486.1
1978	1,150.7	72.8	1,077.9	738.3	125.2	214.5	176.4	153.4	71.4	82.0	901.5	584.9
1979	1,317.0	86.8	1,230.3	855.8	135.0	239.4	199.0	172.9	81.0	92.0	1,031.3	682.8
1980	1,457.8	97.5	1,360.3	957.9	142.5	259.9	225.1	195.2	93.6	101.6	1,135.3	762.7
1981	1,579.5	107.2	1,472.3	1,030.2	142.4	299.7	238.9	207.6	101.3	106.2	1,233.4	822.6
1982	1,661.3	111.3	1,550.0	1,070.2	146.1	333.7	248.9	217.9	108.0	109.9	1,301.1	852.3
1983	1,850.6	113.7	1,736.9	1,186.3	161.2	389.4	279.8	248.8	127.4	121.4	1,457.1	937.4
1984	2,092.0	112.4	1,979.6	1,321.5	186.1	471.9	294.8	265.9	136.7	129.1	1,684.7	1,055.7
1985	2,368.5	94.1	2,274.5	1,526.9	205.9	541.7	328.3	288.8	153.0	135.8	1,946.1	1,238.1
1986	2,655.6	84.1	2,571.5	1,730.1	239.4	602.0	370.5	328.6	185.5	143.1	2,201.0	1,401.5
1987	2,958.0	75.8	2,882.2	1,928.9	258.7	694.5	431.4	387.9	235.5	152.4	2,450.7	1,541.0
1988	3,277.1	70.8	3,206.2	2,163.3	275.1	767.9	459.7	414.2	258.8	155.4	2,746.6	1,749.1
1989	3,529.0	68.8	3,460.2	2,370.0	287.6	802.6	486.8	440.1	282.8	157.3	2,973.4	1,929.9
1990	3,785.7	67.6	3,718.1	2,607.4	288.1	822.6	517.9	470.9	310.9	160.0	3,200.1	2,136.5
1991	3,937.3	67.5	3,869.8	2,775.2	284.8	809.7	537.2	493.3	330.6	162.7	3,332.6	2,281.9
1992	4,047.3	67.9	3,979.4	2,942.6	271.7	765.2	533.3	489.8	326.0	163.8	3,446.1	2,452.9
1993	4,177.7	68.4	4,109.3	3,101.6	268.5	739.1	513.4	469.5	303.2	166.2	3,595.9	2,632.2
1994	4,342.3	69.9	4,272.4	3,279.1	269.3	724.0	559.3	514.2	336.8	177.3	3,713.0	2,764.9
1995	4,528.8	71.7	4,457.1	3,447.0	275.3	734.8	584.3	537.1	352.3	184.7	3,872.8	2,909.9
1996	4,808.9	74.4	4,734.5	3,683.3	287.6	763.6	620.3	571.2	379.2	192.0	4,114.2	3,112.1
1997	5,121.5	78.5	5,043.0	3,918.0	299.6	825.4	656.7	605.7	405.7	200.0	4,386.3	3,312.3
1998	5,609.7	83.1	5,526.6	4,276.4	335.4	914.7	674.0	623.8	417.9	205.9	4,852.5	3,652.6
1999	6,216.6	87.2	6,129.4	4,701.7	376.1	1,051.5	731.5	678.8	462.3	216.5	5,397.9	4,023.0
2000	6,773.3	84.7	6,688.5	5,125.5	405.4	1,157.6	773.1	719.9	499.9	220.1	5,915.4	4,405.5
2001	7,456.6	88.5	7,368.0	5,678.5	447.0	1,242.4	772.7	718.5	497.4	221.2	6,595.4	4,960.0
2002	8,365.4	95.4	8,270.0	6,434.9	487.3	1,347.8	759.3	704.0	486.2	217.7	7,510.7	5,730.9
2003	9,379.6	83.2	9,296.5	7,264.7	563.8	1,468.0	709.2	653.3	438.7	214.6	8,587.3	6,611.4
2004	10,663.7	95.7	10,568.0	8,297.5	614.2	1,656.3	660.2	604.1	398.1	206.0	9,907.8	7,693.4
2005	12,129.5	104.8	12,024.8	9,454.0	679.3	1,891.5	606.6	550.4	348.4	202.0	11,418.2	8,903.6
2006	13,544.6	108.0	13,436.6	10,536.9	723.1	2,176.5	600.2	543.5	336.9	206.6	12,836.4	9,993.4
2007	14,632.9	112.7	14,520.2	11,260.5	817.9	2,441.7	609.2	552.6	342.6	210.0	13,911.0	10,707.9
2008	14,710.5	134.7	14,575.8	11,157.8	859.1	2,559.0	807.2	750.7	534.0	216.7	13,768.6	10,407.0
2009	14,465.4	146.0	14,319.4	10,967.4	868.6	2,483.3	1,005.0	944.3	752.6	191.7	13,314.3	10,023.1
2010	13,913.2	154.1	13,759.1	10,530.0	868.9	2,360.3	1,227.6	1,156.1	934.4	221.7	12,531.5	9,373.9
2011	13,586.0	167.2	13,418.8	10,286.8	868.4	2,263.7	1,368.6	1,291.3	1,036.0	255.3	12,050.2	8,995.5
2012	13,346.8	173.4	13,173.4	10,051.3	894.9	2,227.2	1,544.8	1,459.7	1,165.4	294.2	11,628.5	8,591.6
2013	13,350.0	185.2	13,164.8	9,957.4	940.5	2,266.9	3,927.2	3,832.6	3,480.8	351.8	9,237.6	6,124.8
2014	13,490.1	196.8	13,293.3	9,933.2	1,008.0	2,352.1	4,130.9	4,028.1	3,615.3	412.8	9,162.4	5,905.1
2015	13,876.4	208.8	13,667.6	10,067.3	1,113.8	2,486.6	4,432.7	4,326.7	3,851.3	475.4	9,234.9	5,740.6
2016	14,319.2	226.0	14,093.2	10,265.4	1,228.4	2,599.4	4,764.8	4,654.9	4,106.9	548.1	9,328.4	5,610.4
2017	14,895.3	236.2	14,659.1	10,581.2	1,355.1	2,722.8	5,079.1	4,958.2	4,344.3	613.9	9,580.0	5,623.0
2018	15,444.2	245.8	15,198.4	10,880.7	1,478.9	2,838.8	5,380.0	5,246.5	4,562.3	684.2	9,818.4	5,634.2
2019	16,020.8	267.9	15,752.9	11,165.6	1,615.1	2,972.3	5,664.1	5,522.9	4,788.6	734.3	10,088.8	5,642.6
2020	16,762.4	288.6	16,473.8	11,631.9	1,743.7	3,098.2	6,053.8	5,908.0	5,108.2	799.7	10,420.0	5,724.0
2021	18,281.6	324.4	17,957.2	12,762.9	1,896.8	3,297.5	6,480.3	6,325.5	5,442.1	883.4	11,476.9	6,437.4
2022	19,514.0	334.8	19,179.2	13,571.7	2,058.9	3,548.6	6,784.7	6,626.5	5,670.9	955.5	12,394.5	6,945.2
2023	20,123.1	355.0	19,768.1	13,951.7	2,162.7	3,653.7	7,053.2	6,889.9	5,884.1	1,005.8	12,714.9	7,061.8
2023: I	19,657.3	339.8	19,317.5	13,636.5	2,091.5	3,589.5	6,839.1	6,679.1	5,711.7	967.4	12,478.4	6,957.4
II	19,803.3	344.8	19,458.4	13,733.3	2,116.1	3,609.0	6,909.2	6,747.5	5,767.8	979.7	12,549.3	6,985.9
III	19,976.5	349.9	19,626.6	13,855.1	2,139.4	3,632.1	6,687.8	6,525.2	5,530.5	994.7	12,938.8	7,329.9
IV	20,123.1	355.0	19,768.1	13,951.7	2,162.7	3,653.7	7,053.2	6,889.9	5,884.1	1,005.8	12,714.9	7,061.8
2024: I	20,210.0	360.5	19,849.5	13,989.6	2,186.3	3,673.5	7,115.1	6,951.2	5,935.8	1,015.5	12,734.4	7,038.4
II p	20,347.4	366.0	19,981.4	14,094.0	2,206.1	3,681.3	7,191.2	7,026.0	5,996.5	1,029.5	12,790.2	7,068.0

[1] Includes Federal Housing Administration (FHA)–insured multi-family properties, not shown separately.
[2] Derived figures. Total includes multi-family and commercial properties with conventional mortgages, not shown separately.

Source: Board of Governors of the Federal Reserve System, based on data from various Government and private organizations.

TABLE B–44. Mortgage debt outstanding by holder, 1964–2024

[Billions of dollars]

End of year or quarter	Total	Major financial institutions			Other holders		
		Total	Depository institutions [1, 2]	Life insurance companies	Federal and related agencies [3]	Mortgage pools or trusts [4]	Individuals and others
1964	307.0	238.8	183.6	55.2	11.6	0.6	56.0
1965	334.5	262.4	202.4	60.0	12.7	.9	58.6
1966	358.5	279.5	214.8	64.6	16.2	1.3	61.5
1967	382.1	296.4	228.9	67.5	18.9	2.0	64.7
1968	411.4	317.3	247.3	70.0	22.6	2.5	69.0
1969	439.9	336.6	264.6	72.0	27.9	3.2	72.2
1970	469.4	352.9	278.5	74.4	33.6	4.8	78.2
1971	517.9	389.2	313.7	75.5	36.8	9.5	82.3
1972	589.8	443.8	366.8	76.9	40.1	14.4	91.5
1973	666.5	500.7	419.4	81.4	46.6	18.0	101.1
1974	728.4	539.3	453.1	86.2	60.7	21.5	106.9
1975	785.6	576.1	486.9	89.2	72.6	28.5	108.4
1976	870.5	640.7	549.1	91.6	76.0	40.7	113.2
1977	999.2	735.3	638.4	96.8	83.7	56.8	123.4
1978	1,150.7	837.5	731.3	106.2	100.2	70.4	142.7
1979	1,317.0	928.6	810.2	118.4	121.2	94.8	172.4
1980	1,457.8	988.0	857.0	131.1	142.9	114.0	213.0
1981	1,579.5	1,034.1	896.4	137.7	160.4	129.0	256.0
1982	1,661.3	1,019.6	877.6	142.0	176.9	178.5	286.3
1983	1,850.6	1,108.4	957.4	151.0	188.5	244.8	309.0
1984	2,092.0	1,248.2	1,091.5	156.7	201.6	300.0	342.2
1985	2,368.5	1,368.7	1,196.9	171.8	213.0	392.4	394.4
1986	2,655.6	1,483.3	1,289.5	193.8	202.1	549.5	420.6
1987	2,958.0	1,635.2	1,419.1	216.1	188.5	700.8	433.4
1988	3,277.1	1,803.0	1,564.9	238.0	192.5	785.7	495.9
1989	3,529.0	1,902.9	1,643.2	259.6	197.8	922.2	506.1
1990	3,785.7	1,925.1	1,651.0	274.1	239.0	1,085.9	535.7
1991	3,937.3	1,852.7	1,586.7	266.1	266.0	1,269.6	549.0
1992	4,047.3	1,777.0	1,528.5	248.5	286.1	1,440.0	544.3
1993	4,177.7	1,790.5	1,560.4	230.1	311.9	1,561.1	514.2
1994	4,342.3	1,838.5	1,616.7	221.8	307.8	1,696.9	499.1
1995	4,528.8	1,910.8	1,691.0	219.9	303.9	1,812.0	502.0
1996	4,808.9	1,990.7	1,776.2	214.6	291.9	1,989.1	537.1
1997	5,121.5	2,090.5	1,877.9	212.6	284.4	2,166.5	580.1
1998	5,609.7	2,201.6	1,981.3	220.2	291.5	2,487.1	629.5
1999	6,216.6	2,401.6	2,163.6	238.0	319.6	2,832.3	663.1
2000	6,773.3	2,625.8	2,383.1	242.8	339.9	3,097.5	710.1
2001	7,456.6	2,797.4	2,547.9	249.6	372.0	3,532.4	754.7
2002	8,365.4	3,096.2	2,839.3	256.8	432.3	3,978.4	858.6
2003	9,379.6	3,394.9	3,126.4	268.5	694.1	4,330.3	960.3
2004	10,663.7	3,934.1	3,653.0	281.1	703.2	4,834.5	1,191.9
2005	12,129.5	4,403.4	4,110.8	292.6	665.4	5,710.0	1,350.8
2006	13,544.6	4,792.3	4,479.8	312.4	687.5	6,629.5	1,435.4
2007	14,632.9	5,074.1	4,738.6	335.5	725.2	7,434.4	1,399.1
2008	14,710.5	5,063.9	4,711.8	352.1	791.3	7,592.7	1,262.5
2009	14,465.4	4,803.8	4,467.6	336.2	800.5	7,649.8	1,211.3
2010	13,913.2	4,599.6	4,271.8	327.9	5,121.9	3,108.4	1,083.4
2011	13,586.0	4,461.3	4,117.9	343.4	5,031.7	3,034.3	1,058.7
2012	13,346.8	4,449.3	4,092.5	356.8	4,933.7	2,947.6	1,016.2
2013	13,350.0	4,424.5	4,047.0	377.5	4,992.3	2,773.5	1,159.8
2014	13,490.1	4,558.8	4,159.2	399.6	4,987.0	2,742.7	1,201.7
2015	13,876.4	4,817.2	4,373.7	443.5	5,036.4	2,793.6	1,229.2
2016	14,319.2	5,111.2	4,631.3	479.9	5,146.8	2,826.6	1,234.6
2017	14,895.3	5,324.2	4,801.5	522.8	5,313.4	2,971.5	1,286.1
2018	15,444.2	5,505.2	4,919.5	585.7	5,456.9	3,143.7	1,338.5
2019	16,020.8	5,728.9	5,090.4	638.5	5,634.5	3,255.3	1,402.2
2020	16,762.4	5,793.0	5,131.0	662.0	6,269.6	3,261.6	1,438.2
2021	18,281.6	5,994.5	5,285.0	709.5	7,057.2	3,391.0	1,838.9
2022	19,514.0	6,599.1	5,819.7	779.4	7,491.5	3,587.9	1,865.5
2023	20,123.1	6,851.9	6,027.3	824.6	7,603.7	3,795.5	1,872.0
2023: I	19,657.3	6,683.2	5,892.3	790.8	7,491.6	3,630.2	1,852.3
II	19,803.3	6,746.0	5,941.7	804.3	7,526.9	3,677.6	1,852.8
III	19,976.5	6,803.1	5,986.2	816.9	7,574.4	3,745.3	1,853.7
IV	20,123.1	6,851.9	6,027.3	824.6	7,603.7	3,795.5	1,872.0
2024: I	20,210.0	6,882.3	6,045.7	836.6	7,609.2	3,850.9	1,867.6
II [p]	20,347.4	6,931.9	6,081.7	850.3	7,637.1	3,896.5	1,881.9

[1] Includes savings banks and savings and loan associations. Data reported by Federal Savings and Loan Insurance Corporation–insured institutions include loans in process for 1987 and exclude loans in process beginning with 1988.

[2] Includes loans held by nondeposit trust companies but not loans held by bank trust departments.

[3] Includes Government National Mortgage Association (GNMA or Ginnie Mae), Federal Housing Administration, Veterans Administration, Farmers Home Administration (FmHA), Federal Deposit Insurance Corporation, Resolution Trust Corporation (through 1995), and in earlier years Reconstruction Finance Corporation, Homeowners Loan Corporation, Federal Farm Mortgage Corporation, and Public Housing Administration. Also includes U.S.-sponsored agencies such as Federal National Mortgage Association (FNMA or Fannie Mae), Federal Land Banks, Federal Home Loan Mortgage Corporation (FHLMC or Freddie Mac), Federal Agricultural Mortgage Corporation (Farmer Mac, beginning 1994), Federal Home Loan Banks (beginning 1997), and mortgage pass-through securities issued or guaranteed by GNMA, FHLMC, FNMA, FmHA, or Farmer Mac. Other U.S. agencies (amounts small or current separate data not readily available) included with “individuals and others.”

[4] Includes private mortgage pools.

Source: Board of Governors of the Federal Reserve System, based on data from various Government and private organizations.

Government Finance

TABLE B–45. Federal receipts, outlays, surplus or deficit, and debt, fiscal years 1960–2025

[Billions of dollars; fiscal years]

Fiscal year or period	Total			On-budget			Off-budget			Federal debt (end of period)		Addendum: Gross domestic product
	Receipts	Outlays	Surplus or deficit (–)	Receipts	Outlays	Surplus or deficit (–)	Receipts	Outlays	Surplus or deficit (–)	Gross Federal	Held by the public	
1960	92.5	92.2	0.3	81.9	81.3	0.5	10.6	10.9	–0.2	290.5	236.8	534.3
1961	94.4	97.7	–3.3	82.3	86.0	–3.8	12.1	11.7	.4	292.6	238.4	546.6
1962	99.7	106.8	–7.1	87.4	93.3	–5.9	12.3	13.5	–1.3	302.9	248.0	585.7
1963	106.6	111.3	–4.8	92.4	96.4	–4.0	14.2	15.0	–.8	310.3	254.0	618.2
1964	112.6	118.5	–5.9	96.2	102.8	–6.5	16.4	15.7	.6	316.1	256.8	661.7
1965	116.8	118.2	–1.4	100.1	101.7	–1.6	16.7	16.5	.2	322.3	260.8	709.3
1966	130.8	134.5	–3.7	111.7	114.8	–3.1	19.1	19.7	–.6	328.5	263.7	780.5
1967	148.8	157.5	–8.6	124.4	137.0	–12.6	24.4	20.4	4.0	340.4	266.6	836.5
1968	153.0	178.1	–25.2	128.1	155.8	–27.7	24.9	22.3	2.6	368.7	289.5	897.6
1969	186.9	183.6	3.2	157.9	158.4	–.5	29.0	25.2	3.7	365.8	278.1	980.3
1970	192.8	195.6	–2.8	159.3	168.0	–8.7	33.5	27.6	5.9	380.9	283.2	1,046.7
1971	187.1	210.2	–23.0	151.3	177.3	–26.1	35.8	32.8	3.0	408.2	303.0	1,116.6
1972	207.3	230.7	–23.4	167.4	193.5	–26.1	39.9	37.2	2.7	435.9	322.4	1,216.3
1973	230.8	245.7	–14.9	184.7	200.0	–15.2	46.1	45.7	.3	466.3	340.9	1,352.7
1974	263.2	269.4	–6.1	209.3	216.5	–7.2	53.9	52.9	1.1	483.9	343.7	1,482.9
1975	279.1	332.3	–53.2	216.6	270.8	–54.1	62.5	61.6	.9	541.9	394.7	1,606.9
1976	298.1	371.8	–73.7	231.7	301.1	–69.4	66.4	70.7	–4.3	629.0	477.4	1,786.1
Transition quarter	81.2	96.0	–14.7	63.2	77.3	–14.1	18.0	18.7	–.7	643.6	495.5	471.7
1977	355.6	409.2	–53.7	278.7	328.7	–49.9	76.8	80.5	–3.7	706.4	549.1	2,024.3
1978	399.6	458.7	–59.2	314.2	369.6	–55.4	85.4	89.2	–3.8	776.6	607.1	2,273.5
1979	463.3	504.0	–40.7	365.3	404.9	–39.6	98.0	99.1	–1.1	829.5	640.3	2,565.6
1980	517.1	590.9	–73.8	403.9	477.0	–73.1	113.2	113.9	–.7	909.0	711.9	2,791.9
1981	599.3	678.2	–79.0	469.1	543.0	–73.9	130.2	135.3	–5.1	994.8	789.4	3,133.2
1982	617.8	745.7	–128.0	474.3	594.9	–120.6	143.5	150.9	–7.4	1,137.3	924.6	3,313.4
1983	600.6	808.4	–207.8	453.2	660.9	–207.7	147.3	147.4	–.1	1,371.7	1,137.3	3,536.0
1984	666.4	851.8	–185.4	500.4	685.6	–185.3	166.1	166.2	–.1	1,564.6	1,307.0	3,949.2
1985	734.0	946.3	–212.3	547.9	769.4	–221.5	186.2	176.9	9.2	1,817.4	1,507.3	4,265.1
1986	769.2	990.4	–221.2	568.9	806.8	–237.9	200.2	183.5	16.7	2,120.5	1,740.6	4,526.3
1987	854.3	1,004.0	–149.7	640.9	809.2	–168.4	213.4	194.8	18.6	2,346.0	1,889.8	4,767.7
1988	909.2	1,064.4	–155.2	667.7	860.0	–192.3	241.5	204.4	37.1	2,601.1	2,051.6	5,138.6
1989	991.1	1,143.7	–152.6	727.4	932.8	–205.4	263.7	210.9	52.8	2,867.8	2,190.7	5,554.7
1990	1,032.0	1,253.0	–221.0	750.3	1,027.9	–277.6	281.7	225.1	56.6	3,206.3	2,411.6	5,898.8
1991	1,055.0	1,324.2	–269.2	761.1	1,082.5	–321.4	293.9	241.7	52.2	3,598.2	2,689.0	6,093.2
1992	1,091.2	1,381.5	–290.3	788.8	1,129.2	–340.4	302.4	252.3	50.1	4,001.8	2,999.7	6,416.3
1993	1,154.3	1,409.4	–255.1	842.4	1,142.8	–300.4	311.9	266.6	45.3	4,351.0	3,248.4	6,775.3
1994	1,258.6	1,461.8	–203.2	923.5	1,182.4	–258.8	335.0	279.4	55.7	4,643.3	3,433.1	7,176.9
1995	1,351.8	1,515.7	–164.0	1,000.7	1,227.1	–226.4	351.1	288.7	62.4	4,920.6	3,604.4	7,560.4
1996	1,453.1	1,560.5	–107.4	1,085.6	1,259.6	–174.0	367.5	300.9	66.6	5,181.5	3,734.1	7,951.3
1997	1,579.2	1,601.1	–21.9	1,187.2	1,290.5	–103.2	392.0	310.6	81.4	5,369.2	3,772.3	8,451.0
1998	1,721.7	1,652.5	69.3	1,305.9	1,335.9	–29.9	415.8	316.6	99.2	5,478.2	3,721.1	8,930.8
1999	1,827.5	1,701.8	125.6	1,383.0	1,381.1	1.9	444.5	320.8	123.7	5,605.5	3,632.4	9,479.6
2000	2,025.2	1,789.0	236.2	1,544.6	1,458.2	86.4	480.6	330.8	149.8	5,628.7	3,409.8	10,117.1
2001	1,991.1	1,862.8	128.2	1,483.6	1,516.0	–32.4	507.5	346.8	160.7	5,769.9	3,319.6	10,525.7
2002	1,853.1	2,010.9	–157.8	1,337.8	1,655.2	–317.4	515.3	355.7	159.7	6,198.4	3,540.4	10,828.9
2003	1,782.3	2,159.9	–377.6	1,258.5	1,796.9	–538.4	523.8	363.0	160.8	6,760.0	3,913.4	11,278.8
2004	1,880.1	2,292.8	–412.7	1,345.4	1,913.3	–568.0	534.7	379.5	155.2	7,354.7	4,295.5	12,028.4
2005	2,153.6	2,472.0	–318.3	1,576.1	2,069.7	–493.6	577.5	402.2	175.3	7,905.3	4,592.2	12,840.0
2006	2,406.9	2,655.1	–248.2	1,798.5	2,233.0	–434.5	608.4	422.1	186.3	8,451.4	4,829.0	13,636.8
2007	2,568.0	2,728.7	–160.7	1,932.9	2,275.0	–342.2	635.1	453.6	181.5	8,950.7	5,035.1	14,305.4
2008	2,524.0	2,982.5	–458.6	1,865.9	2,507.8	–641.8	658.0	474.8	183.3	9,986.1	5,803.1	14,796.6
2009	2,105.0	3,517.7	–1,412.7	1,451.0	3,000.7	–1,549.7	654.0	517.0	137.0	11,875.9	7,544.7	14,467.3
2010	2,162.7	3,457.1	–1,294.4	1,531.0	2,902.4	–1,371.4	631.7	554.7	77.0	13,528.8	9,018.9	14,884.4
2011	2,303.5	3,603.1	–1,299.6	1,737.7	3,104.5	–1,366.8	565.8	498.6	67.2	14,764.2	10,128.2	15,466.5
2012	2,450.0	3,526.6	–1,076.6	1,880.5	3,019.0	–1,138.5	569.5	507.6	61.9	16,050.9	11,281.1	16,109.4
2013	2,775.1	3,454.9	–679.8	2,101.8	2,821.1	–719.2	673.3	633.8	39.5	16,719.4	11,982.7	16,687.8
2014	3,021.5	3,506.3	–484.8	2,285.9	2,800.2	–514.3	735.6	706.1	29.5	17,794.5	12,779.9	17,428.1
2015	3,249.9	3,691.9	–442.0	2,479.5	2,948.8	–469.3	770.4	743.1	27.3	18,120.1	13,116.7	18,164.3
2016	3,268.0	3,852.6	–584.7	2,457.8	3,077.9	–620.2	810.2	774.7	35.5	19,539.5	14,167.6	18,641.3
2017	3,316.2	3,981.6	–665.5	2,465.6	3,180.4	–714.9	850.6	801.2	49.4	20,205.7	14,665.4	19,375.2
2018	3,329.9	4,109.0	–779.1	2,475.2	3,260.4	–785.2	854.7	848.6	6.2	21,462.3	15,749.6	20,436.3
2019	3,463.4	4,447.0	–983.6	2,549.1	3,540.3	–991.3	914.3	906.6	7.7	22,669.5	16,800.7	21,275.3
2020	3,421.2	6,553.6	–3,132.5	2,455.7	5,598.0	–3,142.3	965.4	955.6	9.8	26,902.5	21,016.7	21,292.4
2021	4,047.1	6,822.5	–2,775.4	3,094.8	5,818.6	–2,723.8	952.3	1,003.8	–51.5	28,385.6	22,284.0	22,936.5
2022	4,897.3	6,273.3	–1,375.9	3,831.4	5,192.1	–1,360.7	1,066.0	1,081.2	–15.2	30,838.6	24,253.4	25,305.7
2023	4,440.9	6,134.7	–1,693.7	3,247.2	4,913.6	–1,666.4	1,193.8	1,221.1	–27.3	32,989.0	26,235.6	26,973.8
2024 (estimates) [1]	5,001.1	6,874.6	–1,873.5	3,742.0	5,559.0	–1,817.0	1,259.1	1,315.6	–56.5	35,166.2	28,201.3	28,445.1
2025 (estimates) [1]	5,561.6	7,439.3	–1,877.6	4,255.3	6,035.5	–1,780.2	1,306.4	1,403.8	–97.4	37,271.7	30,102.4	29,744.0

[1] Estimates from *Mid-Session Review*, Budget of the U.S. Government, Fiscal Year 2025, issued July 2024.

Note: Fiscal years through 1976 were on a July 1–June 30 basis; beginning with October 1976 (fiscal year 1977), the fiscal year is on an October 1–September 30 basis. The transition quarter is the three-month period from July 1, 1976 through September 30, 1976.

See *Budget of the United States Government, Fiscal Year 2025*, for additional information.

Sources: Department of Commerce (Bureau of Economic Analysis), Department of the Treasury, and Office of Management and Budget.

Table B–46. Federal receipts, outlays, surplus or deficit, and debt, as percent of gross domestic product, fiscal years 1954–2025

[Percent; fiscal years]

Fiscal year or period	Receipts	Outlays		Surplus or deficit (–)	Federal debt (end of period)	
		Total	National defense		Gross Federal	Held by public
1954	18.0	18.3	12.7	–0.3	70.0	58.0
1955	16.1	16.8	10.5	–.7	67.5	55.8
1956	17.0	16.1	9.7	.9	62.2	50.7
1957	17.3	16.5	9.8	.7	58.8	47.3
1958	16.8	17.4	9.9	–.6	59.1	47.8
1959	15.7	18.3	9.7	–2.5	57.0	46.5
1960	17.3	17.3	9.0	.1	54.4	44.3
1961	17.3	17.9	9.1	–.6	53.5	43.6
1962	17.0	18.2	8.9	–1.2	51.7	42.3
1963	17.2	18.0	8.6	–.8	50.2	41.1
1964	17.0	17.9	8.3	–.9	47.8	38.8
1965	16.5	16.7	7.1	–.2	45.4	36.8
1966	16.8	17.2	7.4	–.5	42.1	33.8
1967	17.8	18.8	8.5	–1.0	40.7	31.9
1968	17.0	19.8	9.1	–2.8	41.1	32.3
1969	19.1	18.7	8.4	.3	37.3	28.4
1970	18.4	18.7	7.8	–.3	36.4	27.1
1971	16.8	18.8	7.1	–2.1	36.6	27.1
1972	17.0	19.0	6.5	–1.9	35.8	26.5
1973	17.1	18.2	5.7	–1.1	34.5	25.2
1974	17.8	18.2	5.4	–.4	32.6	23.2
1975	17.4	20.7	5.4	–3.3	33.7	24.6
1976	16.7	20.8	5.0	–4.1	35.2	26.7
Transition quarter	17.2	20.3	4.7	–3.1	34.1	26.3
1977	17.6	20.2	4.8	–2.7	34.9	27.1
1978	17.6	20.2	4.6	–2.6	34.2	26.7
1979	18.1	19.6	4.5	–1.6	32.3	25.0
1980	18.5	21.2	4.8	–2.6	32.6	25.5
1981	19.1	21.6	5.0	–2.5	31.8	25.2
1982	18.6	22.5	5.6	–3.9	34.3	27.9
1983	17.0	22.9	5.9	–5.9	38.8	32.2
1984	16.9	21.6	5.8	–4.7	39.6	33.1
1985	17.2	22.2	5.9	–5.0	42.6	35.3
1986	17.0	21.9	6.0	–4.9	46.8	38.5
1987	17.9	21.1	5.9	–3.1	49.2	39.6
1988	17.7	20.7	5.7	–3.0	50.6	39.9
1989	17.8	20.6	5.5	–2.7	51.6	39.4
1990	17.5	21.2	5.1	–3.7	54.4	40.9
1991	17.3	21.7	4.5	–4.4	59.1	44.1
1992	17.0	21.5	4.6	–4.5	62.4	46.8
1993	17.0	20.8	4.3	–3.8	64.2	47.9
1994	17.5	20.4	3.9	–2.8	64.7	47.8
1995	17.9	20.0	3.6	–2.2	65.1	47.7
1996	18.3	19.6	3.3	–1.4	65.2	47.0
1997	18.7	18.9	3.2	–.3	63.5	44.6
1998	19.3	18.5	3.0	.8	61.3	41.7
1999	19.3	18.0	2.9	1.3	59.1	38.3
2000	20.0	17.7	2.9	2.3	55.6	33.7
2001	18.9	17.7	2.9	1.2	54.8	31.5
2002	17.1	18.6	3.2	–1.5	57.2	32.7
2003	15.8	19.2	3.6	–3.3	59.9	34.7
2004	15.6	19.1	3.8	–3.4	61.1	35.7
2005	16.8	19.3	3.9	–2.5	61.6	35.8
2006	17.6	19.5	3.8	–1.8	62.0	35.4
2007	18.0	19.1	3.9	–1.1	62.6	35.2
2008	17.1	20.2	4.2	–3.1	67.5	39.2
2009	14.5	24.3	4.6	–9.8	82.1	52.2
2010	14.5	23.2	4.7	–8.7	90.9	60.6
2011	14.9	23.3	4.6	–8.4	95.5	65.5
2012	15.2	21.9	4.2	–6.7	99.6	70.0
2013	16.6	20.7	3.8	–4.1	100.2	71.8
2014	17.3	20.1	3.5	–2.8	102.1	73.3
2015	17.9	20.3	3.2	–2.4	99.8	72.2
2016	17.5	20.7	3.2	–3.1	104.8	76.0
2017	17.1	20.6	3.1	–3.4	104.3	75.7
2018	16.3	20.1	3.1	–3.8	105.0	77.1
2019	16.3	20.9	3.2	–4.6	106.6	79.0
2020	16.1	30.8	3.4	–14.7	126.3	98.7
2021	17.6	29.7	3.3	–12.1	123.8	97.2
2022	19.4	24.8	3.0	–5.4	121.9	95.8
2023	16.5	22.7	3.0	–6.3	122.3	97.3
2024 (estimates)	17.6	24.2	3.0	–6.6	123.6	99.1
2025 (estimates)	18.7	25.0	3.1	–6.3	125.3	101.2

Note: See footnote 1 and Note, Table B–45.

Sources: Department of the Treasury and Office of Management and Budget.

Table B–47. Federal receipts and outlays, by major category, and surplus or deficit, fiscal years 1960–2025

[Billions of dollars; fiscal years]

Fiscal year or period	Receipts (on-budget and off-budget)					Outlays (on-budget and off-budget)										Surplus or deficit (–) (on-budget and off-budget)
	Total	Individual income taxes	Corporation income taxes	Social insurance and retirement receipts	Other	Total	National defense: Total	National defense: Department of Defense, military	International affairs	Health	Medicare	Income security	Social security	Net interest	Other	
1960	92.5	40.7	21.5	14.7	15.6	92.2	48.1	....	3.0	0.8	....	7.4	11.6	6.9	14.4	0.3
1961	94.4	41.3	21.0	16.4	15.7	97.7	49.6	....	3.2	.9	....	9.7	12.5	6.7	15.2	–3.3
1962	99.7	45.6	20.5	17.0	16.5	106.8	52.3	50.1	5.6	1.2	....	9.2	14.4	6.9	17.2	–7.1
1963	106.6	47.6	21.6	19.8	17.6	111.3	53.4	51.1	5.3	1.5	....	9.3	15.8	7.7	18.3	–4.8
1964	112.6	48.7	23.5	22.0	18.5	118.5	54.8	52.6	4.9	1.8	....	9.7	16.6	8.2	22.6	–5.9
1965	116.8	48.8	25.5	22.2	20.3	118.2	50.6	48.8	5.3	1.8	....	9.5	17.5	8.6	25.0	–1.4
1966	130.8	55.4	30.1	25.5	19.8	134.5	58.1	56.6	5.6	2.5	0.1	9.7	20.7	9.4	28.5	–3.7
1967	148.8	61.5	34.0	32.6	20.7	157.5	71.4	70.1	5.6	3.4	2.7	10.3	21.7	10.3	32.1	–8.6
1968	153.0	68.7	28.7	33.9	21.7	178.1	81.9	80.4	5.3	4.4	4.6	11.8	23.9	11.1	35.1	–25.2
1969	186.9	87.2	36.7	39.0	23.9	183.6	82.5	80.8	4.6	5.2	5.7	13.1	27.3	12.7	32.6	3.2
1970	192.8	90.4	32.8	44.4	25.2	195.6	81.7	80.1	4.3	5.9	6.2	15.6	30.3	14.4	37.2	–2.8
1971	187.1	86.2	26.8	47.3	26.8	210.2	78.9	77.5	4.2	6.8	6.6	22.9	35.9	14.8	40.0	–23.0
1972	207.3	94.7	32.2	52.6	27.8	230.7	79.2	77.6	4.8	8.7	7.5	27.6	40.2	15.5	47.3	–23.4
1973	230.8	103.2	36.2	63.1	28.3	245.7	76.7	75.0	4.1	9.4	8.1	28.3	49.1	17.3	52.8	–14.9
1974	263.2	119.0	38.6	75.1	30.6	269.4	79.3	77.9	5.7	10.7	9.6	33.7	55.9	21.4	52.9	–6.1
1975	279.1	122.4	40.6	84.5	31.5	332.3	86.5	84.9	7.1	12.9	12.9	50.2	64.7	23.2	74.9	–53.2
1976	298.1	131.6	41.4	90.8	34.3	371.8	89.6	87.9	6.4	15.7	15.8	60.8	73.9	26.7	82.8	–73.7
Transition quarter	81.2	38.8	8.5	25.2	8.8	96.0	22.3	21.8	2.5	3.9	4.3	15.0	19.8	6.9	21.4	–14.7
1977	355.6	157.6	54.9	106.5	36.6	409.2	97.2	95.1	6.4	17.3	19.3	61.0	85.1	29.9	93.0	–53.7
1978	399.6	181.0	60.0	121.0	37.7	458.7	104.5	102.3	7.5	18.5	22.8	61.5	93.9	35.5	114.7	–59.2
1979	463.3	217.8	65.7	138.9	40.8	504.0	116.3	113.6	7.5	20.5	26.5	66.4	104.1	42.6	120.2	–40.7
1980	517.1	244.1	64.6	157.8	50.6	590.9	134.0	130.9	12.7	23.2	32.1	86.5	118.5	52.5	131.3	–73.8
1981	599.3	285.9	61.1	182.7	69.5	678.2	157.5	153.9	13.1	26.9	39.1	100.3	139.6	68.8	133.0	–79.0
1982	617.8	297.7	49.2	201.5	69.3	745.7	185.3	180.7	12.3	27.4	46.6	108.1	156.0	85.0	125.0	–128.0
1983	600.6	288.9	37.0	209.0	65.6	808.4	209.9	204.4	11.8	28.6	52.6	123.0	170.7	89.8	121.8	–207.8
1984	666.4	298.4	56.9	239.4	71.8	851.8	227.4	220.9	15.9	30.4	57.5	113.4	178.2	111.1	117.9	–185.4
1985	734.0	334.5	61.3	265.2	73.0	946.3	252.7	245.1	16.2	33.5	65.8	129.0	188.6	129.5	131.0	–212.3
1986	769.2	349.0	63.1	283.9	73.2	990.4	273.4	265.4	14.1	35.9	70.2	120.7	198.8	136.0	141.3	–221.2
1987	854.3	392.6	83.9	303.3	74.5	1,004.0	282.0	273.9	11.6	40.0	75.1	124.1	207.4	138.6	125.2	–149.7
1988	909.2	401.2	94.5	334.3	79.2	1,064.4	290.4	281.9	10.5	44.5	78.9	130.4	219.3	151.8	138.7	–155.2
1989	991.1	445.7	103.3	359.4	82.7	1,143.7	303.6	294.8	9.6	48.4	85.0	137.6	232.5	169.0	158.2	–152.6
1990	1,032.0	466.9	93.5	380.0	91.5	1,253.0	299.3	289.7	13.8	57.7	98.1	148.8	248.6	184.3	202.4	–221.0
1991	1,055.0	467.8	98.1	396.0	93.1	1,324.2	273.3	262.3	15.8	71.1	104.5	172.6	269.0	194.4	223.4	–269.2
1992	1,091.2	476.0	100.3	413.7	101.3	1,381.5	298.3	286.8	16.1	89.4	119.0	199.7	287.6	199.3	172.1	–290.3
1993	1,154.3	509.7	117.5	428.3	98.8	1,409.4	291.1	278.5	17.2	99.3	130.6	210.1	304.6	198.7	157.8	–255.1
1994	1,258.6	543.1	140.4	461.5	113.7	1,461.8	281.6	268.6	17.1	107.1	144.7	217.2	319.6	202.9	171.5	–203.2
1995	1,351.8	590.2	157.0	484.5	120.1	1,515.7	272.1	259.4	16.4	115.4	159.9	223.8	335.8	232.1	160.3	–164.0
1996	1,453.1	656.4	171.8	509.4	115.4	1,560.5	265.7	253.1	13.5	119.3	174.2	229.7	349.7	241.1	167.3	–107.4
1997	1,579.2	737.5	182.3	539.4	120.1	1,601.1	270.5	258.3	15.2	123.8	190.0	235.0	365.3	244.0	157.4	–21.9
1998	1,721.7	828.6	188.7	571.8	132.6	1,652.5	268.2	255.8	13.1	131.4	192.8	237.7	379.2	241.1	189.0	69.3
1999	1,827.5	879.5	184.7	611.8	151.5	1,701.8	274.8	261.2	15.2	141.0	190.4	242.4	390.0	229.8	218.1	125.6
2000	2,025.2	1,004.5	207.3	652.9	160.6	1,789.0	294.4	281.0	17.2	154.5	197.1	253.7	409.4	222.9	239.7	236.2
2001	1,991.1	994.3	151.1	694.0	151.7	1,862.8	304.7	290.2	16.5	172.2	217.4	269.7	433.0	206.2	243.2	128.2
2002	1,853.1	858.3	148.0	700.8	146.0	2,010.9	348.5	331.8	22.3	196.5	230.9	312.7	456.0	170.9	273.2	–157.8
2003	1,782.3	793.7	131.8	713.0	143.9	2,159.9	404.7	387.1	21.2	219.6	249.4	334.6	474.7	153.1	302.6	–377.6
2004	1,880.1	809.0	189.4	733.4	148.4	2,292.8	455.8	436.4	26.9	240.1	269.4	333.0	495.5	160.2	311.8	–412.7
2005	2,153.6	927.2	278.3	794.1	154.0	2,472.0	495.3	474.1	34.6	250.6	298.6	345.8	523.3	184.0	339.8	–318.3
2006	2,406.9	1,043.9	353.9	837.8	171.2	2,655.1	521.8	499.3	29.5	252.8	329.9	352.4	548.5	226.6	393.5	–248.2
2007	2,568.0	1,163.5	370.2	869.6	164.7	2,728.7	551.3	528.5	28.5	266.4	375.4	365.9	586.2	237.1	317.9	–160.7
2008	2,524.0	1,145.7	304.3	900.2	173.7	2,982.5	616.1	594.6	28.9	280.6	390.8	431.2	617.0	252.8	365.2	–458.6
2009	2,105.0	915.3	138.2	890.9	160.5	3,517.7	661.0	636.7	37.5	334.4	430.1	533.1	683.0	186.9	651.7	–1,412.7
2010	2,162.7	898.5	191.4	864.8	207.9	3,457.1	693.5	666.7	45.2	369.1	451.6	622.1	706.7	196.2	372.6	–1,294.4
2011	2,303.5	1,091.5	181.1	818.8	212.1	3,603.1	705.6	678.1	45.7	372.5	485.7	597.3	730.8	230.0	435.7	–1,299.6
2012	2,450.0	1,132.2	242.3	845.3	230.2	3,526.6	677.9	650.9	36.8	346.8	471.8	541.2	773.3	220.4	458.4	–1,076.6
2013	2,775.1	1,316.4	273.5	947.8	237.4	3,454.9	633.4	607.8	46.5	358.3	497.8	536.4	813.6	220.9	348.0	–679.8
2014	3,021.5	1,394.6	320.7	1,023.5	282.7	3,506.3	603.5	577.9	46.9	409.5	511.7	513.6	850.5	229.0	341.7	–484.8
2015	3,249.9	1,540.8	343.8	1,065.3	300.0	3,691.9	589.7	562.5	52.0	482.3	546.2	508.8	887.8	223.2	402.0	–442.0
2016	3,268.0	1,546.1	299.6	1,115.1	307.3	3,852.6	593.4	565.4	45.3	511.3	594.5	514.1	916.1	240.0	437.9	–584.7
2017	3,316.2	1,587.1	297.0	1,161.9	270.1	3,981.6	598.7	568.9	46.3	533.2	597.3	503.4	944.9	262.6	495.3	–665.5
2018	3,329.9	1,683.5	204.7	1,170.7	270.9	4,109.0	631.3	600.8	48.9	551.2	588.7	495.3	987.8	325.0	480.9	–779.1
2019	3,463.4	1,717.9	230.2	1,243.1	272.1	4,447.0	685.7	653.7	53.0	584.8	651.0	514.8	1,044.4	375.2	538.0	–983.6
2020	3,421.2	1,608.7	211.8	1,310.0	290.7	6,553.6	724.6	690.4	67.7	747.6	776.2	1,263.6	1,095.8	345.5	1,532.6	–3,132.5
2021	4,047.1	2,044.4	371.8	1,314.1	316.8	6,822.5	753.9	717.6	47.0	796.5	696.5	1,647.7	1,134.6	352.3	1,394.1	–2,775.4
2022	4,897.3	2,632.1	424.9	1,483.5	356.8	6,273.3	765.6	726.5	71.9	914.1	755.1	866.1	1,218.7	475.9	1,205.9	–1,375.9
2023	4,440.9	2,176.5	419.6	1,614.5	230.4	6,134.7	820.3	775.9	69.3	888.6	847.5	774.7	1,354.3	658.3	721.8	–1,693.7
2024 (estimates)[1]	4,918.7	2,426.1	529.9	1,709.6	253.2	6,751.6	874.0	826.3	72.0	911.7	874.1	671.1	1,460.9	881.7	1,006.1	–1,832.8
2025 (estimates)[2]	5,561.6	2,686.3	702.5	1,919.6	253.2	7,439.3	930.8	881.2	83.1	967.3	963.4	927.0	1,558.5	984.3	1,024.9	–1,877.6

[1] Estimates from *Final Monthly Treasury Statement*, issued October 2024.
[2] Estimates from *Mid-Session Review*, Budget of the U.S. Government, Fiscal Year 2025, issued July 2024.

Note: See Note, Table B–45.

Sources: Department of the Treasury and Office of Management and Budget.

TABLE B–48. Federal receipts, outlays, surplus or deficit, and debt, fiscal years 2019–2024

[Millions of dollars; fiscal years]

Description	Actual					Estimates [1]
	2019	2020	2021	2022	2023	2024
RECEIPTS, OUTLAYS, AND SURPLUS OR DEFICIT						
Total:						
Receipts	3,463,364	3,421,164	4,047,111	4,897,339	4,440,947	4,918,736
Outlays	4,446,952	6,553,620	6,822,461	6,273,259	6,134,672	6,751,552
Surplus or deficit (–)	–983,588	–3,132,456	–2,775,350	–1,375,920	–1,693,725	–1,832,816
On-budget:						
Receipts	2,549,061	2,455,736	3,094,788	3,831,364	3,247,192	3,658,853
Outlays	3,540,335	5,598,038	5,818,614	5,192,104	4,913,572	5,431,240
Surplus or deficit (–)	–991,274	–3,142,302	–2,723,826	–1,360,740	–1,666,380	–1,772,387
Off-budget:						
Receipts	914,303	965,428	952,323	1,065,975	1,193,755	1,259,883
Outlays	906,617	955,582	1,003,847	1,081,155	1,221,100	1,320,311
Surplus or deficit (–)	7,686	9,846	–51,524	–15,180	–27,345	–60,429
OUTSTANDING DEBT, END OF PERIOD						
Gross Federal debt	22,669,466	26,902,455	28,385,562	30,838,586	32,988,990	35,229,758
Held by Federal Government accounts	5,868,766	5,885,786	6,101,522	6,585,141	6,753,388	7,030,445
Held by the public	16,800,700	21,016,669	22,284,040	24,253,445	26,235,602	28,199,313
Federal Reserve System	2,113,329	4,445,477	5,433,156	5,634,940	4,952,914	....
Other	14,687,371	16,571,192	16,850,884	18,618,505	21,282,688	....
RECEIPTS BY SOURCE						
Total: On-budget and off-budget	3,463,364	3,421,164	4,047,111	4,897,339	4,440,947	4,918,736
Individual income taxes	1,717,857	1,608,663	2,044,377	2,632,146	2,176,481	2,426,067
Corporation income taxes	230,245	211,845	371,831	424,865	419,584	529,867
Social insurance and retirement receipts	1,243,113	1,309,955	1,314,088	1,483,527	1,614,456	1,709,559
On-budget	328,810	344,527	361,765	417,552	420,701	....
Off-budget	914,303	965,428	952,323	1,065,975	1,193,755	....
Excise taxes	98,914	86,780	75,274	87,728	75,802	101,435
Estate and gift taxes	16,672	17,624	27,140	32,550	33,668	31,616
Customs duties and fees	70,784	68,551	79,985	99,908	80,338	77,037
Miscellaneous receipts	85,779	117,746	134,416	136,615	40,618	43,155
Deposits of earnings by Federal Reserve System	52,793	81,880	100,054	106,674	581	....
All other	32,986	35,866	34,362	29,941	40,037	43,155
OUTLAYS BY FUNCTION						
Total: On-budget and off-budget	4,446,952	6,553,620	6,822,461	6,273,259	6,134,672	6,751,552
National defense	685,707	724,588	753,897	765,649	820,263	874,041
International affairs	53,035	67,722	46,951	71,873	69,313	71,992
General science, space, and technology	32,414	34,022	35,534	37,404	41,276	41,562
Energy	5,041	7,083	5,977	–9,132	–406	13,790
Natural resources and environment	37,836	42,450	44,151	41,384	47,387	56,892
Agriculture	38,257	47,298	47,398	33,065	33,651	34,747
Commerce and housing credit	–25,715	572,071	307,847	–19,075	100,765	35,568
On-budget	–24,612	574,474	310,581	–18,658	94,996	....
Off-budget	–1,103	–2,403	–2,734	–417	5,769	....
Transportation	95,756	145,623	154,291	131,024	126,417	137,122
Community and regional development	26,784	81,878	44,655	69,963	86,553	87,766
Education, training, employment, and social services	136,700	237,754	298,406	677,305	–2,189	305,026
Health	584,816	747,582	796,450	914,081	888,555	911,684
Medicare	650,996	776,225	696,458	755,094	847,544	874,134
Income security	514,787	1,263,639	1,647,729	866,097	774,655	671,076
Social security	1,044,409	1,095,816	1,134,586	1,218,663	1,354,317	1,460,914
On-budget	36,130	39,893	34,862	48,524	50,800	....
Off-budget	1,008,279	1,055,923	1,099,724	1,170,139	1,303,517	....
Veterans benefits and services	199,843	218,655	234,282	274,404	301,600	325,363
Administration of justice	65,832	71,997	71,430	71,323	80,432	85,034
General government	23,488	180,109	273,941	133,214	38,199	29,928
Net interest	375,158	345,470	352,338	475,887	658,267	881,651
On-budget	457,662	424,274	425,591	543,625	724,774	....
Off-budget	–82,504	–78,804	–73,253	–67,738	–66,507	....
Allowances	....	....	....	....	....	....
Undistributed offsetting receipts	–98,192	–106,362	–123,860	–234,964	–131,927	–146,738
On-budget	–80,137	–87,228	–103,970	–214,135	–110,248	....
Off-budget	–18,055	–19,134	–19,890	–20,829	–21,679	....

[1] Estimates from *Final Monthly Treasury Statement*, issued October 2024.

Note: See Note, Table B–45.

Sources: Department of the Treasury and Office of Management and Budget.

TABLE B–49. Federal and State and local government current receipts and expenditures, national income and product accounts (NIPA) basis, 1973–2024

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

Year or quarter	Total government			Federal Government			State and local government			Addendum: Grants-in-aid to State and local governments
	Current receipts	Current expenditures	Net government saving (NIPA)	Current receipts	Current expenditures	Net Federal Government saving (NIPA)	Current receipts	Current expenditures	Net State and local government saving (NIPA)	
1973	388.8	421.5	–32.7	249.2	287.6	–38.3	173.0	167.4	5.6	33.5
1974	430.2	473.9	–43.7	278.5	319.8	–41.3	186.6	189.0	–2.3	34.9
1975	441.2	549.9	–108.6	276.8	374.8	–97.9	208.0	218.7	–10.7	43.6
1976	505.7	591.0	–85.3	322.6	403.5	–80.9	232.2	236.6	–4.4	49.1
1977	567.4	640.3	–72.9	363.9	437.3	–73.4	258.3	257.8	.5	54.8
1978	646.1	703.3	–57.2	423.8	485.9	–62.0	285.8	280.9	4.9	63.5
1979	729.3	777.9	–48.6	487.0	534.4	–47.4	306.3	307.5	–1.2	64.0
1980	799.9	894.6	–94.7	533.7	622.5	–88.8	335.9	341.8	–5.9	69.7
1981	919.1	1,017.4	–98.2	621.1	709.1	–88.1	367.5	377.6	–10.2	69.4
1982	940.9	1,131.0	–190.1	618.7	786.0	–167.4	388.5	411.3	–22.8	66.3
1983	1,002.1	1,227.7	–225.6	644.8	851.9	–207.2	425.3	443.7	–18.4	67.9
1984	1,115.0	1,311.7	–196.7	711.2	907.7	–196.5	476.1	476.3	–.2	72.3
1985	1,217.0	1,418.7	–201.7	775.7	975.0	–199.2	517.5	519.9	–2.4	76.2
1986	1,292.9	1,512.8	–219.9	817.9	1,033.8	–215.9	557.4	561.3	–4.0	82.4
1987	1,406.6	1,586.7	–180.1	899.5	1,065.2	–165.7	585.5	599.9	–14.4	78.4
1988	1,507.1	1,678.3	–171.3	962.4	1,122.4	–160.0	630.4	641.7	–11.3	85.7
1989	1,632.0	1,810.7	–178.7	1,042.5	1,201.8	–159.4	681.4	700.7	–19.3	91.8
1990	1,713.3	1,952.9	–239.5	1,087.6	1,290.9	–203.3	730.0	766.3	–36.3	104.4
1991	1,763.6	2,072.2	–308.5	1,107.8	1,356.2	–248.4	779.8	840.0	–60.1	124.0
1992	1,848.6	2,254.2	–405.6	1,154.4	1,488.9	–334.5	836.0	907.0	–71.1	141.7
1993	1,953.1	2,339.3	–386.2	1,231.0	1,544.6	–313.5	877.8	950.4	–72.6	155.7
1994	2,097.3	2,417.2	–319.9	1,329.3	1,585.0	–255.6	934.8	999.1	–64.2	166.8
1995	2,223.5	2,536.5	–312.9	1,417.4	1,659.5	–242.1	980.6	1,051.4	–70.8	174.5
1996	2,388.2	2,621.8	–233.6	1,536.3	1,715.7	–179.4	1,033.3	1,087.5	–54.2	181.5
1997	2,565.5	2,699.9	–134.4	1,667.4	1,759.4	–92.0	1,086.2	1,128.7	–42.4	188.1
1998	2,738.0	2,767.4	–29.3	1,789.8	1,788.4	1.4	1,149.0	1,179.7	–30.7	200.8
1999	2,908.9	2,879.5	29.5	1,906.0	1,836.8	69.1	1,222.1	1,261.8	–39.7	219.2
2000	3,138.2	3,019.9	118.2	2,067.8	1,908.1	159.7	1,303.5	1,345.0	–41.5	233.1
2001	3,124.4	3,229.2	–104.7	2,032.4	2,017.3	15.0	1,353.3	1,473.1	–119.8	261.3
2002	2,968.3	3,419.8	–451.4	1,870.9	2,138.7	–267.8	1,386.2	1,569.8	–183.6	288.7
2003	3,044.6	3,624.0	–579.4	1,896.1	2,293.5	–397.4	1,470.2	1,652.2	–182.0	321.7
2004	3,274.1	3,817.4	–543.3	2,028.1	2,421.6	–393.5	1,578.4	1,728.2	–149.8	332.3
2005	3,677.8	4,075.3	–397.4	2,304.7	2,598.5	–293.8	1,716.6	1,820.3	–103.7	343.5
2006	4,012.2	4,320.1	–307.9	2,538.8	2,760.7	–221.9	1,814.4	1,900.4	–86.0	341.0
2007	4,209.6	4,599.6	–390.0	2,668.3	2,928.0	–259.7	1,900.4	2,030.7	–130.4	359.1
2008	4,125.0	4,972.0	–847.0	2,582.1	3,207.0	–624.9	1,914.1	2,136.2	–222.1	371.2
2009	3,698.5	5,284.0	–1,585.5	2,242.1	3,485.2	–1,243.2	1,914.6	2,256.9	–342.3	458.1
2010	3,932.7	5,560.0	–1,627.3	2,446.3	3,764.6	–1,318.4	1,991.7	2,300.6	–309.0	505.2
2011	4,128.3	5,639.5	–1,511.2	2,573.6	3,807.8	–1,234.1	2,027.2	2,304.2	–277.0	472.5
2012	4,309.6	5,667.1	–1,357.5	2,700.8	3,773.5	–1,072.7	2,053.3	2,338.1	–284.8	444.4
2013	4,829.6	5,729.5	–899.9	3,136.3	3,770.3	–633.9	2,143.4	2,409.4	–266.0	450.1
2014	5,054.1	5,885.7	–831.6	3,294.4	3,888.4	–594.0	2,254.7	2,492.3	–237.6	495.0
2015	5,285.5	6,059.5	–774.0	3,448.4	4,005.8	–557.4	2,370.2	2,586.8	–216.6	533.1
2016	5,329.2	6,238.7	–909.5	3,460.7	4,128.0	–667.3	2,425.3	2,667.4	–242.2	556.7
2017	5,456.9	6,418.5	–961.6	3,503.7	4,240.5	–736.8	2,513.5	2,738.4	–224.8	560.4
2018	5,643.7	6,749.9	–1,106.2	3,583.1	4,489.5	–906.4	2,643.2	2,843.0	–199.9	582.6
2019	5,883.9	7,133.4	–1,249.6	3,704.3	4,748.1	–1,043.8	2,788.5	2,994.3	–205.8	608.9
2020	5,969.6	8,961.6	–2,992.0	3,767.3	6,708.0	–2,940.8	3,081.1	3,132.3	–51.2	878.7
2021	6,900.3	9,493.7	–2,593.4	4,423.8	7,262.6	–2,838.8	3,586.5	3,341.2	245.4	1,110.1
2022	7,862.6	8,794.6	–932.0	5,120.8	6,141.1	–1,020.3	3,690.1	3,601.8	88.3	948.3
2023	7,584.1	9,312.1	–1,728.0	4,834.0	6,500.4	–1,666.4	3,700.8	3,762.3	–61.6	950.7
2021: I	6,478.0	10,778.4	–4,300.5	4,141.9	8,312.3	–4,170.4	3,113.8	3,243.9	–130.1	777.7
II	6,827.2	9,421.3	–2,594.1	4,368.6	7,728.1	–3,359.5	4,099.4	3,333.9	765.5	1,640.8
III	7,009.0	9,083.8	–2,074.8	4,514.1	6,784.5	–2,270.4	3,580.5	3,384.9	195.6	1,085.6
IV	7,286.9	8,691.2	–1,404.3	4,670.8	6,225.5	–1,554.7	3,552.5	3,402.0	150.4	936.3
2022: I	7,813.8	8,546.8	–733.0	5,099.9	5,997.3	–897.4	3,643.9	3,479.5	164.4	930.0
II	7,951.4	8,706.3	–754.9	5,160.7	6,068.5	–907.9	3,742.1	3,589.1	153.0	951.4
III	7,839.3	8,847.1	–1,007.8	5,128.9	6,181.5	–1,052.5	3,666.8	3,622.0	44.8	956.4
IV	7,846.0	9,078.2	–1,232.2	5,093.8	6,317.1	–1,223.3	3,707.6	3,716.5	–8.9	955.4
2023: I	7,481.1	9,163.7	–1,682.5	4,772.1	6,409.7	–1,637.5	3,686.7	3,731.7	–45.0	977.7
II	7,511.4	9,240.7	–1,729.3	4,785.2	6,444.7	–1,659.5	3,694.1	3,763.9	–69.8	967.9
III	7,617.4	9,387.4	–1,770.0	4,850.2	6,527.4	–1,677.2	3,682.8	3,775.6	–92.8	915.6
IV	7,726.5	9,456.6	–1,730.1	4,928.4	6,619.8	–1,691.4	3,739.4	3,778.1	–38.7	941.4
2024: I	7,892.2	9,692.1	–1,799.9	5,026.7	6,772.8	–1,746.1	3,806.5	3,860.3	–53.8	941.0
II	7,930.1	9,815.2	–1,885.1	5,073.0	6,864.6	–1,791.6	3,806.2	3,899.8	–93.5	949.1
III p	8,029.5	9,998.6	–1,969.1	5,119.9	7,053.6	–1,933.7	3,891.2	3,926.6	–35.4	981.6

Note: Federal grants-in-aid to State and local governments are reflected in Federal current expenditures and State and local current receipts. Total government current receipts and expenditures have been adjusted to eliminate this duplication.

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

Table B–50. State and local government revenues and expenditures, fiscal years 1959–2022

[Millions of dollars]

Fiscal year [1]	General revenues by source [2]							General expenditures by function [2]				
	Total	Property taxes	Sales and gross receipts taxes	Individual income taxes	Corporation net income taxes	Revenue from Federal Government	All other [3]	Total [4]	Education	Highways	Public welfare [4]	All other [4, 5]
1959	45,306	14,983	10,437	1,994	1,001	6,377	10,514	48,887	17,283	9,592	4,136	17,876
1960	50,505	16,405	11,849	2,463	1,180	6,974	11,634	51,876	18,719	9,428	4,404	19,325
1961	54,037	18,002	12,463	2,613	1,266	7,131	12,562	56,201	20,574	9,844	4,720	21,063
1962	58,252	19,054	13,494	3,037	1,308	7,871	13,488	60,206	22,216	10,357	5,084	22,549
1963	62,891	20,089	14,456	3,269	1,505	8,722	14,850	64,815	23,776	11,135	5,481	24,423
1963–64	68,443	21,241	15,762	3,791	1,695	10,002	15,952	69,302	26,286	11,664	5,766	25,586
1964–65	74,000	22,583	17,118	4,090	1,929	11,029	17,251	74,678	28,563	12,221	6,315	27,579
1965–66	83,036	24,670	19,085	4,760	2,038	13,214	19,269	82,843	33,287	12,770	6,757	30,029
1966–67	91,197	26,047	20,530	5,825	2,227	15,370	21,198	93,350	37,919	13,932	8,218	33,281
1967–68	101,264	27,747	22,911	7,308	2,518	17,181	23,599	102,411	41,158	14,481	9,857	36,915
1968–69	114,550	30,673	26,519	8,908	3,180	19,153	26,117	116,728	47,238	15,417	12,110	41,963
1969–70	130,756	34,054	30,322	10,812	3,738	21,857	29,973	131,332	52,718	16,427	14,679	47,508
1970–71	144,927	37,852	33,233	11,900	3,424	26,146	32,372	150,674	59,413	18,095	18,226	54,940
1971–72	167,535	42,877	37,518	15,227	4,416	31,342	36,156	168,549	65,813	19,021	21,117	62,598
1972–73	190,222	45,283	42,047	17,994	5,425	39,264	40,210	181,357	69,713	18,615	23,582	69,447
1973–74	207,670	47,705	46,098	19,491	6,015	41,820	46,542	199,222	75,833	19,946	25,085	78,358
1974–75	228,171	51,491	49,815	21,454	6,642	47,034	51,735	230,722	87,858	22,528	28,156	92,180
1975–76	256,176	57,001	54,547	24,575	7,273	55,589	57,191	256,731	97,216	23,907	32,604	103,004
1976–77	285,157	62,527	60,641	29,246	9,174	62,444	61,125	274,215	102,780	23,058	35,906	112,472
1977–78	315,960	66,422	67,596	33,176	10,738	69,592	68,435	296,984	110,758	24,609	39,140	122,478
1978–79	343,236	64,944	74,247	36,932	12,128	75,164	79,822	327,517	119,448	28,440	41,898	137,731
1979–80	382,322	68,499	79,927	42,080	13,321	83,029	95,467	369,086	133,211	33,311	47,288	155,276
1980–81	423,404	74,969	85,971	46,426	14,143	90,294	111,599	407,449	145,784	34,603	54,105	172,957
1981–82	457,654	82,067	93,613	50,738	15,028	87,282	128,925	436,733	154,282	34,520	57,996	189,935
1982–83	486,753	89,105	100,247	55,129	14,258	90,007	138,008	466,516	163,876	36,655	60,906	205,080
1983–84	542,730	96,457	114,097	64,871	16,798	96,935	153,571	505,008	176,108	39,419	66,414	223,068
1984–85	598,121	103,757	126,376	70,361	19,152	106,158	172,317	553,899	192,686	44,989	71,479	244,745
1985–86	641,486	111,709	135,005	74,365	19,994	113,099	187,314	605,623	210,819	49,368	75,868	269,568
1986–87	686,860	121,203	144,091	83,935	22,425	114,857	200,350	657,134	226,619	52,355	82,650	295,510
1987–88	726,762	132,212	156,452	88,350	23,663	117,602	208,482	704,921	242,683	55,621	89,090	317,527
1988–89	786,129	142,400	166,336	97,806	25,926	125,824	227,838	762,360	263,898	58,105	97,879	342,479
1989–90	849,502	155,613	177,885	105,640	23,566	136,802	249,996	834,818	288,148	61,057	110,518	375,094
1990–91	902,207	167,999	185,570	109,341	22,242	154,099	262,955	908,108	309,302	64,937	130,402	403,467
1991–92	979,137	180,337	197,731	115,638	23,880	179,174	282,376	981,253	324,652	67,351	158,723	430,526
1992–93	1,041,643	189,744	209,649	123,235	26,417	198,663	293,935	1,030,434	342,287	68,370	170,705	449,072
1993–94	1,100,490	197,141	223,628	128,810	28,320	215,492	307,099	1,077,665	353,287	72,067	183,394	468,916
1994–95	1,169,505	203,451	237,268	137,931	31,406	228,771	330,677	1,149,863	378,273	77,109	196,703	497,779
1995–96	1,222,821	209,440	248,993	146,844	32,009	234,891	350,645	1,193,276	398,859	79,092	197,354	517,971
1996–97	1,289,237	218,877	261,418	159,042	33,820	244,847	371,233	1,249,984	418,416	82,062	203,779	545,727
1997–98	1,365,762	230,150	274,883	175,630	34,412	255,048	395,639	1,318,042	450,365	87,214	208,120	572,343
1998–99	1,434,029	239,672	290,993	189,309	33,922	270,628	409,505	1,402,369	483,259	93,018	218,957	607,134
1999–2000	1,541,322	249,178	309,290	211,661	36,059	291,950	443,186	1,506,797	521,612	101,336	237,336	646,512
2000–01	1,647,161	263,689	320,217	226,334	35,296	324,033	477,592	1,626,063	563,572	107,235	261,622	693,634
2001–02	1,684,879	279,191	324,123	202,832	28,152	360,546	490,035	1,736,866	594,694	115,295	285,464	741,413
2002–03	1,763,212	296,683	337,787	199,407	31,369	389,264	508,702	1,821,917	621,335	117,696	310,783	772,102
2003–04	1,887,397	317,941	361,027	215,215	33,716	423,112	536,386	1,908,543	655,182	117,215	340,523	795,622
2004–05	2,026,034	335,779	384,266	242,273	43,256	438,558	581,902	2,012,110	688,314	126,350	365,295	832,151
2005–06	2,197,475	364,559	417,735	268,667	53,081	452,975	640,458	2,123,663	728,917	136,502	373,846	884,398
2006–07	2,330,611	388,905	440,470	290,278	60,955	464,914	685,089	2,264,035	774,170	145,011	389,259	955,595
2007–08	2,421,977	409,540	449,945	304,902	57,231	477,441	722,919	2,406,183	826,061	153,831	408,920	1,017,372
2008–09	2,429,672	434,818	434,128	270,942	46,280	537,949	705,555	2,500,796	851,689	154,338	437,184	1,057,586
2009–10	2,510,846	443,947	435,571	261,510	44,108	623,801	701,909	2,542,231	860,118	155,912	460,230	1,065,971
2010–11	2,618,037	445,771	463,979	285,293	48,422	647,606	726,966	2,583,805	862,271	153,895	494,682	1,072,957
2011–12	2,598,745	445,854	482,172	307,897	48,877	580,604	733,341	2,595,947	870,321	159,498	491,158	1,074,971
2012–13	2,687,495	453,458	503,553	339,666	52,853	583,294	754,672	2,631,945	878,957	160,260	518,035	1,074,693
2013–14	2,768,260	465,100	522,014	343,001	54,558	602,175	781,412	2,723,022	906,016	165,051	547,889	1,104,066
2014–15	2,920,320	484,251	544,359	368,862	57,130	658,012	807,707	2,842,289	934,353	171,084	616,515	1,122,338
2015–16	3,018,372	504,593	559,625	375,310	53,581	693,989	831,274	2,964,238	973,025	177,982	655,532	1,157,699
2016–17	3,120,509	524,664	580,963	384,678	52,805	711,827	865,573	3,084,229	1,016,295	181,295	679,848	1,206,791
2017–18	3,303,773	547,515	618,091	429,820	56,871	741,523	909,953	3,213,995	1,048,521	194,646	709,463	1,261,365
2018–19	3,465,482	576,735	644,205	446,770	67,841	762,910	967,020	3,359,781	1,094,234	202,789	748,319	1,314,439
2019–20	3,627,999	601,048	652,427	424,741	60,791	912,083	976,909	3,513,437	1,133,735	205,810	794,119	1,379,774
2020–21	4,083,722	630,414	690,216	545,122	98,715	1,127,124	992,131	3,693,785	1,145,918	206,229	865,061	1,476,578
2021–22	4,538,773	649,034	789,243	600,617	159,660	1,257,879	1,082,341	4,030,718	1,264,379	210,639	974,680	1,581,020

[1] Fiscal years not the same for all governments. See Note.

[2] Excludes revenues or expenditures of publicly owned utilities and liquor stores and of insurance-trust activities. Intergovernmental receipts and payments between State and local governments are also excluded.

[3] Includes motor vehicle license taxes, other taxes, and charges and miscellaneous revenues.

[4] Includes intergovernmental payments to the Federal Government.

[5] Includes expenditures for libraries, hospitals, health, employment security administration, veterans' services, air transportation, sea and inland port facilities, parking facilities, police protection, fire protection, correction, protective inspection and regulation, sewerage, natural resources, parks and recreation, housing and community development, solid waste management, financial administration, judicial and legal, general public buildings, other government administration, interest on general debt, and other general expenditures, not elsewhere classified.

Note: Except for States listed, data for fiscal years listed from 1963–64 to 2021–22 are the aggregation of data for government fiscal years that ended in the 12-month period from July 1 to June 30 of those years; Texas used August and Alabama and Michigan used September as end dates. Data for 1963 and earlier years include data for government fiscal years ending during that particular calendar year.

Source: Department of Commerce (Bureau of the Census).

Table B–51. U.S. Treasury securities outstanding by kind of obligation, 1984–2024

[Billions of dollars]

End of fiscal year or month	Total Treasury securities outstanding [1]	Marketable: Total [2]	Marketable: Treasury bills	Marketable: Treasury notes	Marketable: Treasury bonds	Treasury inflation-protected securities: Total	Treasury inflation-protected securities: Notes	Treasury inflation-protected securities: Bonds	Nonmarketable: Total	Nonmarketable: U.S. savings securities [3]	Nonmarketable: Foreign series [4]	Nonmarketable: Government account series	Nonmarketable: Other [5]
1984	1,560.4	1,176.6	356.8	661.7	158.1	....	....	....	383.8	73.7	8.8	259.5	41.8
1985	1,822.3	1,360.2	384.2	776.4	199.5	....	....	....	462.1	78.2	6.6	313.9	63.3
1986	2,124.9	1,564.3	410.7	896.9	241.7	....	....	....	560.5	87.8	4.1	365.9	102.8
1987	2,349.4	1,676.0	378.3	1,005.1	277.6	....	....	....	673.4	98.5	4.4	440.7	129.8
1988	2,601.4	1,802.9	398.5	1,089.6	299.9	....	....	....	798.5	107.8	6.3	536.5	148.0
1989	2,837.9	1,892.8	406.6	1,133.2	338.0	....	....	....	945.2	115.7	6.8	663.7	159.0
1990	3,212.7	2,092.8	482.5	1,218.1	377.2	....	....	....	1,119.9	123.9	36.0	779.4	180.6
1991	3,664.5	2,390.7	564.6	1,387.7	423.4	....	....	....	1,273.9	135.4	41.6	908.4	188.5
1992	4,063.8	2,677.5	634.3	1,566.3	461.8	....	....	....	1,386.3	150.3	37.0	1,011.0	188.0
1993	4,410.7	2,904.9	658.4	1,734.2	497.4	....	....	....	1,505.8	169.1	42.5	1,114.3	179.9
1994	4,691.7	3,091.6	697.3	1,867.5	511.8	....	....	....	1,600.1	178.6	42.0	1,211.7	167.8
1995	4,953.0	3,260.4	742.5	1,980.3	522.6	....	....	....	1,692.6	183.5	41.0	1,324.3	143.8
1996	5,220.8	3,418.4	761.2	2,098.7	543.5	....	....	....	1,802.4	184.1	37.5	1,454.7	126.1
1997	5,407.6	3,439.6	701.9	2,122.2	576.2	24.4	24.4	....	1,968.0	182.7	34.9	1,608.5	141.9
1998	5,518.7	3,331.0	637.6	2,009.1	610.4	58.8	41.9	17.0	2,187.6	180.8	35.1	1,777.3	194.4
1999	5,647.3	3,233.0	653.2	1,828.8	643.7	92.4	67.6	24.8	2,414.3	180.0	31.0	2,005.2	198.1
2000	5,622.1	2,992.8	616.2	1,611.3	635.3	115.0	81.6	33.4	2,629.4	177.7	25.4	2,242.9	183.3
2001 [1]	5,807.5	2,930.7	734.9	1,433.0	613.0	134.9	95.1	39.7	2,876.7	186.5	18.3	2,492.1	179.9
2002	6,228.2	3,136.7	868.3	1,521.6	593.0	138.9	93.7	45.1	3,091.5	193.3	12.5	2,707.3	178.4
2003	6,783.2	3,460.7	918.2	1,799.5	576.9	166.1	120.0	46.1	3,322.5	201.6	11.0	2,912.2	197.7
2004	7,379.1	3,846.1	961.5	2,109.6	552.0	223.0	164.5	58.5	3,533.0	204.2	5.9	3,130.0	192.9
2005	7,932.7	4,084.9	914.3	2,328.8	520.7	307.1	229.1	78.0	3,847.8	203.6	3.1	3,380.6	260.5
2006	8,507.0	4,303.0	911.5	2,447.2	534.7	395.6	293.9	101.7	4,203.9	203.7	3.0	3,722.7	274.5
2007	9,007.7	4,448.1	958.1	2,458.0	561.1	456.9	335.7	121.2	4,559.5	197.1	3.0	4,026.8	332.6
2008	10,024.7	5,236.0	1,489.8	2,624.8	582.9	524.5	380.2	144.3	4,788.7	194.3	3.0	4,297.7	293.8
2009	11,909.8	7,009.7	1,992.5	3,773.8	679.8	551.7	396.2	155.5	4,900.1	192.5	4.9	4,454.3	248.4
2010	13,561.6	8,498.3	1,788.5	5,255.9	849.9	593.8	421.1	172.7	5,063.3	188.7	4.2	4,645.3	225.1
2011	14,790.3	9,624.5	1,477.5	6,412.5	1,020.4	705.7	509.4	196.3	5,165.8	185.1	3.0	4,793.9	183.8
2012	16,066.2	10,749.7	1,616.0	7,120.7	1,198.2	807.7	584.7	223.0	5,316.5	183.8	3.0	4,939.3	190.4
2013	16,738.2	11,596.2	1,530.0	7,758.0	1,366.2	936.4	685.5	250.8	5,142.0	180.0	3.0	4,803.1	156.0
2014	17,824.1	12,294.2	1,411.0	8,167.8	1,534.1	1,044.7	765.2	279.5	5,529.9	176.7	3.0	5,212.5	137.7
2015	18,150.6	12,853.8	1,358.0	8,372.7	1,688.3	1,135.4	832.1	303.3	5,296.9	172.8	.3	5,013.5	110.3
2016	19,573.4	13,660.6	1,647.0	8,631.0	1,825.5	1,210.0	881.6	328.3	5,912.8	167.5	.3	5,604.1	141.0
2017	20,244.9	14,199.8	1,801.9	8,805.5	1,951.7	1,286.5	933.3	353.2	6,045.1	161.7	.3	5,771.1	112.0
2018	21,516.1	15,278.0	2,239.9	9,154.4	2,127.8	1,376.4	993.4	383.0	6,238.0	156.8	.3	5,977.6	103.4
2019	22,719.4	16,347.3	2,377.0	9,762.8	2,319.1	1,455.7	1,044.9	410.8	6,372.1	152.3	.3	6,133.7	85.8
2020	26,945.4	20,374.9	5,028.9	10,663.8	2,673.5	1,523.2	1,092.7	430.5	6,570.5	148.6	.3	6,196.3	225.3
2021	28,428.9	21,878.7	3,714.1	12,578.9	3,347.6	1,652.7	1,180.2	472.5	6,550.2	143.6	.3	6,243.3	163.0
2022	30,928.9	23,694.1	3,644.6	13,703.8	3,874.4	1,840.5	1,306.8	533.7	7,234.8	166.2	.3	6,929.8	138.5
2023	33,167.4	25,753.8	5,260.4	13,729.5	4,246.9	1,935.9	1,364.9	571.1	7,413.7	175.7	.0	7,117.3	120.7
2024	35,464.7	27,728.3	6,004.8	14,343.4	4,708.3	2,051.7	1,447.0	604.8	7,736.3	161.1	.0	7,444.5	130.7
2023: Jan	31,455.0	24,127.6	3,938.9	13,753.8	4,001.9	1,870.8	1,334.5	536.3	7,327.4	176.4	.3	7,024.1	126.6
Feb	31,459.3	24,282.6	4,057.8	13,730.5	4,033.7	1,876.3	1,330.6	545.7	7,176.7	177.1	.3	6,872.1	127.3
Mar	31,458.4	24,382.2	4,068.8	13,737.9	4,063.7	1,905.6	1,355.7	549.9	7,076.2	177.8	.0	6,772.6	125.8
Apr	31,458.2	24,286.2	3,942.6	13,774.3	4,082.8	1,880.1	1,327.2	552.9	7,172.0	178.8	.0	6,863.2	130.0
May	31,464.5	24,328.2	3,993.4	13,718.3	4,140.5	1,904.9	1,350.0	554.9	7,136.3	178.5	.0	6,835.3	122.4
June	32,332.3	24,886.6	4,466.7	13,724.0	4,170.5	1,933.6	1,376.0	557.6	7,445.6	178.2	.0	7,150.7	116.7
July	32,608.6	25,138.0	4,770.5	13,732.1	4,200.4	1,902.0	1,342.9	559.1	7,470.6	177.7	.0	7,178.6	114.3
Aug	32,914.1	25,477.6	5,073.9	13,702.5	4,226.9	1,917.1	1,347.2	569.9	7,436.6	176.6	.0	7,148.9	111.0
Sept	33,167.4	25,753.8	5,260.4	13,729.5	4,246.9	1,935.9	1,364.9	571.1	7,413.7	175.7	.0	7,117.3	120.7
Oct	33,699.6	26,003.5	5,457.0	13,762.3	4,292.9	1,966.3	1,392.8	573.5	7,696.1	174.1	.0	7,402.4	119.6
Nov	33,878.7	26,271.9	5,671.1	13,729.6	4,333.6	1,986.7	1,411.7	575.0	7,606.8	172.9	.0	7,315.1	118.7
Dec	34,001.5	26,371.7	5,675.8	13,758.2	4,354.6	2,006.2	1,431.4	574.8	7,629.8	171.9	.0	7,344.7	113.1
2024: Jan	34,191.1	26,510.3	5,780.2	13,831.2	4,401.5	1,966.3	1,392.6	573.7	7,680.8	169.3	.0	7,400.1	111.4
Feb	34,471.1	26,818.8	6,011.2	13,829.8	4,445.1	1,973.7	1,391.2	582.5	7,652.2	168.0	.0	7,374.1	110.2
Mar	34,586.9	26,951.8	6,062.9	13,863.2	4,467.1	1,999.7	1,414.3	585.4	7,635.0	166.8	.0	7,355.2	112.9
Apr	34,617.0	26,918.4	5,866.8	13,994.9	4,515.3	1,995.6	1,406.8	588.8	7,698.6	165.9	.0	7,417.1	115.6
May	34,667.1	27,042.2	5,866.8	14,013.8	4,560.4	2,025.8	1,433.1	592.7	7,624.9	164.8	.0	7,340.5	119.7
June	34,831.9	27,050.3	5,765.8	14,046.7	4,581.1	2,054.1	1,459.4	594.8	7,781.6	163.9	.0	7,499.8	118.0
July	35,104.8	27,362.4	5,915.8	14,227.0	4,631.8	2,023.7	1,427.9	595.8	7,742.4	162.8	.0	7,455.1	124.5
Aug	35,256.1	27,595.9	6,121.8	14,192.2	4,657.6	2,032.2	1,428.0	604.2	7,660.2	161.8	.0	7,372.5	125.9
Sept	35,464.7	27,728.3	6,004.8	14,343.4	4,708.3	2,051.7	1,447.0	604.8	7,736.3	161.1	.0	7,444.5	130.7
Oct	35,951.6	27,990.8	6,186.8	14,443.6	4,743.8	2,033.9	1,429.2	604.7	7,960.8	160.4	.0	7,666.2	134.2
Nov	36,087.5	28,223.2	6,389.8	14,409.5	4,759.3	2,054.0	1,448.3	605.7	7,864.3	159.6	.0	7,579.3	125.5

[1] Data beginning with January 2001 are interest-bearing and non-interest-bearing securities; prior data are interest-bearing securities only.
[2] Data from 1986 to 2002 and 2005 forward include Federal Financing Bank securities, not shown separately. Beginning with data for January 2014, includes Floating Rate Notes, not shown separately.
[3] Through 1996, series is U.S. savings bonds. Beginning 1997, includes U.S. retirement plan bonds, U.S. individual retirement bonds, and U.S. savings notes previously included in "other" nonmarketable securities.
[4] Nonmarketable certificates of indebtedness, notes, bonds, and bills in the Treasury foreign series of dollar-denominated and foreign-currency-denominated issues.
[5] Includes depository bonds; retirement plan bonds through 1996; Rural Electrification Administration bonds; State and local bonds; special issues held only by U.S. Government agencies and trust funds and the Federal home loan banks; for the period July 2003 through February 2004, depositary compensation securities; and for the period August 2008 through April 2016, Hope bonds for the HOPE For Homeowners Program.

Note: The fiscal year is on an October 1–September 30 basis.

Source: Department of the Treasury.

TABLE B–52. Estimated ownership of U.S. Treasury securities, 2010–2024

[Billions of dollars]

End of month	Total public debt [1]	Federal Reserve and Intra-governmental holdings [2]	Held by private investors									
			Total privately held	Depository institutions [3]	U.S. savings bonds [4]	Pension funds		Insurance companies	Mutual funds [6]	State and local governments	Foreign and international [7]	Other investors [8]
						Private [5]	State and local governments					
2010: Mar	12,773.1	5,259.8	7,513.3	269.3	190.2	183.0	153.6	225.7	678.5	585.0	3,877.9	1,350.1
June	13,201.8	5,345.1	7,856.7	266.1	189.6	190.8	150.1	231.8	676.8	584.4	4,070.0	1,497.1
Sept	13,561.6	5,350.5	8,211.1	322.8	188.7	198.2	145.2	240.6	671.0	586.0	4,324.2	1,534.4
Dec	14,025.2	5,656.2	8,368.9	319.3	187.9	206.8	153.7	248.4	721.7	595.7	4,435.6	1,499.9
2011: Mar	14,270.0	5,958.9	8,311.1	321.0	186.7	215.8	157.9	253.5	749.4	585.3	4,481.4	1,360.1
June	14,343.1	6,220.4	8,122.7	279.4	186.0	251.8	158.0	254.8	753.7	572.2	4,690.6	976.1
Sept	14,790.3	6,328.0	8,462.4	293.8	185.1	373.6	155.7	259.6	788.7	557.9	4,912.1	935.8
Dec	15,222.8	6,439.6	8,783.3	279.7	185.2	391.9	160.7	297.3	927.9	562.2	5,006.9	971.4
2012: Mar	15,582.3	6,397.2	9,185.1	317.0	184.8	406.6	169.4	298.1	1,015.4	567.4	5,145.1	1,081.2
June	15,855.5	6,475.8	9,379.7	303.2	184.7	427.4	171.2	293.6	997.8	585.4	5,310.9	1,105.4
Sept	16,066.2	6,446.8	9,619.4	338.2	183.8	453.9	181.7	292.6	1,080.7	596.9	5,476.1	1,015.4
Dec	16,432.7	6,523.7	9,909.1	347.7	182.5	468.0	183.6	292.7	1,031.8	599.6	5,573.8	1,229.4
2013: Mar	16,771.6	6,656.8	10,114.8	338.9	181.7	463.4	193.4	284.3	1,066.7	615.6	5,725.0	1,245.7
June	16,738.2	6,773.3	9,964.9	300.2	180.9	444.5	187.7	281.3	1,000.1	612.6	5,595.0	1,362.6
Sept	16,738.2	6,834.2	9,904.0	293.2	180.0	347.8	187.5	276.6	986.1	624.3	5,652.8	1,355.7
Dec	17,352.0	7,205.3	10,146.6	321.1	179.2	464.9	181.3	274.5	983.3	633.6	5,792.6	1,316.2
2014: Mar	17,601.2	7,301.5	10,299.7	368.4	178.3	474.3	184.3	280.1	1,060.4	632.0	5,948.3	1,173.7
June	17,632.6	7,461.0	10,171.6	409.5	177.6	482.6	198.3	291.0	986.2	638.8	6,018.7	968.8
Sept	17,824.1	7,490.8	10,333.2	471.1	176.7	490.7	198.7	301.4	1,075.8	628.7	6,069.2	920.8
Dec	18,141.4	7,578.9	10,562.6	516.8	175.9	507.1	199.2	310.5	1,121.8	654.5	6,157.7	919.0
2015: Mar	18,152.1	7,521.3	10,630.8	518.1	174.9	447.8	176.7	308.5	1,170.4	663.3	6,172.6	998.4
June	18,152.0	7,536.5	10,615.5	518.5	173.9	373.8	185.7	307.7	1,139.8	652.8	6,163.1	1,100.1
Sept	18,150.6	7,488.7	10,661.9	519.1	172.8	305.3	171.0	310.0	1,195.1	646.0	6,105.9	1,236.8
Dec	18,922.2	7,711.2	11,211.0	547.4	171.6	504.7	174.5	310.1	1,318.3	680.9	6,146.2	1,357.1
2016: Mar	19,264.9	7,801.4	11,463.6	562.9	170.3	524.4	170.4	319.1	1,404.1	694.9	6,284.4	1,333.0
June	19,381.6	7,911.2	11,470.4	580.6	169.0	537.9	185.0	333.7	1,434.2	712.6	6,279.1	1,238.3
Sept	19,573.4	7,863.5	11,709.9	626.8	167.5	545.6	203.8	345.2	1,600.4	710.9	6,155.9	1,353.8
Dec	19,976.9	8,005.6	11,971.3	663.1	165.8	538.0	218.8	334.2	1,705.4	717.3	6,006.3	1,622.4
2017: Mar	19,846.4	7,941.1	11,905.3	657.4	164.2	444.2	239.5	342.6	1,715.2	724.6	6,075.3	1,542.3
June	19,844.6	7,943.4	11,901.1	620.5	162.8	425.9	262.8	352.8	1,645.8	710.1	6,151.9	1,568.5
Sept	20,244.9	8,036.9	12,208.0	610.5	161.7	570.8	266.5	364.3	1,739.6	704.0	6,301.9	1,488.7
Dec	20,492.7	8,132.1	12,360.6	636.7	160.4	432.1	289.4	377.9	1,850.8	735.0	6,211.3	1,667.1
2018: Mar	21,089.9	8,086.6	13,003.3	637.8	159.0	589.7	300.1	366.9	2,048.2	715.8	6,223.4	1,962.5
June	21,195.3	8,106.9	13,088.5	663.1	157.8	605.0	307.3	360.2	1,902.9	726.8	6,225.0	2,140.4
Sept	21,516.1	8,068.1	13,447.9	682.0	156.8	615.3	301.7	361.3	1,957.2	730.7	6,225.9	2,417.0
Dec	21,974.1	8,095.0	13,879.1	769.7	155.7	637.3	367.9	360.5	2,094.9	713.2	6,270.1	2,509.9
2019: Mar	22,028.0	7,999.1	14,028.9	769.5	154.5	443.6	357.6	366.8	2,189.2	752.7	6,474.0	2,521.0
June	22,023.5	7,945.2	14,078.4	808.2	153.4	470.4	386.5	369.3	2,037.0	751.4	6,625.9	2,476.3
Sept	22,719.4	8,023.6	14,695.8	909.4	152.3	691.1	343.3	372.7	2,319.7	701.8	6,923.5	2,281.9
Dec	23,201.4	8,359.9	14,841.5	935.1	151.3	705.3	333.4	374.8	2,412.8	718.6	6,844.2	2,366.0
2020: Mar	23,686.9	9,279.7	14,407.2	947.6	150.0	758.9	330.4	402.6	2,501.7	715.2	6,949.5	1,651.2
June	26,477.4	10,157.7	16,319.6	1,157.9	149.8	766.9	290.1	408.9	3,695.4	880.6	7,052.1	1,917.9
Sept	26,945.4	10,371.9	16,573.5	1,241.1	148.6	772.6	318.0	420.3	3,724.9	940.0	7,069.2	1,938.8
Dec	27,747.8	10,809.2	16,938.6	1,265.2	147.1	770.6	354.4	404.1	3,784.6	992.1	7,070.7	2,149.8
2021: Mar	28,132.6	11,095.5	17,037.1	1,347.9	145.7	761.2	345.8	397.7	3,951.4	990.5	7,038.3	2,058.6
June	28,529.4	11,382.9	17,146.5	1,433.1	144.6	787.5	395.5	427.0	3,778.5	1,301.7	7,518.9	1,359.6
Sept	28,428.9	11,579.1	16,849.8	1,540.3	143.6	622.7	390.5	429.7	3,238.0	1,344.2	7,570.9	1,569.8
Dec	29,617.2	12,125.9	17,491.3	1,734.0	146.2	809.6	413.6	425.0	3,411.7	1,379.1	7,740.4	1,431.7
2022: Mar	30,401.0	12,281.3	18,119.7	1,754.1	149.7	803.4	381.9	379.8	3,290.7	1,366.7	7,604.2	2,389.2
June	30,568.6	12,399.7	18,168.9	1,807.7	160.4	785.3	368.5	371.1	2,890.3	1,401.7	7,416.9	2,967.1
Sept	30,928.9	12,264.7	18,664.2	1,736.8	166.2	756.0	336.2	371.7	2,604.3	1,403.8	7,251.5	4,037.6
Dec	31,419.9	12,401.4	19,018.5	1,713.9	173.5	733.6	321.4	396.0	2,408.7	1,427.2	7,197.8	4,646.6
2023: Mar	31,458.4	12,044.6	19,413.8	1,615.9	177.8	476.0	356.2	407.7	2,412.7	1,499.6	7,471.4	4,996.6
June	32,332.3	11,976.9	20,355.4	1,556.3	178.2	747.2	349.6	409.3	2,591.9	1,510.1	7,559.0	5,453.8
Sept	33,167.4	11,790.1	21,377.4	1,555.2	175.7	734.6	365.1	427.7	3,086.9	1,493.6	7,515.1	6,023.6
Dec	34,001.5	11,848.1	22,153.4	1,646.8	171.9	452.9	402.8	444.1	3,647.8	1,566.7	7,944.4	5,875.8
2024: Mar	34,592.4	11,689.3	22,903.1	1,738.3	166.8	454.6	415.9	469.9	3,956.0	1,589.9	8,114.9	5,996.9
June	34,831.9	11,672.4	23,159.5	1,726.3	163.9	459.8	429.7	549.2	3,841.9	1,621.4	8,210.6	6,156.7
Sept	35,464.7	11,521.7	23,943.0	....	161.1	....	....	....	....	....	8,672.9	....

[1] Face value.
[2] Federal Reserve holdings exclude Treasury securities held under repurchase agreements.
[3] Includes U.S. chartered depository institutions, foreign banking offices in U.S., banks in U.S. affiliated areas, credit unions, and bank holding companies.
[4] Current accrual value includes myRA.
[5] Includes Treasury securities held by the Federal Employees Retirement System Thrift Savings Plan "G Fund."
[6] Includes money market mutual funds, mutual funds, and closed-end investment companies.
[7] Includes nonmarketable foreign series, Treasury securities, and Treasury deposit funds. Excludes Treasury securities held under repurchase agreements in custody accounts at the Federal Reserve Bank of New York. Estimates reflect benchmarks to this series at differing intervals; for further detail, see *Treasury Bulletin* and http://www.treasury.gov/resource-center/data-chart-center/tic/pages/index.aspx.
[8] Includes individuals, Government-sponsored enterprises, brokers and dealers, bank personal trusts and estates, corporate and noncorporate businesses, and other investors.

Source: Department of the Treasury.

Table B–53. Corporate profits with inventory valuation and capital consumption adjustments, 1973–2024

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

Year or quarter	Corporate profits with inventory valuation and capital consumption adjustments	Taxes on corporate income	Corporate profits after tax with inventory valuation and capital consumption adjustments		
			Total	Net dividends	Undistributed profits with inventory valuation and capital consumption adjustments
1973	133.4	45.6	87.8	34.2	53.5
1974	125.7	47.2	78.5	38.8	39.7
1975	138.9	46.3	92.6	38.3	54.3
1976	174.3	59.4	114.9	44.9	70.0
1977	205.8	68.5	137.3	50.7	86.6
1978	238.6	77.9	160.7	57.8	102.9
1979	249.2	80.7	168.5	67.0	101.5
1980	223.1	75.5	147.6	76.0	71.6
1981	245.9	70.3	175.6	83.9	91.7
1982	227.8	51.3	176.5	88.5	88.0
1983	277.9	66.4	211.5	96.4	115.1
1984	337.3	81.5	255.8	102.0	153.8
1985	353.1	81.6	271.5	111.7	159.7
1986	323.6	91.9	231.7	121.1	110.6
1987	370.8	112.7	258.1	119.9	138.2
1988	416.2	124.3	292.0	145.5	146.5
1989	418.7	124.4	294.3	179.3	115.0
1990	419.3	121.8	297.5	193.6	104.0
1991	448.7	117.8	330.9	202.1	128.8
1992	481.3	131.9	349.4	206.5	142.9
1993	530.7	155.0	375.7	221.7	154.0
1994	634.1	172.7	461.4	258.6	202.9
1995	716.7	194.4	522.2	283.5	238.7
1996	803.6	211.4	592.2	323.9	268.3
1997	889.9	224.8	665.1	359.9	305.2
1998	835.2	221.8	613.4	386.6	226.7
1999	866.8	227.4	639.4	375.4	264.0
2000	826.4	233.4	593.0	413.1	179.9
2001	787.2	170.1	617.0	402.9	214.1
2002	930.4	160.7	769.7	427.5	342.2
2003	1,077.1	213.8	863.3	455.0	408.3
2004	1,320.5	278.5	1,042.0	579.8	462.2
2005	1,530.0	379.7	1,150.3	579.3	571.0
2006	1,696.1	430.1	1,266.0	715.8	550.1
2007	1,595.8	391.8	1,204.0	818.3	385.7
2008	1,345.6	255.9	1,089.7	841.4	248.3
2009	1,425.7	203.9	1,221.7	634.7	587.0
2010	1,774.5	272.3	1,502.2	636.0	866.2
2011	1,862.4	280.8	1,581.7	788.0	793.7
2012	2,057.7	334.6	1,723.1	945.3	777.8
2013	2,081.1	362.4	1,718.7	997.3	721.4
2014	2,212.8	406.9	1,805.9	1,059.9	746.0
2015	2,173.1	396.1	1,777.0	1,128.7	648.3
2016	2,144.3	376.0	1,768.3	1,139.4	628.9
2017	2,225.2	297.2	1,928.1	1,253.9	674.2
2018	2,365.2	297.4	2,067.7	1,319.9	747.8
2019	2,471.3	297.2	2,174.1	1,416.8	757.3
2020	2,411.3	311.8	2,099.5	1,496.7	602.8
2021	3,077.6	464.2	2,613.4	1,816.0	797.3
2022	3,316.7	579.3	2,737.5	1,921.9	815.6
2023	3,546.5	624.7	2,921.8	1,938.0	983.8
2021: I	2,863.1	386.2	2,476.9	1,656.4	820.4
II	3,130.7	451.3	2,679.4	1,788.0	891.4
III	3,138.9	478.3	2,660.6	1,880.2	780.4
IV	3,177.6	541.1	2,636.6	1,939.4	697.2
2022: I	3,132.3	566.0	2,566.3	1,948.6	617.6
II	3,318.3	590.3	2,728.1	1,947.2	780.8
III	3,422.4	576.7	2,845.7	1,895.7	950.0
IV	3,394.0	584.1	2,809.9	1,896.0	913.9
2023: I	3,405.4	608.6	2,796.8	1,913.8	883.1
II	3,443.7	608.2	2,835.5	1,943.1	892.4
III	3,587.0	633.9	2,953.0	1,934.2	1,018.8
IV	3,749.9	648.0	3,101.8	1,960.8	1,141.0
2024: I	3,684.8	648.0	3,036.7	1,995.8	1,040.9
II	3,817.2	675.7	3,141.6	1,996.0	1,145.5
III p	3,807.1	665.9	3,141.1	1,984.9	1,156.2

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

Table B–54. Corporate profits by industry, 1973–2024

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

Year or quarter	Corporate profits with inventory valuation adjustment and without capital consumption adjustment													
	Total	Domestic industries												Rest of the world
		Total	Financial			Nonfinancial								
			Total	Federal Reserve banks	Other	Total	Manufacturing	Transportation [1]	Utilities	Wholesale trade	Retail trade	Information	Other	
SIC:[2]														
1973	126.6	111.7	21.1	4.5	16.6	90.6	55.0	10.2	....	8.8	7.0	....	9.6	14.9
1974	123.3	105.8	20.8	5.7	15.1	85.1	51.0	9.1	....	12.2	2.8	....	10.0	17.5
1975	144.2	129.6	20.4	5.6	14.8	109.2	63.0	11.7	....	14.3	8.4	....	11.8	14.6
1976	182.1	165.6	25.6	5.9	19.7	140.0	82.5	17.5	....	13.7	10.9	....	15.3	16.5
1977	212.8	193.7	32.6	6.1	26.5	161.1	91.5	21.2	....	16.4	12.8	....	19.2	19.1
1978	246.7	223.8	40.8	7.6	33.1	183.1	105.8	25.5	....	16.7	13.1	....	22.0	22.9
1979	261.2	226.6	42.0	9.4	32.6	184.6	107.1	21.6	....	20.0	10.7	....	25.2	34.6
1980	240.2	204.7	34.8	11.8	23.0	169.9	97.6	22.2	....	18.5	7.0	....	24.6	35.5
1981	250.4	220.7	28.7	14.4	14.3	192.0	112.5	25.1	....	23.7	10.7	....	20.1	29.7
1982	222.7	190.1	25.1	15.2	9.9	165.0	89.6	28.1	....	20.7	14.3	....	12.3	32.6
1983	254.6	219.5	34.3	14.6	19.7	185.2	97.3	34.3	....	21.9	19.3	....	12.3	35.1
1984	293.6	257.1	34.1	16.4	17.7	223.0	114.2	44.7	....	30.4	21.5	....	12.1	36.6
1985	288.3	250.2	45.1	16.3	28.8	205.1	107.1	39.1	....	24.6	22.8	....	11.4	38.1
1986	272.4	233.0	55.5	15.5	40.0	177.4	75.6	39.3	....	24.4	23.4	....	14.7	39.5
1987	319.4	271.4	65.1	16.2	48.9	206.2	101.8	42.0	....	18.9	23.3	....	20.3	48.0
1988	368.0	311.0	68.7	18.1	50.6	242.3	132.8	46.8	....	20.4	19.8	....	22.5	57.0
1989	377.5	310.3	82.7	20.6	62.1	227.6	122.3	41.9	....	22.0	20.9	....	20.5	67.1
1990	392.8	316.7	91.2	21.8	69.4	225.5	120.9	43.5	....	19.4	20.3	....	21.3	76.1
1991	430.4	353.9	116.6	20.7	95.9	237.3	109.3	54.5	....	22.3	26.9	....	24.3	76.5
1992	463.9	390.8	136.5	18.3	118.2	254.2	109.8	57.7	....	25.3	28.1	....	33.4	73.1
1993	508.1	431.1	126.1	16.7	109.4	305.1	122.9	70.1	....	26.5	39.7	....	45.8	76.9
1994	598.6	520.6	135.2	18.5	116.7	385.4	162.6	83.9	....	31.4	46.3	....	61.2	78.0
1995	677.4	584.5	150.8	22.9	127.8	433.7	199.8	89.0	....	28.0	43.9	....	73.1	92.9
1996	755.9	653.9	161.9	22.5	139.4	492.0	220.4	91.2	....	39.9	52.0	....	88.5	102.0
1997	831.1	723.6	182.4	24.3	158.1	541.2	248.5	81.0	....	48.1	63.4	....	100.3	107.6
1998	770.5	667.8	165.6	25.6	140.0	502.1	220.4	72.6	....	50.6	72.3	....	86.3	102.8
1999	793.8	672.0	186.4	26.7	159.8	485.6	219.4	49.3	....	46.8	72.5	....	97.6	121.7
2000	769.6	624.0	189.6	31.2	158.3	434.4	205.9	33.8	....	50.4	68.9	....	75.4	145.7
NAICS:[2]														
1998	770.5	667.8	165.6	25.6	140.0	502.1	193.4	12.7	33.3	57.3	62.6	33.0	109.7	102.8
1999	793.8	672.0	186.4	26.7	159.8	485.6	188.0	7.2	34.4	55.5	48.4	28.5	123.5	121.7
2000	769.6	624.0	189.6	31.2	158.3	434.4	175.5	9.5	24.3	59.5	51.5	–11.9	126.1	145.7
2001	725.6	556.8	223.7	28.9	194.8	333.1	75.1	–.7	22.5	51.1	71.3	–26.4	140.1	168.8
2002	815.7	659.0	280.4	23.5	256.9	378.6	78.2	–6.5	10.5	53.5	83.3	5.0	154.6	156.8
2003	976.1	817.2	317.9	20.0	297.8	499.3	123.8	4.4	13.2	56.6	87.9	28.1	185.4	158.9
2004	1,248.3	1,053.2	368.3	20.0	348.3	684.9	186.1	11.9	21.1	72.7	94.0	61.6	237.5	195.1
2005	1,670.2	1,444.5	436.1	26.5	409.6	1,008.4	279.7	28.4	32.4	96.0	123.3	100.7	347.9	225.7
2006	1,861.7	1,622.0	443.3	33.8	409.5	1,178.6	352.9	40.8	55.2	105.0	133.6	115.2	376.0	239.7
2007	1,770.5	1,432.8	345.8	36.0	309.8	1,087.0	321.1	23.3	49.6	102.8	119.4	120.5	350.3	337.8
2008	1,403.9	1,013.7	138.3	35.1	103.2	875.4	240.0	29.3	30.4	92.7	82.2	98.8	302.1	390.2
2009	1,508.3	1,159.5	389.5	47.3	342.2	770.0	164.7	21.7	23.4	88.9	107.9	87.0	276.4	348.8
2010	1,831.1	1,445.3	437.5	71.6	365.9	1,007.8	281.8	44.6	30.6	99.3	115.9	102.3	333.4	385.8
2011	1,802.2	1,389.6	414.3	76.0	338.3	975.4	296.0	30.6	10.2	97.2	115.1	95.7	330.6	412.6
2012	2,203.9	1,798.6	519.0	71.8	447.2	1,279.6	403.0	54.4	13.8	137.9	155.7	112.0	402.8	405.4
2013	2,234.1	1,835.2	480.7	79.7	401.0	1,354.5	440.0	45.0	27.8	146.3	153.3	138.6	403.5	398.8
2014	2,356.1	1,951.2	536.1	103.5	432.7	1,415.1	453.1	55.7	32.4	151.2	157.8	131.0	433.9	404.9
2015	2,295.5	1,900.3	512.4	100.7	411.7	1,387.9	421.5	61.1	19.9	153.9	170.4	134.8	426.3	395.2
2016	2,245.2	1,825.3	511.8	92.0	419.8	1,313.5	327.9	64.7	9.4	130.0	176.6	163.3	441.6	419.9
2017	2,247.5	1,748.6	491.6	78.3	413.4	1,257.0	299.9	59.6	13.8	127.4	151.7	143.0	461.5	498.9
2018	2,266.6	1,746.0	478.9	68.1	410.8	1,267.1	361.7	45.1	16.5	108.2	145.6	115.2	474.6	520.6
2019	2,376.0	1,843.0	575.0	59.2	515.8	1,268.0	353.6	34.5	11.7	125.8	149.5	134.5	458.3	533.0
2020	2,503.2	2,058.0	536.1	85.4	450.7	1,521.9	331.8	39.2	27.4	158.5	248.8	120.0	596.3	445.3
2021	3,090.0	2,687.8	642.5	108.3	534.2	2,045.3	471.5	93.9	33.3	167.6	298.2	151.6	829.1	402.2
2022	3,388.7	2,943.9	627.4	59.5	567.9	2,316.5	664.2	107.4	40.8	254.0	281.1	162.8	806.2	444.9
2023	3,723.3	3,233.7	614.9	–117.5	732.4	2,618.9	696.7	123.4	51.4	290.5	344.5	210.9	901.5	489.5
2022: I	3,181.2	2,787.7	664.5	134.7	529.8	2,123.2	611.3	81.8	35.3	187.9	266.8	152.7	787.5	393.5
II	3,387.5	2,946.1	619.8	123.4	496.4	2,326.3	664.9	119.6	37.7	220.0	284.7	156.2	843.1	441.4
III	3,506.3	3,034.6	633.7	38.4	595.3	2,400.9	677.3	119.2	48.1	301.5	283.6	163.5	807.7	471.6
IV	3,479.9	3,007.0	591.6	–58.6	650.2	2,415.4	703.2	109.0	42.2	306.6	289.2	178.8	786.4	472.9
2023: I	3,582.4	3,118.1	631.7	–105.8	737.5	2,486.4	706.0	116.4	46.8	283.8	306.3	185.4	841.8	464.2
II	3,622.1	3,131.8	590.9	–134.5	725.4	2,541.0	656.2	131.4	56.7	288.2	334.4	208.9	865.2	490.3
III	3,760.4	3,253.1	599.5	–135.1	734.6	2,653.6	694.2	119.3	52.2	288.0	360.7	219.0	920.3	507.3
IV	3,928.1	3,431.9	637.4	–94.7	732.0	2,794.5	730.4	126.6	49.9	302.1	376.7	230.2	978.5	496.2
2024: I	3,945.9	3,447.3	701.2	–95.1	796.4	2,746.1	643.7	129.4	57.6	284.2	373.8	250.5	1,006.9	498.6
II	4,084.8	3,605.0	745.9	–84.2	830.1	2,859.1	695.0	129.4	66.9	286.0	379.7	272.8	1,029.2	479.8
III p	4,078.3	3,636.7	745.9	–93.2	839.1	2,890.8	....	....	....	....	....	....	....	441.6

[1] Data on Standard Industrial Classification (SIC) basis include transportation and public utilities. Those on North American Industry Classification System (NAICS) basis include transporation and warehousing. Utilities classified separately in NAICS (as shown beginning 1998).

[2] SIC-based industry data use the 1987 SIC for data beginning in 1987 and the 1972 SIC for prior data. NAICS-based data use 2017 NAICS.

Note: Industry data on SIC basis and NAICS basis are not necessarily the same and are not strictly comparable.

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

TABLE B–55. Historical stock prices and yields, 1949–2003

End of year	Common stock prices (end of period)[1]									Common stock yields (Standard & Poor's) (percent)[5]	
	New York Stock Exchange (NYSE) indexes[2]						Dow Jones industrial average[2]	Standard & Poor's composite index (1941–43=10)[2]	Nasdaq composite index (Feb. 5, 1971=100)[2]	Dividend-price ratio[6]	Earnings-price ratio[7]
	Composite (Dec. 31, 2002=5,000)[3]	December 31, 1965=50									
		Composite	Industrial	Transportation	Utility[4]	Finance					
1949	......	......	......	......	......	......	200.52	16.76	......	6.59	15.48
1950	......	......	......	......	......	......	235.42	20.41	......	6.57	13.99
1951	......	......	......	......	......	......	269.23	23.77	......	6.13	11.82
1952	......	......	......	......	......	......	291.90	26.57	......	5.80	9.47
1953	......	13.60	......	......	......	......	280.90	24.81	......	5.80	10.26
1954	......	19.40	......	......	......	......	404.39	35.98	......	4.95	8.57
1955	......	23.71	......	......	......	......	488.40	45.48	......	4.08	7.95
1956	......	24.35	......	......	......	......	499.47	46.67	......	4.09	7.55
1957	......	21.11	......	......	......	......	435.69	39.99	......	4.35	7.89
1958	......	28.85	......	......	......	......	583.65	55.21	......	3.97	6.23
1959	......	32.15	......	......	......	......	679.36	59.89	......	3.23	5.78
1960	......	30.94	......	......	......	......	615.89	58.11	......	3.47	5.90
1961	......	38.93	......	......	......	......	731.14	71.55	......	2.98	4.62
1962	......	33.81	......	......	......	......	652.10	63.10	......	3.37	5.82
1963	......	39.92	......	......	......	......	762.95	75.02	......	3.17	5.50
1964	......	45.65	......	......	......	......	874.13	84.75	......	3.01	5.32
1965	528.69	50.00	50.00	50.00	50.00	50.00	969.26	92.43	......	3.00	5.59
1966	462.28	43.72	43.13	47.56	90.38	44.91	785.69	80.33	......	3.40	6.63
1967	569.18	53.83	56.59	49.66	86.76	53.80	905.11	96.47	......	3.20	5.73
1968	622.79	58.90	61.69	56.27	91.64	76.48	943.75	103.86	......	3.07	5.67
1969	544.86	51.53	54.74	37.85	77.54	67.87	800.36	92.06	......	3.24	6.08
1970	531.12	50.23	52.91	35.70	81.64	64.34	838.92	92.15	......	3.83	6.45
1971	596.68	56.43	60.53	49.56	78.78	73.83	890.20	102.09	114.12	3.14	5.41
1972	681.79	64.48	70.33	47.69	84.34	83.34	1,020.02	118.05	133.73	2.84	5.50
1973	547.93	51.82	56.60	37.53	68.66	64.51	850.86	97.55	92.19	3.06	7.12
1974	382.03	36.13	39.15	26.36	53.30	39.84	616.24	68.56	59.82	4.47	11.59
1975	503.73	47.64	52.73	32.98	66.94	45.20	852.41	90.19	77.62	4.31	9.15
1976	612.01	57.88	63.36	42.57	82.54	59.23	1,004.65	107.46	97.88	3.77	8.90
1977	555.12	52.50	56.43	40.50	81.08	53.85	831.17	95.10	105.05	4.62	10.79
1978	566.96	53.62	58.87	41.58	75.38	55.01	805.01	96.11	117.98	5.28	12.03
1979	655.04	61.95	70.24	50.64	73.80	63.45	838.74	107.94	151.14	5.47	13.46
1980	823.27	77.86	91.52	76.19	76.90	70.83	963.99	135.76	202.34	5.26	12.66
1981	751.90	71.11	80.89	66.85	80.10	73.68	875.00	122.55	195.84	5.20	11.96
1982	856.79	81.03	93.02	73.63	86.94	85.00	1,046.54	140.64	232.41	5.81	11.60
1983	1,006.41	95.18	111.35	98.09	92.48	94.32	1,258.64	164.93	278.60	4.40	8.03
1984	1,013.91	96.38	110.58	90.61	103.14	97.63	1,211.57	167.24	247.35	4.64	10.02
1985	1,285.66	121.59	139.27	113.97	126.38	131.29	1,546.67	211.28	324.93	4.25	8.12
1986	1,465.31	138.59	160.11	117.65	147.54	140.05	1,895.95	242.17	348.83	3.49	6.09
1987	1,461.61	138.23	167.04	118.57	134.62	114.57	1,938.83	247.08	330.47	3.08	5.48
1988	1,652.25	156.26	189.42	146.60	149.38	128.19	2,168.57	277.72	381.38	3.64	8.01
1989	2,062.30	195.04	232.76	178.33	204.00	156.15	2,753.20	353.40	454.82	3.45	7.42
1990	1,908.45	180.49	223.60	141.49	182.60	122.06	2,633.66	330.22	373.84	3.61	6.47
1991	2,426.04	229.44	285.82	201.87	204.26	172.68	3,168.83	417.09	586.34	3.24	4.79
1992	2,539.92	240.21	294.39	214.72	209.66	200.83	3,301.11	435.71	676.95	2.99	4.22
1993	2,739.44	259.08	315.26	270.48	229.92	216.82	3,754.09	466.45	776.80	2.78	4.46
1994	2,653.37	250.94	318.10	222.46	198.41	195.80	3,834.44	459.27	751.96	2.82	5.83
1995	3,484.15	329.51	413.29	301.96	252.90	274.25	5,117.12	615.93	1,052.13	2.56	6.09
1996	4,148.07	392.30	494.38	352.30	259.91	351.17	6,448.27	740.74	1,291.03	2.19	5.24
1997	5,405.19	511.19	630.38	466.25	335.19	495.96	7,908.25	970.43	1,570.35	1.77	4.57
1998	6,299.94	595.81	743.65	482.38	445.94	521.42	9,181.43	1,229.23	2,192.69	1.49	3.46
1999	6,876.10	650.30	828.21	466.70	511.15	516.61	11,497.12	1,469.25	4,069.31	1.25	3.17
2000	6,945.57	656.87	803.29	462.76	440.54	646.95	10,786.85	1,320.28	2,470.52	1.15	3.63
2001	6,236.39	589.80	735.71	438.81	329.84	593.69	10,021.50	1,148.08	1,950.40	1.32	2.95
2002	5,000.00	472.87	583.95	395.81	233.08	510.46	8,341.63	879.82	1,335.51	1.61	2.92
2003[3]	6,440.30	572.56	735.50	519.58	265.58	655.12	10,453.92	1,111.92	2,003.37	1.77	3.84

[1] End of period.
[2] Includes stocks as follows: for NYSE, all stocks listed; for Dow Jones industrial average, 30 stocks; for Standard & Poor's (S&P) composite index, 500 stocks; and for Nasdaq composite index, over 5,000.
[3] The NYSE relaunched the composite index on January 9, 2003, incorporating new definitions, methodology, and base value. (The composite index based on December 31, 1965=50 was discontinued.) Subset indexes on financial, energy, and health care were released by the NYSE on January 8, 2004 (see Table B–56). NYSE indexes shown in this table for industrials, utilities, transportation, and finance were discontinued.
[4] Effective April 1993, the NYSE doubled the value of the utility index to facilitate trading of options and futures on the index. Indexes prior to 1993 reflect the doubling.
[5] Based on 500 stocks in the S&P composite index.
[6] Aggregate cash dividends (based on latest known annual rate) divided by aggregate market value based on Wednesday closing prices. Monthly data are averages of weekly figures; annual data are averages of monthly figures.
[7] Quarterly data are ratio of earnings (after taxes) for four quarters ending with particular quarter-to-price index for last day of that quarter. Annual data are averages of quarterly ratios.

Sources: New York Stock Exchange, Dow Jones & Co., Inc., Standard & Poor's, and Nasdaq Stock Market.

TABLE B–56. Common stock prices and yields, 2000–2024

End of year or month	Common stock prices (end of period) [1]							Common stock yields (Standard & Poor's) (percent) [4]	
	New York Stock Exchange (NYSE) indexes (December 31, 2002=5,000) [2, 3]				Dow Jones industrial average [2]	Standard & Poor's composite index (1941–43=10) [2]	Nasdaq composite index (Feb. 5, 1971=100) [2]	Dividend-price ratio [5]	Earnings-price ratio [6]
	Composite	Financial	Energy	Health care					
2000	6,945.57	....	....	....	10,786.85	1,320.28	2,470.52	1.15	3.63
2001	6,236.39	....	....	....	10,021.50	1,148.08	1,950.40	1.32	2.95
2002	5,000.00	5,000.00	5,000.00	5,000.00	8,341.63	879.82	1,335.51	1.61	2.92
2003	6,440.30	6,676.42	6,321.05	5,925.97	10,453.92	1,111.92	2,003.37	1.77	3.84
2004	7,250.06	7,493.92	7,934.49	6,119.07	10,783.01	1,211.92	2,175.44	1.72	4.89
2005	7,753.95	7,996.94	10,109.61	6,458.20	10,717.50	1,248.29	2,205.32	1.83	5.36
2006	9,139.02	9,552.22	11,967.88	6,958.64	12,463.15	1,418.30	2,415.29	1.87	5.78
2007	9,740.32	8,300.68	15,283.81	7,170.42	13,264.82	1,468.36	2,652.28	1.86	5.29
2008	5,757.05	3,848.42	9,434.01	5,340.73	8,776.39	903.25	1,577.03	2.37	3.54
2009	7,184.96	4,721.02	11,415.03	6,427.27	10,428.05	1,115.10	2,269.15	2.40	1.86
2010	7,964.02	4,958.62	12,520.29	6,501.53	11,577.51	1,257.64	2,652.87	1.98	6.04
2011	7,477.03	4,062.88	12,409.61	7,045.61	12,217.56	1,257.60	2,605.15	2.05	6.77
2012	8,443.51	5,114.54	12,606.06	7,904.06	13,104.14	1,426.19	3,019.51	2.24	6.20
2013	10,400.33	6,353.68	14,557.54	10,245.31	16,576.66	1,848.36	4,176.59	2.14	5.57
2014	10,839.24	6,707.16	12,533.54	11,967.04	17,823.07	2,058.90	4,736.05	2.04	5.25
2015	10,143.42	6,305.68	9,343.81	12,385.19	17,425.03	2,043.94	5,007.41	2.10	4.59
2016	11,056.89	6,961.56	11,503.76	11,907.20	19,762.60	2,238.83	5,383.12	2.19	4.17
2017	12,808.84	8,235.89	11,470.58	14,220.58	24,719.22	2,673.61	6,903.39	1.97	4.22
2018	11,374.39	6,969.48	9,341.44	15,158.38	23,327.46	2,506.85	6,635.28	1.90	4.66
2019	13,913.03	8,700.11	10,037.30	18,070.10	28,538.44	3,230.78	8,972.60	1.93	4.53
2020	14,524.80	8,292.85	6,502.78	20,045.67	30,606.48	3,756.07	12,888.28	1.89	3.28
2021	17,164.13	10,175.36	9,146.18	24,345.65	36,338.30	4,766.18	15,644.97	1.38	3.79
2022	15,184.31	8,668.77	13,051.89	23,439.84	33,147.25	3,839.50	10,466.48	1.57	4.79
2023	16,852.89	9,881.78	13,259.54	24,167.14	37,689.54	4,769.83	15,011.35	1.62	4.17
2022: Jan	16,659.78	10,200.96	10,648.50	22,894.30	35,131.86	4,515.55	14,239.88	1.33	....
Feb	16,313.89	9,875.64	11,142.11	22,757.28	33,892.60	4,373.94	13,751.40	1.38	....
Mar	16,670.91	9,971.24	12,065.19	23,828.90	34,678.35	4,530.41	14,220.52	1.41	4.37
Apr	15,615.25	9,139.65	11,791.27	22,944.86	32,977.21	4,131.93	12,334.64	1.42	....
May	15,827.05	9,297.74	13,336.34	23,217.06	32,990.12	4,132.15	12,081.39	1.55	....
June	14,487.64	8,313.35	11,252.27	22,640.69	30,775.43	3,785.38	11,028.74	1.64	5.08
July	15,327.71	8,901.55	12,171.38	23,258.76	32,845.13	4,130.29	12,390.69	1.64	....
Aug	14,801.25	8,563.40	12,304.08	21,713.32	31,510.43	3,955.00	11,816.20	1.56	....
Sept	13,472.18	7,747.27	11,004.62	20,936.54	28,725.51	3,585.62	10,575.62	1.71	5.22
Oct	14,747.03	8,481.92	13,240.72	22,560.24	32,732.95	3,871.98	10,988.15	1.78	....
Nov	15,780.02	9,083.61	13,551.07	23,695.65	34,589.77	4,080.11	11,468.00	1.70	....
Dec	15,184.31	8,668.77	13,051.89	23,439.84	33,147.25	3,839.50	10,466.48	1.72	4.50
2023: Jan	16,036.39	9,432.80	13,434.64	23,027.98	34,086.04	4,076.60	11,584.55	1.71	....
Feb	15,428.97	9,139.29	12,724.58	22,041.91	32,656.70	3,970.15	11,455.54	1.67	....
Mar	15,374.91	8,494.23	12,455.61	22,550.28	33,274.15	4,109.31	12,221.91	1.73	4.26
Apr	15,545.88	8,699.82	12,895.29	23,395.71	34,098.16	4,169.48	12,226.58	1.67	....
May	14,887.14	8,346.55	11,635.80	22,397.48	32,908.27	4,179.83	12,935.29	1.67	....
June	15,875.91	8,907.96	12,504.78	23,378.02	34,407.60	4,450.38	13,787.92	1.59	4.07
July	16,427.29	9,305.43	13,328.62	23,604.11	35,559.53	4,588.96	14,346.02	1.54	....
Aug	16,000.37	8,988.61	13,467.87	23,602.11	34,721.91	4,507.66	14,034.97	1.55	....
Sept	15,398.21	8,668.91	13,852.13	22,951.48	33,507.50	4,288.05	13,219.32	1.57	4.30
Oct	14,919.20	8,332.44	13,275.28	22,337.96	33,052.87	4,193.80	12,851.24	1.62	....
Nov	16,088.84	9,258.87	13,250.97	23,464.37	35,950.89	4,567.80	14,226.22	1.56	....
Dec	16,852.89	9,881.78	13,259.54	24,167.14	37,689.54	4,769.83	15,011.35	1.50	4.03
2024: Jan	16,911.13	9,903.28	13,132.77	24,943.26	38,150.30	4,845.65	15,164.01	1.48	....
Feb	17,607.43	10,247.93	13,259.84	25,971.64	38,996.39	5,096.27	16,091.92	1.42	....
Mar	18,312.67	10,702.54	14,361.75	26,551.78	39,807.37	5,254.35	16,379.46	1.38	3.64
Apr	17,603.34	10,212.57	14,395.24	25,455.64	37,815.92	5,035.69	15,657.82	1.40	....
May	18,083.69	10,647.38	14,471.13	25,982.73	38,686.32	5,277.51	16,735.02	1.37	....
June	18,026.50	10,577.82	14,073.60	26,375.22	39,118.86	5,460.48	17,732.60	1.34	3.59
July	18,710.01	11,252.91	14,279.73	26,913.78	40,842.79	5,522.30	17,599.40	1.31	....
Aug	19,292.23	11,642.16	14,092.64	28,478.56	41,563.08	5,648.40	17,713.62	1.34	....
Sept	19,516.44	11,677.14	13,544.51	27,656.89	42,330.15	5,762.48	18,189.17	1.31	3.48
Oct	19,238.95	11,781.25	13,535.19	26,201.34	41,763.46	5,705.45	18,095.15	1.28	....
Nov	20,272.04	12,763.92	14,184.72	26,175.03	44,910.65	6,032.38	19,218.17	1.26	....

[1] End of year or month.
[2] Includes stocks as follows: for NYSE, all stocks listed (in 2023, over 2,270); for Dow Jones industrial average, 30 stocks; for Standard & Poor's (S&P) composite index, 500 stocks; and for Nasdaq composite index, in 2023, about 3,400.
[3] The NYSE relaunched the composite index on January 9, 2003, incorporating new definitions, methodology, and base value. Subset indexes on financial, energy, and health care were released by the NYSE on January 8, 2004.
[4] Based on 500 stocks in the S&P composite index.
[5] Aggregate cash dividends (based on latest known annual rate) divided by aggregate market value based on Wednesday closing prices. Monthly data are averages of weekly figures, annual data are averages of monthly figures.
[6] Quarterly data are ratio of earnings (after taxes) for four quarters ending with particular quarter-to-price index for last day of that quarter. Annual data are averages of quarterly ratios.

Sources: New York Stock Exchange, Dow Jones & Co., Inc., Standard & Poor's, and Nasdaq Stock Market.

TABLE B–57. U.S. international transactions, 1973–2024

[Millions of dollars; quarterly data seasonally adjusted]

Year or quarter	Current Account [1]												Current account balance as a percentage of GDP
	Goods [2]			Services			Balance on goods and services	Primary income receipts and payments			Balance on secondary Income [3]	Balance on current account	
	Exports	Imports	Balance on goods	Exports	Imports	Balance on services		Receipts	Payments	Balance on primary income			
1973	71,410	70,499	911	19,832	18,843	989	1,900	21,809	9,656	12,153	–6,914	7,140	0.5
1974	98,306	103,811	–5,505	22,591	21,378	1,212	–4,293	27,587	12,084	15,503	–9,248	1,961	.1
1975	107,088	98,185	8,903	25,497	21,996	3,500	12,403	25,351	12,565	12,786	–7,076	18,117	1.1
1976	114,745	124,228	–9,483	27,971	24,570	3,402	–6,082	29,374	13,312	16,062	–5,686	4,296	.2
1977	120,816	151,907	–31,091	31,486	27,640	3,845	–27,247	32,355	14,218	18,137	–5,227	–14,336	–.7
1978	142,075	176,002	–33,927	36,353	32,189	4,164	–29,763	42,087	21,680	20,407	–5,788	–15,143	–.6
1979	184,439	212,007	–27,568	39,693	36,689	3,003	–24,566	63,835	32,961	30,874	–6,593	–285	.0
1980	224,250	249,750	–25,500	47,585	41,492	6,093	–19,407	72,605	42,533	30,072	–8,349	2,318	.1
1981	237,044	265,067	–28,023	57,355	45,503	11,851	–16,172	86,529	53,626	32,903	–11,702	5,029	.2
1982	211,157	247,642	–36,485	64,078	51,750	12,330	–24,156	96,522	61,359	35,163	–16,545	–5,537	–.2
1983	201,799	268,901	–67,102	64,307	54,973	9,335	–57,767	96,031	59,643	36,388	–17,311	–38,691	–1.1
1984	219,926	332,418	–112,492	71,168	67,748	3,418	–109,074	115,639	80,574	35,065	–20,334	–94,344	–2.3
1985	215,915	338,088	–122,173	73,156	72,863	294	–121,879	105,046	79,324	25,722	–21,999	–118,155	–2.7
1986	223,344	368,425	–145,081	86,690	80,147	6,543	–138,539	102,798	87,304	15,494	–24,131	–147,176	–3.2
1987	250,208	409,765	–159,557	98,661	90,788	7,874	–151,683	113,603	99,309	14,294	–23,265	–160,655	–3.3
1988	320,230	447,189	–126,959	110,920	98,525	12,394	–114,566	141,666	122,981	18,685	–25,274	–121,153	–2.3
1989	359,916	477,665	–117,749	127,087	102,480	24,607	–93,142	166,384	146,560	19,824	–26,169	–99,487	–1.8
1990	387,401	498,438	–111,037	147,833	117,660	30,173	–80,865	176,894	148,345	28,549	–26,654	–78,969	–1.3
1991	414,083	491,020	–76,937	164,260	118,459	45,802	–31,136	155,327	131,198	24,129	9,904	2,897	.0
1992	439,631	536,528	–96,897	177,251	119,566	57,685	–39,212	139,082	114,845	24,237	–36,635	–51,613	–.8
1993	456,943	589,394	–132,451	185,920	123,780	62,141	–70,311	141,606	116,287	25,319	–39,811	–84,805	–1.2
1994	502,859	668,690	–165,831	200,395	133,057	67,338	–98,493	169,447	152,302	17,145	–40,265	–121,612	–1.7
1995	575,204	749,374	–174,170	219,183	141,397	77,786	–96,384	213,661	192,771	20,890	–38,074	–113,567	–1.5
1996	612,113	803,113	–191,000	239,489	152,554	86,935	–104,065	229,530	207,212	22,318	–43,017	–124,764	–1.5
1997	678,366	876,794	–198,428	256,087	165,932	90,155	–108,273	261,357	248,750	12,607	–45,062	–140,726	–1.6
1998	670,416	918,637	–248,221	262,758	180,677	82,081	–166,140	266,244	261,978	4,266	–53,187	–215,062	–2.4
1999	698,524	1,035,592	–337,068	278,001	196,742	81,258	–255,809	302,540	292,566	9,974	–40,777	–286,612	–3.0
2000	784,940	1,231,722	–446,783	298,023	220,927	77,096	–369,686	365,612	350,980	14,632	–46,863	–401,918	–3.9
2001	731,331	1,153,701	–422,370	284,035	222,039	61,997	–360,373	311,364	288,120	23,244	–56,953	–394,082	–3.7
2002	698,036	1,173,281	–475,245	288,059	233,480	54,579	–420,666	306,391	288,886	17,506	–52,949	–456,110	–4.2
2003	730,446	1,272,089	–541,643	297,740	252,340	45,401	–496,243	346,931	317,677	29,254	–55,300	–522,289	–4.6
2004	823,584	1,488,349	–664,766	344,536	290,609	53,927	–610,838	432,839	386,256	46,583	–71,634	–635,890	–5.2
2005	913,016	1,695,820	–782,804	378,487	312,225	66,262	–716,542	536,294	492,108	44,186	–76,876	–749,232	–5.7
2006	1,040,905	1,878,194	–837,289	423,086	349,329	73,756	–763,533	669,919	653,945	15,974	–69,088	–816,646	–5.9
2007	1,165,151	1,986,347	–821,196	495,664	385,464	110,199	–710,997	816,938	752,582	64,356	–89,910	–736,550	–5.1
2008	1,308,795	2,141,287	–832,492	540,791	420,650	120,142	–712,350	820,244	708,225	112,019	–96,192	–696,523	–4.7
2009	1,070,331	1,580,025	–509,694	522,461	407,538	114,923	–394,771	653,222	537,684	115,539	–100,496	–379,729	–2.6
2010	1,290,279	1,938,950	–648,671	582,041	436,456	145,584	–503,087	723,223	553,311	169,911	–98,834	–432,009	–2.9
2011	1,498,887	2,239,886	–740,999	644,665	458,188	186,477	–554,522	791,469	589,038	202,431	–103,211	–455,302	–2.9
2012	1,562,630	2,303,749	–741,119	684,823	469,610	215,213	–525,906	791,613	593,754	197,859	–90,134	–418,181	–2.6
2013	1,593,708	2,294,247	–700,539	719,413	465,736	253,678	–446,861	811,501	616,041	195,460	–88,115	–339,516	–2.0
2014	1,635,563	2,385,480	–749,917	757,051	491,086	265,965	–483,952	845,858	645,623	200,235	–86,339	–370,056	–2.1
2015	1,511,381	2,273,249	–761,868	769,397	498,305	271,092	–490,776	824,929	639,724	185,205	–102,882	–408,453	–2.2
2016	1,457,393	2,207,195	–749,801	783,431	513,088	270,343	–479,458	857,240	660,798	196,442	–113,199	–396,216	–2.1
2017	1,557,003	2,356,345	–799,343	837,474	555,070	282,404	–516,939	995,442	737,501	257,942	–108,618	–367,616	–1.9
2018	1,676,913	2,555,662	–878,749	865,549	565,395	300,155	–578,594	1,102,964	847,689	255,275	–116,530	–439,849	–2.1
2019	1,655,098	2,512,358	–857,260	891,177	593,313	297,865	–559,395	1,139,310	891,911	247,400	–129,756	–441,751	–2.1
2020	1,433,852	2,346,727	–912,875	726,296	467,111	259,185	–653,691	954,005	776,288	177,717	–125,227	–601,201	–2.8
2021	1,765,853	2,849,043	–1,083,190	804,948	569,829	235,120	–848,070	1,048,567	929,509	119,058	–138,968	–867,980	–3.7
2022	2,090,339	3,270,281	–1,179,941	949,065	713,886	235,179	–944,762	1,184,423	1,068,464	115,959	–183,295	–1,012,098	–3.9
2023	2,045,221	3,108,509	–1,063,288	1,026,596	748,198	278,398	–784,890	1,376,721	1,309,692	67,029	–187,515	–905,376	–3.3
2021: I	411,870	672,346	–260,476	189,042	123,849	65,193	–195,283	254,021	216,575	37,446	–31,666	–189,504	–3.3
II	434,365	701,135	–266,769	196,006	133,875	62,131	–204,639	255,188	231,097	24,092	–30,688	–211,235	–3.6
III	441,784	713,466	–271,682	203,524	152,103	51,421	–220,261	266,642	241,179	25,463	–40,196	–234,993	–3.9
IV	477,833	762,096	–284,263	216,377	160,001	56,375	–227,887	272,716	240,658	32,058	–36,418	–232,248	–3.7
2022: I	489,628	821,627	–331,999	224,073	166,624	57,450	–274,549	273,035	251,980	21,055	–38,325	–291,819	–4.6
II	536,202	845,281	–309,079	236,736	178,503	58,233	–250,846	289,846	257,941	31,905	–44,158	–263,099	–4.1
III	546,427	812,460	–266,033	239,704	184,449	55,255	–210,778	305,686	269,864	35,822	–55,573	–230,529	–3.5
IV	518,082	790,913	–272,831	248,552	184,310	64,242	–208,589	315,857	288,679	27,177	–45,239	–226,651	–3.4
2023: I	518,316	785,166	–266,851	249,316	183,267	66,049	–200,801	328,098	311,356	16,742	–46,271	–230,330	–3.4
II	497,038	771,030	–273,992	255,875	185,511	70,364	–203,628	338,467	320,540	17,926	–46,901	–232,603	–3.4
III	515,998	773,827	–257,829	258,072	186,703	71,369	–186,461	355,262	338,382	16,880	–51,078	–220,659	–3.2
IV	513,869	778,485	–264,616	263,332	192,717	70,616	–194,001	354,894	339,413	15,481	–43,264	–221,784	–3.1
2024: I	516,760	793,707	–276,947	268,590	194,884	73,706	–203,241	359,632	352,956	6,676	–44,419	–240,984	–3.4
II p	516,708	813,854	–297,146	271,662	197,741	73,921	–223,225	362,377	361,254	1,122	–44,684	–266,787	–3.7

1 Current and capital account statistics in the international transactions accounts differ slightly from statistics in the National Income and Product Accounts (NIPAs) because of adjustments made to convert the international statistics to national accounting concepts. A reconciliation can be found in NIPA table 4.3B.

2 Adjusted from Census data to align with concepts and definitions used to prepare the international and national economic accounts. The adjustments are necessary to supplement coverage of Census data, to eliminate duplication of transactions recorded elsewhere in the international accounts, to value transactions according to a standard definition, and for earlier years, to record transactions in the appropriate period.

See next page for continuation of table.

TABLE B–57. U.S. international transactions, 1973–2024—*Continued*

[Millions of dollars; quarterly data seasonally adjusted]

Year or quarter	Balance on capital account [1]	Financial account											Statistical discrepancy
		Net U.S. acquisition of financial assets excluding financial derivatives [net increase in assets / financial outflow (+)]					Net U.S. incurrence of liabilities excluding financial derivatives [net increase in liabilities / financial inflow (+)]				Financial derivatives other than reserves, net transactions	Net lending (+) or net borrowing (–) from financial account transactions [5]	
		Total	Direct investment assets	Portfolio investment assets	Other investment assets	Reserve assets [4]	Total	Direct investment liabilities	Portfolio investment liabilities	Other investment liabilities			
1973	....	22,874	11,353	672	11,007	–158	18,388	2,800	4,790	10,798	....	4,486	–2,654
1974	....	34,745	9,052	1,853	22,373	1,467	35,228	4,761	5,500	24,967	....	–483	–2,444
1975	....	39,703	14,244	6,247	18,363	849	16,870	2,603	12,761	1,506	....	22,833	4,717
1976	....	51,269	11,949	8,885	27,877	2,558	37,840	4,347	16,165	17,328	....	13,429	9,134
1977	....	34,785	11,891	5,459	17,060	375	52,770	3,728	37,615	11,427	....	–17,985	–3,651
1978	....	61,130	16,057	3,626	42,179	–732	66,275	7,896	30,083	28,296	....	–5,145	9,997
1979	....	66,053	25,223	12,430	27,267	1,133	40,693	11,876	–13,502	42,319	....	25,360	25,647
1980	....	86,968	19,222	6,042	53,550	8,154	62,036	16,918	23,825	21,293	....	24,932	22,614
1981	....	114,147	9,624	15,650	83,697	5,176	85,684	25,196	17,509	42,979	....	28,463	23,433
1982	....	142,722	19,397	12,395	105,965	4,965	109,897	27,475	19,695	62,727	....	32,825	38,362
1983	....	74,690	20,844	2,063	50,588	1,195	95,715	18,688	18,382	58,645	....	–21,025	17,666
1984	....	50,740	26,770	3,498	17,340	3,132	126,413	34,832	38,695	52,886	....	–75,673	18,673
1985	....	47,064	21,241	3,008	18,957	3,858	146,544	22,057	68,004	56,483	....	–99,480	18,677
1986	....	107,252	19,524	8,984	79,057	–313	223,854	30,946	104,497	88,411	....	–116,602	30,570
1987	....	84,058	39,795	7,903	45,508	–9,148	251,863	63,232	79,631	109,000	....	–167,805	–7,149
1988	....	105,747	21,701	4,589	75,544	3,913	244,008	56,910	86,786	100,312	....	–138,261	–17,108
1989	–207	182,908	50,973	31,166	75,476	25,293	230,302	75,801	74,852	79,649	....	–47,394	52,299
1990	–7,221	103,985	59,934	30,557	11,336	2,158	162,109	71,247	25,767	65,095	....	–58,124	28,066
1991	–5,129	75,753	49,253	32,053	210	–5,763	119,586	34,535	72,562	12,489	....	–43,833	–41,601
1992	1,449	84,899	58,755	50,684	–20,639	–3,901	178,842	30,315	92,199	56,328	....	–93,943	–43,776
1993	–714	199,399	82,799	137,917	–22,696	1,379	278,607	50,211	174,387	54,009	....	–79,208	6,313
1994	–1,112	188,758	89,988	54,088	50,028	–5,346	312,995	55,942	131,849	125,204	....	–124,237	–1,514
1995	–221	363,555	110,041	143,506	100,266	9,742	446,393	69,067	254,431	122,895	....	–82,838	30,951
1996	–8	424,548	103,024	160,179	168,013	–6,668	559,027	97,644	392,107	69,276	....	–134,479	–9,706
1997	–256	502,024	121,352	121,036	258,626	1,010	720,999	122,150	311,105	287,744	....	–218,975	–77,995
1998	–7	385,936	174,751	132,186	72,216	6,783	452,901	211,152	225,878	15,871	....	–66,965	148,106
1999	–6,428	526,612	247,484	141,007	146,868	–8,747	765,215	312,449	278,697	174,069	....	–238,603	54,437
2000	–4,217	587,682	186,371	159,713	241,308	290	1,066,074	349,124	441,966	274,984	....	–478,392	–72,257
2001	12,170	386,313	146,041	106,919	128,442	4,911	788,345	172,496	431,492	184,357	....	–402,032	–20,120
2002	–3,825	319,175	178,984	79,532	56,978	3,681	821,844	111,056	504,155	206,634	....	–502,668	–42,734
2003	–8,499	371,104	195,218	133,059	44,351	–1,524	911,660	117,107	550,163	244,390	....	–540,556	–9,768
2004	–4,344	1,058,661	374,006	191,956	495,505	–2,806	1,600,881	213,642	867,340	519,899	....	–542,220	98,014
2005	950	562,996	52,591	267,290	257,210	–14,094	1,277,056	142,345	832,037	302,673	....	–714,059	34,223
2006	–7,439	1,324,623	283,800	493,366	549,830	–2,373	2,120,480	298,464	1,126,735	695,280	–29,710	–825,567	–1,482
2007	–6,057	1,563,467	523,889	380,807	658,649	122	2,190,087	346,615	1,156,612	686,860	–6,222	–632,841	109,765
2008	–172	–317,592	343,584	–284,269	–381,754	4,848	462,408	341,091	523,683	–402,367	32,947	–747,053	–50,358
2009	–5,877	131,082	312,597	375,883	–609,654	52,256	325,644	161,082	357,352	–192,789	–44,816	–239,379	146,227
2010	–6,891	958,737	349,829	199,620	407,454	1,835	1,391,042	264,039	820,434	306,569	–14,076	–446,381	–7,481
2011	–9,020	492,556	436,615	85,365	–45,301	15,877	983,522	263,499	311,626	408,397	–35,006	–525,972	–61,650
2012	931	171,359	377,239	243,182	–453,522	4,460	632,034	250,343	747,017	–365,327	7,064	–453,611	–36,361
2013	–6,559	626,189	392,796	457,734	–221,242	–3,099	1,052,068	288,131	511,987	251,949	2,222	–423,657	–77,582
2014	–6,535	865,694	387,528	581,668	–99,920	–3,583	1,109,443	251,857	697,607	159,979	–54,335	–298,084	78,506
2015	–7,940	144,104	302,072	107,154	–258,831	–6,292	503,468	511,434	213,910	–221,876	–27,035	–386,400	29,993
2016	–6,606	336,438	299,814	37,489	–2,955	2,090	706,693	474,388	231,265	1,040	7,827	–362,427	40,394
2017	12,394	1,161,984	409,413	540,728	213,533	–1,690	1,559,219	380,823	790,810	387,586	23,998	–373,237	–18,016
2018	–4,261	429,710	–130,720	381,863	173,578	4,989	712,178	214,716	303,075	194,387	–20,404	–302,872	141,238
2019	–6,456	315,580	114,924	–11,453	207,450	4,659	832,266	315,983	233,469	282,814	–41,670	–558,356	–110,149
2020	–5,610	954,808	282,333	406,368	257,133	8,974	1,621,666	137,068	946,560	538,038	–5,107	–671,965	–65,154
2021	–1,423	1,191,028	341,955	711,540	23,541	113,993	1,975,626	475,803	614,103	885,720	–39,028	–823,625	45,778
2022	–181	747,109	388,510	322,719	30,066	5,814	1,535,516	408,982	760,384	366,150	–80,698	–869,105	143,174
2023	–6,320	978,604	454,085	81,562	442,916	41	1,887,085	348,784	1,231,077	307,224	–15,642	–924,123	–12,427
2021: I	–2,343	435,739	65,307	337,343	35,189	–2,100	630,216	56,963	393,559	179,694	–2,216	–196,693	–4,846
II	–649	240,110	121,535	175,898	–57,800	477	443,865	124,861	146,867	172,138	–7,319	–211,075	809
III	3,231	460,634	82,927	303,444	–38,339	112,603	677,733	162,914	200,792	314,027	–6,796	–223,895	7,867
IV	–1,662	54,545	72,185	–105,144	84,491	3,013	223,811	131,065	–127,115	219,861	–22,697	–191,962	41,948
2022: I	–1,367	395,757	144,052	191,983	58,790	932	681,897	136,221	264,368	281,307	6,102	–280,037	13,149
II	–2,462	364,634	96,648	236,902	29,903	1,181	451,649	71,867	384,377	–4,595	–45,911	–132,925	132,636
III	6,272	295,807	34,770	270,789	–10,549	797	526,270	127,356	262,003	136,912	–33,940	–264,404	–40,147
IV	–2,624	–309,090	113,039	–376,955	–48,077	2,903	–124,300	73,537	–150,364	–47,474	–6,949	–191,739	37,535
2023: I	–2,520	199,533	89,192	18,614	90,948	778	585,035	93,218	349,775	142,042	–1,727	–387,229	–154,379
II	–1,061	209,246	78,657	53,042	77,276	272	309,433	88,890	392,385	–171,842	–4,741	–104,928	128,736
III	–994	270,003	119,890	48,595	101,118	400	467,099	66,740	261,558	138,801	1,068	–196,028	25,624
IV	–1,745	299,822	166,346	–38,689	173,574	–1,408	525,518	99,936	227,358	198,223	–10,242	–235,937	–12,408
2024: I	–1,813	361,707	112,254	162,791	84,154	2,509	544,659	67,900	395,359	81,400	–2,865	–185,817	56,980
II ^{p}	–1,470	153,140	47,475	109,445	–4,459	679	387,006	89,452	258,737	38,816	–70,471	–304,337	–36,081

[3] Includes U.S. government and private transfers, such as U.S. government grants and pensions, fines and penalties, withholding taxes, personal transfers, insurance-related transfers, and other current transfers.
[4] Consists of monetary gold, special drawing rights (SDRs), the U.S. reserve position in the International Monetary Fund (IMF), and other reserve assets, including foreign currencies.
[5] Net lending means that U.S. residents are net suppliers of funds to foreign residents, and net borrowing means the opposite.

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

Table B–58. U.S. international trade in goods on balance of payments (BOP) and Census basis, and trade in services on BOP basis, 1994–2024

[Billions of dollars; monthly data seasonally adjusted]

Year or month	Goods: Exports (f.a.s. value)[1, 2]							Goods: Imports (customs value)[6]							Services (BOP basis)	
		Census basis (by end-use category)							Census basis (by end-use category)							
	Total, BOP basis[3, 4]	Total, Census basis[3, 5]	Foods, feeds, and beverages	Industrial supplies and materials	Capital goods except automotive	Automotive vehicles, parts, and engines	Consumer goods (nonfood) except automotive	Total, BOP basis[4]	Total, Census basis[5]	Foods, feeds, and beverages	Industrial supplies and materials	Capital goods except automotive	Automotive vehicles, parts, and engines	Consumer goods (nonfood) except automotive	Exports[4]	Imports[4]
1994	502.9	512.6	42.0	121.4	205.0	57.8	60.0	668.7	663.3	31.0	162.1	184.4	118.3	146.3	200.4	133.1
1995	575.2	584.7	50.5	146.2	233.0	61.8	64.4	749.4	743.5	33.2	181.8	221.4	123.8	159.9	219.2	141.4
1996	612.1	625.1	55.5	147.7	253.0	65.0	70.1	803.1	795.3	35.7	204.5	228.1	128.9	172.0	239.5	152.6
1997	678.4	689.2	51.5	158.2	294.5	74.0	77.4	876.8	869.7	39.7	213.8	253.3	139.8	193.8	256.1	165.9
1998	670.4	682.1	46.4	148.3	299.4	72.4	80.3	918.6	911.9	41.2	200.1	269.5	148.7	217.0	262.8	180.7
1999	698.5	695.8	46.0	147.5	310.8	75.3	80.9	1,035.6	1,024.6	43.6	221.4	295.7	179.0	241.9	278.0	196.7
2000	784.9	781.9	47.9	172.6	356.9	80.4	89.4	1,231.7	1,218.0	46.0	299.0	347.0	195.9	281.8	298.0	220.9
2001	731.3	729.1	49.4	160.1	321.7	75.4	88.3	1,153.7	1,141.0	46.6	273.9	298.0	189.8	284.3	284.0	222.0
2002	698.0	693.1	49.6	156.8	290.4	78.9	84.4	1,173.3	1,161.4	49.7	267.7	283.3	203.7	307.8	288.1	233.5
2003	730.4	724.8	55.0	173.0	293.7	80.6	89.9	1,272.1	1,257.1	55.8	313.8	295.9	210.1	333.9	297.7	252.3
2004	823.6	814.9	56.6	203.9	327.5	89.2	103.2	1,488.3	1,469.7	62.1	412.8	343.6	228.2	372.9	344.5	290.6
2005	913.0	901.1	59.0	233.0	358.4	98.4	115.3	1,695.8	1,673.5	68.1	523.8	379.3	239.4	407.2	378.5	312.2
2006	1,040.9	1,026.0	66.0	276.0	404.0	107.3	129.1	1,878.2	1,853.9	74.9	602.0	418.3	256.6	442.6	423.1	349.3
2007	1,165.2	1,148.2	84.3	316.4	433.0	121.3	146.0	1,986.3	1,957.0	81.7	634.7	444.5	256.7	474.6	495.7	385.5
2008	1,308.8	1,287.4	108.3	388.0	457.7	121.5	161.3	2,141.3	2,103.6	89.0	779.5	453.7	231.2	481.6	540.8	420.7
2009	1,070.3	1,056.0	93.9	296.5	391.2	81.7	149.5	1,580.0	1,559.6	81.6	462.4	370.5	157.7	427.3	522.5	407.5
2010	1,290.3	1,278.5	107.7	391.7	447.5	112.0	165.2	1,939.0	1,913.9	91.7	603.1	449.4	225.1	483.2	582.0	436.5
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
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
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	555.7	308.8	531.7	719.4	465.7
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	757.1	491.1
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	769.4	498.3
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	589.7	349.9	583.1	783.4	513.1
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	837.5	555.1
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	690.9	371.1	645.4	865.5	565.4
2019	1,655.1	1,645.9	131.0	529.5	550.5	163.1	205.6	2,512.4	2,491.7	150.5	520.6	674.8	374.5	653.0	891.2	593.3
2020	1,433.9	1,430.0	139.3	466.5	463.2	129.4	175.0	2,346.7	2,331.5	154.3	478.7	643.4	309.2	639.6	726.3	467.1
2021	1,765.9	1,757.7	164.5	637.4	521.3	146.4	222.3	2,849.0	2,828.5	182.1	649.1	760.0	345.5	767.3	804.9	569.8
2022	2,090.3	2,066.5	179.9	829.4	572.9	163.0	245.1	3,270.3	3,239.9	208.3	809.7	864.5	397.9	838.2	949.1	713.9
2023	2,045.2	2,018.1	161.9	729.7	602.2	180.0	259.5	3,108.5	3,080.2	200.2	675.4	859.1	458.2	757.7	1,026.6	748.2
2023: Jan	175.2	173.7	14.8	63.6	49.7	15.5	23.3	266.5	264.0	17.2	60.7	72.3	37.4	66.2	82.6	61.3
Feb	169.9	168.4	14.7	61.7	49.1	13.9	21.8	262.4	259.8	16.9	59.3	72.6	36.4	63.3	83.0	61.0
Mar	173.1	171.1	14.1	63.5	49.3	14.5	22.3	256.3	253.7	16.7	57.0	70.6	35.5	63.3	83.8	60.9
Apr	166.3	163.6	13.4	59.2	49.1	14.4	21.1	262.0	259.6	16.4	59.4	71.1	37.1	65.0	84.7	61.7
May	165.4	162.7	12.6	57.8	49.0	15.3	21.5	255.2	253.0	16.1	56.2	71.7	37.2	60.7	85.5	61.7
June	165.4	163.0	12.5	57.1	49.9	15.2	21.2	253.8	251.7	16.4	54.0	70.2	38.6	61.9	85.7	62.1
July	168.4	165.6	12.6	58.7	50.0	16.2	21.2	256.8	254.7	16.8	52.5	71.7	39.0	63.7	85.5	61.7
Aug	172.5	170.1	12.8	61.6	51.1	15.4	22.2	256.2	253.8	16.7	54.9	70.7	38.5	62.3	86.0	61.9
Sept	175.0	172.3	13.4	61.9	51.3	15.7	22.2	260.8	258.4	16.7	55.9	71.5	40.0	63.5	86.6	63.1
Oct	173.4	171.2	13.5	63.1	51.2	15.1	20.9	261.2	258.8	16.7	55.2	72.8	39.5	63.8	87.4	63.9
Nov	168.8	166.2	13.6	59.2	51.3	14.6	20.5	257.2	254.8	16.8	54.6	72.0	39.6	60.9	87.7	64.1
Dec	171.6	170.2	13.9	62.2	51.1	14.2	21.4	260.1	257.7	16.7	55.7	72.0	39.4	63.1	88.3	64.7
2024: Jan	170.4	168.9	13.6	60.6	51.4	14.9	21.4	261.4	258.7	16.8	54.6	74.5	40.4	61.9	88.6	64.0
Feb	175.7	174.1	14.8	64.0	52.8	14.1	21.2	268.6	265.9	18.1	54.9	75.3	42.0	64.5	89.9	65.8
Mar	170.7	169.1	13.7	62.1	50.8	14.2	21.0	263.6	261.3	17.6	54.0	75.7	37.7	65.9	90.0	65.0
Apr	172.5	171.1	12.9	60.8	52.7	14.9	22.2	272.0	269.3	17.5	55.3	78.1	41.7	65.7	89.9	65.8
May	169.7	168.3	12.7	58.8	52.3	14.4	22.5	270.0	267.4	17.5	56.7	77.9	40.2	63.7	91.2	67.0
June	174.2	173.0	13.3	60.2	54.3	15.1	22.6	271.5	269.5	17.2	54.8	80.2	40.0	66.0	91.1	67.4
July	174.9	172.9	13.5	60.4	56.1	13.4	21.8	278.1	275.8	17.5	57.6	83.5	39.8	66.6	92.3	68.2
Aug	179.1	177.8	13.4	61.2	57.8	14.3	22.8	274.1	272.1	17.9	53.7	83.4	38.5	67.0	93.5	69.1
Sept	176.0	174.3	14.1	59.8	55.9	14.8	21.3	285.0	282.9	18.8	55.9	86.2	39.6	71.0	94.0	68.8
Oct ^{p}	170.7	169.0	13.5	57.3	51.9	12.0	20.1	269.3	267.2	18.1	52.7	78.7	38.1	69.0	95.1	70.2

[1] Department of Defense shipments of grant-aid military supplies and equipment under the Military Assistance Program are excluded from total exports through 1985 and included beginning 1986.
[2] F.a.s. (free alongside ship) value basis at U.S. port of exportation for exports.
[3] Beginning with data for 1989, exports have been adjusted for undocumented exports to Canada and are included in the appropriate end-use categories. For prior years, only total exports include this adjustment.
[4] Beginning with data for 1999, exports of goods under the U.S. Foreign Military Sales program and fuel purchases by foreign air and ocean carriers in U.S. ports are included in goods exports (BOP basis) and excluded from services exports. Beginning with data for 1999, imports of petroleum abroad by U.S. military agencies and fuel purchases by U.S. air and ocean carriers in foreign ports are included in goods imports (BOP basis) and excluded from services imports.
[5] Total includes "other" exports or imports, not shown separately.
[6] Total arrivals of imported goods other than in-transit shipments.
[7] Total includes revisions not reflected in detail.
[8] Total exports are on a revised statistical month basis; end-use categories are on a statistical month basis.

Note: Goods on a Census basis are adjusted to a BOP basis by the Bureau of Economic Analysis, in line with concepts and definitions used to prepare international and national accounts. The adjustments are necessary to supplement coverage of Census data, to eliminate duplication of transactions recorded elsewhere in international accounts, to value transactions according to a standard definition, and for earlier years, to record transactions in the appropriate period.

Data include international trade of the U.S. Virgin Islands, Puerto Rico, and U.S. Foreign Trade Zones.

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

Table B–59. U.S. international trade in goods and services by area and country, 2000–2023

[Millions of dollars]

Item	2000	2005	2010	2015	2019	2020	2021	2022	2023
EXPORTS									
Total, all countries	1,082,963	1,291,503	1,872,320	2,280,778	2,546,276	2,160,147	2,570,802	3,039,405	3,071,816
Europe	298,654	366,823	510,936	608,049	735,529	633,089	725,381	912,722	945,982
Euro area [1]	174,591	214,207	292,815	350,143	433,677	377,779	431,621	541,133	569,804
France	30,821	35,241	45,279	50,074	60,012	42,890	46,744	68,187	68,092
Germany	45,379	55,246	75,023	81,184	96,758	87,700	97,301	113,079	118,884
Italy	16,665	18,556	22,787	24,628	33,279	25,767	28,146	36,880	39,996
United Kingdom	73,995	83,456	104,891	126,762	147,130	120,202	129,714	159,387	165,915
Canada	204,237	246,291	307,571	341,365	362,297	309,637	367,774	436,720	440,939
Latin America and Other Western Hemisphere	228,633	259,832	416,623	551,389	584,967	476,315	612,902	728,411	711,992
Brazil	22,112	21,574	53,767	58,667	66,965	49,381	61,957	75,964	69,560
Mexico	127,581	141,856	187,487	267,794	289,849	236,067	308,594	363,097	367,195
Venezuela	9,476	9,395	15,918	14,212	3,623	2,264	3,109	3,774	4,183
Asia and Pacific	301,451	342,228	523,350	633,923	716,470	628,631	739,273	817,505	818,044
China	21,862	50,685	113,576	163,329	167,475	166,311	192,225	197,361	195,524
India	6,731	13,294	29,243	38,838	58,012	43,335	58,032	73,514	74,479
Japan	101,554	93,383	104,991	106,619	124,628	102,244	111,690	119,897	120,365
Korea, Republic of	35,106	37,867	56,700	66,254	80,967	69,150	85,975	96,277	91,290
Singapore	24,557	26,657	39,743	43,049	54,105	53,098	67,043	80,221	79,771
Taiwan	30,603	29,104	36,896	39,016	42,910	39,821	47,256	55,251	52,364
Middle East	28,617	48,702	70,477	102,159	102,183	76,038	82,536	94,429	105,298
Africa	17,203	22,891	40,278	41,229	41,748	33,066	38,648	45,202	45,733
IMPORTS									
Total, all countries	1,452,650	2,008,045	2,375,407	2,771,554	3,105,670	2,813,838	3,418,871	3,984,167	3,856,707
Europe	359,220	493,562	566,372	704,961	854,846	775,804	909,244	1,032,525	1,047,373
Euro area [1]	216,802	304,574	341,235	444,164	537,759	464,418	550,329	642,753	677,669
France	41,344	47,725	56,562	66,202	78,324	57,254	69,191	84,868	85,477
Germany	75,710	110,075	114,861	158,863	163,947	146,319	168,852	190,223	205,884
Italy	31,593	39,767	37,778	53,782	69,467	53,996	67,286	80,811	87,092
United Kingdom	70,962	84,200	96,034	115,152	128,550	105,331	119,885	140,080	151,440
Canada	253,312	319,543	310,341	334,249	363,420	308,988	403,979	494,285	481,566
Latin America and Other Western Hemisphere	255,760	362,652	468,190	528,383	597,459	509,794	630,628	759,949	791,197
Brazil	15,340	26,401	30,094	35,155	37,469	27,945	36,495	45,374	45,922
Mexico	148,493	188,385	248,694	327,768	393,822	346,681	417,386	499,213	529,299
Venezuela	19,192	34,662	33,394	16,215	2,144	317	437	556	3,747
Asia and Pacific	507,527	682,521	841,359	1,091,819	1,180,349	1,140,548	1,358,960	1,543,878	1,398,374
China	103,340	251,791	377,619	499,697	469,514	448,652	526,413	563,558	447,668
India	12,480	23,426	44,940	69,771	87,528	77,516	102,400	118,621	120,119
Japan	164,972	162,613	147,993	164,737	181,022	152,737	167,172	188,808	186,516
Korea, Republic of	45,726	51,175	59,293	82,529	89,204	86,527	109,094	131,987	132,070
Singapore	21,837	19,241	23,668	25,232	37,219	39,927	38,893	41,480	52,115
Taiwan	44,272	40,690	41,740	47,629	61,676	66,763	87,247	106,058	99,894
Middle East	44,500	81,361	95,038	79,353	70,169	49,505	69,560	99,250	86,587
Africa	31,076	69,516	93,001	32,713	39,343	29,143	45,000	52,480	51,536
BALANCE (excess of exports +)									
Total, all countries	–369,686	–716,542	–503,087	–490,776	–559,395	–653,691	–848,070	–944,762	–784,890
Europe	–60,566	–126,739	–55,436	–96,911	–119,317	–142,715	–183,863	–119,803	–101,391
Euro area [1]	–42,211	–90,367	–48,420	–94,021	–104,082	–86,639	–118,708	–101,619	–107,865
France	–10,523	–12,484	–11,284	–16,128	–18,312	–14,365	–22,448	–16,681	–17,384
Germany	–30,330	–54,830	–39,838	–77,679	–67,188	–58,620	–71,551	–77,144	–87,000
Italy	–14,927	–21,211	–14,991	–29,154	–36,188	–28,229	–39,140	–43,931	–47,096
United Kingdom	3,033	–744	8,856	11,611	18,580	14,871	9,829	19,307	14,475
Canada	–49,075	–73,252	–2,770	7,116	–1,123	649	–36,205	–57,565	–40,627
Latin America and Other Western Hemisphere	–27,127	–102,820	–51,567	23,005	–12,492	–33,479	–17,726	–31,537	–79,205
Brazil	6,772	–4,827	23,672	23,512	29,496	21,437	25,462	30,590	23,638
Mexico	–20,912	–46,528	–61,207	–59,974	–103,973	–110,614	–108,792	–136,115	–162,104
Venezuela	–9,716	–25,266	–17,476	–2,003	1,479	1,948	2,673	3,218	436
Asia and Pacific	–206,076	–340,293	–318,009	–457,897	–463,879	–511,917	–619,687	–726,373	–580,330
China	–81,478	–201,106	–264,042	–336,368	–302,039	–282,341	–334,188	–366,197	–252,144
India	–5,749	–10,132	–15,697	–30,933	–29,516	–34,181	–44,368	–45,107	–45,640
Japan	–63,418	–69,230	–43,002	–58,118	–56,395	–50,494	–55,483	–68,911	–66,151
Korea, Republic of	–10,620	–13,308	–2,593	–16,275	–8,238	–17,377	–23,118	–35,710	–40,779
Singapore	2,720	7,415	16,075	17,817	16,887	13,172	28,150	38,741	27,657
Taiwan	–13,668	–11,586	–4,843	–8,612	–18,766	–26,942	–39,991	–50,807	–47,530
Middle East	–15,883	–32,659	–24,561	22,806	32,014	26,533	12,976	–4,821	18,711
Africa	–13,872	–46,625	–52,723	8,516	2,405	3,923	–6,352	–7,278	–5,802

[1] Euro area consists of Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Greece (beginning in 2001), Slovenia (2007), Cyprus and Malta (2008), Slovakia (2009), Estonia (2011), Latvia (2014), Lithuania (2015), and Croatia (2023).

Note: Data are on a balance of payments basis. For further details, and additional data by country, see *Survey of Current Business*, October 2024.

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

Table B–60. Foreign exchange rates, 2003–2024

[Foreign currency units per U.S. dollar, except as noted; certified noon buying rates in New York]

Period	Australia (dollar) [1]	Brazil (real)	Canada (dollar)	China, P.R. (yuan)	EMU Members (euro) [1, 2]	India (rupee)	Japan (yen)	Mexico (peso)	South Korea (won)	Sweden (krona)	Switzerland (franc)	United Kingdom (pound) [1]
March 1973	1.4129	....	0.9967	2.2401	....	7.55	261.90	0.013	398.85	4.4294	3.2171	2.4724
2003	.6524	3.0750	1.4008	8.2772	1.1321	46.59	115.94	10.793	1,192.08	8.0787	1.3450	1.6347
2004	.7365	2.9262	1.3017	8.2768	1.2438	45.26	108.15	11.290	1,145.24	7.3480	1.2428	1.8330
2005	.7627	2.4352	1.2115	8.1936	1.2449	44.00	110.11	10.894	1,023.75	7.4710	1.2459	1.8204
2006	.7535	2.1738	1.1340	7.9723	1.2563	45.19	116.31	10.906	954.32	7.3718	1.2532	1.8434
2007	.8391	1.9461	1.0734	7.6058	1.3711	41.18	117.76	10.928	928.97	6.7550	1.1999	2.0020
2008	.8537	1.8326	1.0660	6.9477	1.4726	43.39	103.39	11.143	1,098.71	6.5846	1.0816	1.8545
2009	.7927	1.9976	1.1412	6.8307	1.3935	48.33	93.68	13.498	1,274.63	7.6539	1.0860	1.5661
2010	.9200	1.7600	1.0298	6.7696	1.3261	45.65	87.78	12.624	1,155.74	7.2053	1.0432	1.5452
2011	1.0332	1.6723	.9887	6.4630	1.3931	46.58	79.70	12.427	1,106.94	6.4878	.8862	1.6043
2012	1.0359	1.9535	.9995	6.3093	1.2859	53.37	79.82	13.154	1,126.16	6.7721	.9377	1.5853
2013	.9683	2.1570	1.0300	6.1478	1.3281	58.51	97.60	12.758	1,094.67	6.5124	.9269	1.5642
2014	.9034	2.3512	1.1043	6.1620	1.3297	61.00	105.74	13.302	1,052.29	6.8576	.9147	1.6484
2015	.7522	3.3360	1.2791	6.2827	1.1096	64.11	121.05	15.874	1,130.96	8.4350	.9628	1.5284
2016	.7445	3.4839	1.3243	6.6400	1.1072	67.16	108.66	18.667	1,159.34	8.5541	.9848	1.3555
2017	.7671	3.1910	1.2984	6.7569	1.1301	65.07	112.10	18.884	1,129.04	8.5430	.9842	1.2890
2018	.7481	3.6513	1.2957	6.6090	1.1817	68.37	110.40	19.218	1,099.29	8.6945	.9784	1.3363
2019	.6952	3.9440	1.3269	6.9081	1.1194	70.38	109.02	19.247	1,165.80	9.4604	.9937	1.2768
2020	.6899	5.1587	1.3422	6.9042	1.1410	74.14	106.78	21.546	1,180.56	9.2167	.9389	1.2829
2021	.7515	5.3958	1.2533	6.4508	1.1830	73.94	109.84	20.284	1,144.89	8.5812	.9144	1.3764
2022	.6951	5.1605	1.3014	6.7290	1.0534	78.58	131.46	20.121	1,291.78	10.1177	.9550	1.2371
2023	.6644	4.9946	1.3494	7.0809	1.0817	82.57	140.50	17.733	1,306.76	10.6089	.8984	1.2440
2023: I	.6833	5.1948	1.3529	6.8423	1.0730	82.20	132.44	18.653	1,276.34	10.4426	.9251	1.2153
II	.6681	4.9515	1.3430	7.0130	1.0888	82.17	137.35	17.689	1,315.68	10.5291	.8988	1.2519
III	.6548	4.8811	1.3410	7.2445	1.0884	82.69	144.53	17.055	1,313.19	10.8059	.8832	1.2663
IV	.6513	4.9529	1.3613	7.2247	1.0761	83.24	147.78	17.546	1,321.85	10.6571	.8864	1.2419
2024: I	.6573	4.9528	1.3486	7.1885	1.0855	83.03	148.56	16.984	1,329.61	10.3986	.8749	1.2682
II	.6589	5.2096	1.3681	7.2410	1.0766	83.41	155.78	17.222	1,370.14	10.6937	.9047	1.2618
III	.6698	5.5447	1.3641	7.1641	1.0987	83.75	149.10	18.925	1,355.48	10.4252	.8662	1.3005

Period	Trade-weighted value of the U.S. dollar					
	Nominal			Real [6]		
	Broad index (January 2006=100) [3]	Advanced foreign economies index (January 2006=100) [4]	Emerging market economies index (January 2006=100) [5]	Broad index (January 2006=100) [3]	Advanced foreign economies index (January 2006=100) [4]	Emerging market economies index (January 2006=100) [5]
2003	....	....	....	....	....	....
2004	....	....	....	....	....	....
2005	....	....	....	....	....	....
2006	98.6005	97.6833	99.8103	98.9168	98.3159	99.7084
2007	93.8100	92.0715	96.1170	94.2522	93.6198	95.0827
2008	90.8801	88.4517	94.1271	90.9667	90.8429	91.1695
2009	96.7509	92.8232	101.9953	95.3231	94.7210	96.0769
2010	93.0541	90.1336	97.1416	90.7875	92.0389	89.5776
2011	88.7767	84.8522	93.9916	86.2906	87.3412	85.2632
2012	91.6361	88.0233	96.5231	88.5011	90.8670	86.1579
2013	92.7611	90.6492	96.0312	88.7134	93.8601	83.7863
2014	95.5876	93.4349	98.9391	90.7054	97.0250	84.7467
2015	108.1696	108.1483	109.5239	101.1728	111.8302	91.5462
2016	113.0665	109.3636	118.1858	105.3910	114.0182	97.3560
2017	112.8101	108.9520	118.0903	104.8407	114.1622	96.2487
2018	112.0032	106.4902	119.0076	104.0712	112.2297	96.4255
2019	115.7334	110.2673	122.7186	107.1792	116.7241	98.3341
2020	117.7809	109.0631	128.3959	108.7517	116.4068	101.4458
2021	113.1162	104.5205	123.5588	106.2746	114.1767	98.7923
2022	120.7044	115.0954	128.0962	115.0563	126.9626	104.3588
2023	120.4892	115.4193	127.3109	114.4569	126.5280	103.6341
2023: I	120.3423	115.5038	126.9249	114.4352	126.6064	103.5361
II	119.5897	114.5662	126.3512	113.7631	125.5572	103.1613
III	120.2048	115.0455	127.1142	114.0824	125.9772	103.3996
IV	121.8611	116.6005	128.8976	115.5468	127.9713	104.4395
2024: I	121.0047	115.5340	128.2452	114.7476	127.3336	103.5294
II	122.8774	117.3299	130.2260	116.6022	129.4336	105.1742
III	122.9346	114.9510	132.8545	116.1751	126.4480	106.7260

[1] U.S. dollars per foreign currency unit.
[2] European Economic and Monetary Union (EMU) members consists of Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Greece (beginning in 2001), Slovenia (2007), Cyprus and Malta (2008), Slovakia (2009), Estonia (2011), Latvia (2014), Lithuania (2015), and Croatia (2023).
[3] Weighted average of the foreign exchange value of the U.S. dollar against the currencies of a broad group of major U.S. trading partners.
[4] Subset of the broad index. Consists of currencies of the Euro area, Australia, Canada, Japan, Sweden, Switzerland, and the United Kingdom.
[5] Subset of the broad index currencies that are emerging market economies. For details, see *Revisions to the Federal Reserve Dollar Indexes*, January 2019.
[6] Adjusted for changes in consumer price indexes for the United States and other countries.

Source: Board of Governors of the Federal Reserve System.

Table B–61. Growth rates in real gross domestic product by area and country, 2006–2025

[Percent change]

Area and country	2006–2015 annual average	2016	2017	2018	2019	2020	2021	2022	2023	2024 [1]	2025 [1]
World	3.6	3.3	3.8	3.6	2.9	–2.7	6.6	3.6	3.3	3.2	3.2
Advanced economies	1.5	1.8	2.6	2.3	1.9	–4.0	6.0	2.9	1.7	1.8	1.8
Of which:											
United States	1.6	1.8	2.5	3.0	2.6	–2.2	6.1	2.5	2.9	2.8	2.2
Euro area [2]	0.8	1.8	2.6	1.8	1.6	–6.1	6.2	3.3	.4	.8	1.2
Germany	1.4	2.3	2.7	1.1	1.0	–4.1	3.7	1.4	–.3	.0	.8
France	1.0	.7	2.3	1.6	2.1	–7.6	6.8	2.6	1.1	1.1	1.1
Italy	–0.5	1.2	1.6	.8	.4	–8.9	8.9	4.7	.7	.7	.8
Spain	0.5	2.9	2.9	2.4	2.0	–10.9	6.7	6.2	2.7	2.9	2.1
Japan	0.5	.8	1.7	.6	–.4	–4.2	2.7	1.2	1.7	.3	1.1
United Kingdom	1.2	1.9	2.7	1.4	1.6	–10.3	8.6	4.8	.3	1.1	1.5
Canada	1.6	1.0	3.0	2.7	1.9	–5.0	5.3	3.8	1.2	1.3	2.4
Other advanced economies	3.1	2.7	3.2	2.8	2.0	–1.6	5.9	2.7	1.8	2.1	2.2
Emerging market and developing economies	5.6	4.4	4.8	4.7	3.7	–1.8	7.0	4.0	4.4	4.2	4.2
Regional groups:											
Emerging and Developing Asia	7.9	6.8	6.6	6.4	5.3	–.5	7.7	4.4	5.7	5.3	5.0
China	9.6	6.8	6.9	6.7	6.0	2.2	8.4	3.0	5.2	4.8	4.5
India [3]	6.8	8.3	6.8	6.5	3.9	–5.8	9.7	7.0	8.2	7.0	6.5
ASEAN-5 [4]	5.1	4.8	5.2	5.0	4.2	–4.4	4.1	5.4	4.0	4.5	4.5
Emerging and Developing Europe	3.1	1.7	4.2	3.6	2.5	–1.8	7.1	.6	3.3	3.2	2.2
Russia	2.6	.2	1.8	2.8	2.2	–2.7	5.9	–1.2	3.6	3.6	1.3
Latin America and the Caribbean	3.0	–.8	1.4	1.1	.2	–6.9	7.4	4.2	2.2	2.1	2.5
Brazil	2.8	–3.3	1.3	1.8	1.2	–3.3	4.8	3.0	2.9	3.0	2.2
Mexico	1.9	1.8	1.9	2.0	–.4	–8.4	6.0	3.7	3.2	1.5	1.3
Middle East and Central Asia	4.2	4.3	2.6	2.7	1.9	–2.2	4.4	5.5	2.1	2.4	3.9
Saudi Arabia	4.3	1.9	.9	3.2	1.1	–3.6	5.1	7.5	–.8	1.5	4.6
Sub-Saharan Africa	5.2	1.5	3.0	3.3	3.2	–1.6	4.8	4.1	3.6	3.6	4.2
Nigeria	6.4	–1.6	.8	1.9	2.2	–1.8	3.6	3.3	2.9	2.9	3.2
South Africa	2.6	.7	1.2	1.6	.3	–6.2	5.0	1.9	.7	1.1	1.5

[1] All figures are forecasts as published by the International Monetary Fund.
[2] Euro area consists of Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Greece (beginning in 2001), Slovenia (2007), Cyprus and Malta (2008), Slovakia (2009), Estonia (2011), Latvia (2014), Lithuania (2015), and Croatia (2023).
[3] Data and forecasts are presented on a fiscal year basis and output growth is based on GDP at market prices.
[4] Consists of Indonesia, Malaysia, Philippines, Singapore, and Thailand.

Note: For details on data shown in this table, see *World Economic Outlook*, October 2024, published by the International Monetary Fund.

Source: International Monetary Fund.

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