
Chapter 2: The Economic Outlook

Overview

This chapter provides details about the Congressional Budget Office's May 2022 economic projections, which the agency used as the basis for updating its budget projections. Inflation surged in 2021 and persisted at an elevated rate in 2022 as the prices of many goods and services increased sharply and the unemployment rate fell. Over that period, output and employment continued to expand markedly, and robust demand combined with supply disruptions to cause considerable tightness in product and labor markets.

The Economic Outlook for 2022 to 2026

CBO's projections reflect economic developments as of March 2, 2022, and the assumption that current laws governing federal taxes and spending generally remain in place. In those projections, high inflation initially persists as strong demand for products and labor continues and as supply disruptions and energy prices gradually decline:

- **Inflation** remains elevated in 2022; its pace since mid-2021 has been the fastest in four decades. In CBO's projections, the price index for personal consumption expenditures (PCE) increases by 4.0 percent in 2022, reflecting a variety of factors that continue to restrain supply in the face of strong demand.¹ In the second half of 2022, supply-side conditions improve, and energy prices decrease. Inflation as measured by the PCE price index falls to 2.3 percent in 2023. From 2024 to 2026, inflation remains near the Federal Reserve's long-run goal of 2 percent.
- **Output** surpasses its potential (maximum sustainable) level in the middle of 2022 as the economy continues to expand following the disruptions caused by the coronavirus pandemic and the recession of early

2020. Real gross domestic product (that is, GDP adjusted to remove the effects of inflation) grows by 3.1 percent in 2022, driven by strong gains in consumer spending on services (see Figure 2-1). After 2022, several factors—including tightening monetary policy and waning fiscal support—combine to slow the growth of output; the annual growth of real GDP averages 1.6 percent from 2023 to 2026.

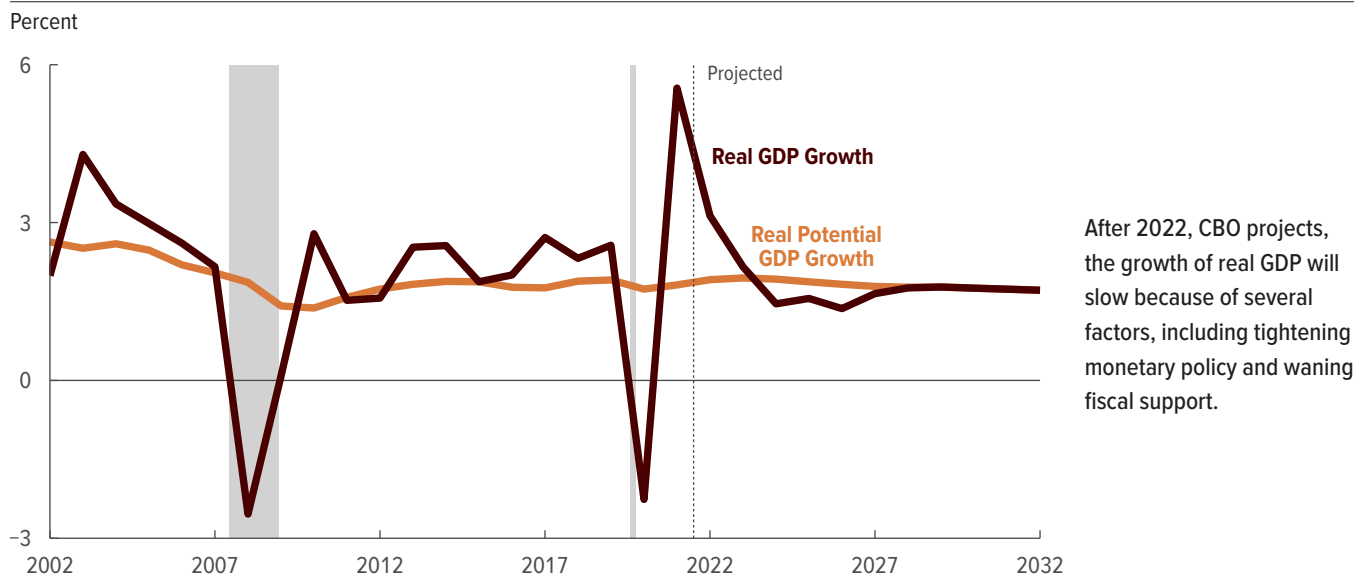
- **Conditions in the labor market** continue to improve in 2022. Employment grows by 4.1 million jobs and surpasses its prepandemic (February 2020) level in the middle of this year. The average rate of unemployment declines through 2023, reaching 3.5 percent. The annual average has not been lower than that since 1953. The unemployment rate remains below or near 4.0 percent for the next several years (see Table 2-1). The size of the labor force, which, in early 2022, remained roughly one million people below its prepandemic level, is expected to keep increasing, exceeding that level by the end of 2022.² CBO expects the labor force to grow more slowly after 2022 as the negative effects of an aging population outweigh the positive effects of an ongoing economic expansion.
- **Interest rates** on Treasury securities rise. To contain inflationary pressures, the Federal Reserve raises the target range for the federal funds rate (the rate that financial institutions charge each other for overnight loans of their monetary reserves); that rate increases to 1.9 percent by the end of 2022 and to 2.6 percent by the end of 2023. The interest rate on 10-year Treasury notes rises from 1.5 percent in the fourth quarter of 2021 to 3.1 percent in the fourth quarter of 2024.

1. Unless this report indicates otherwise, annual growth rates are measured from the fourth quarter of one year to the fourth quarter of the next.

2. The labor force consists of the people age 16 or older in the civilian noninstitutionalized population who have jobs or who are available for work and are actively seeking jobs.

Figure 2-1.

Growth of Real GDP and Real Potential GDP



Data source: Congressional Budget Office. See www.cbo.gov/publication/57950#data.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Potential GDP is CBO's estimate of the maximum sustainable output of the economy. Growth of real GDP and real potential GDP is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

GDP = gross domestic product.

The Economic Outlook for 2027 to 2032

In CBO's forecast, economic output expands less rapidly from 2027 to 2032 than it does over the 2022–2026 period. Real GDP grows by 1.7 percent per year, on average. Real potential GDP grows at a marginally faster rate.³ The level of real GDP is slightly below the level of real potential GDP from 2027 to 2032, in line with their historical relationship, on average. That negative output gap is projected to relieve upward pressure on prices, helping to keep inflation near the Federal Reserve's long-run goal.

In CBO's projections for the 2027–2032 period, the growth rate of potential output is similar to the average rate of such growth during the most recent business cycle (from 2007 to 2020). However, the growth rate of the potential labor force is slower, and the growth rate of potential labor force productivity is faster, than in that most recent business cycle.⁴

3. Potential GDP is CBO's estimate of the maximum sustainable output of the economy.

4. The potential labor force is CBO's estimate of the size of the labor force that would occur if economic output and other key variables were at their maximum sustainable amounts. Potential labor force productivity is the ratio of real potential GDP to the potential labor force.

Uncertainty About the Economic Outlook

CBO develops its projections so that they fall in the middle of the range of likely outcomes under current law. The agency's projections of economic output and conditions in the labor market are highly uncertain, both in the short run and in the long run. The upward pressure on wages and prices from tight conditions in the labor market could be greater or less than the agency expects.⁵ Future monetary policy and the path of financial conditions over the next several years are also highly uncertain. Financial conditions might tighten more rapidly than CBO anticipates, which would result in a sharp decline in the availability of credit to consumers and businesses and might lead to a recession. Another source of uncertainty is the path of interest rates in the long run, which contributes to the uncertainty of the agency's estimates of the impact of larger deficits and debt on the economy. Furthermore, geopolitical events, including Russia's invasion of Ukraine, add to the uncertainty of the economic outlook, notably the outlook for inflation.

5. A tight labor market is one in which the demand for labor exceeds the supply of labor, for example when the number of job vacancies exceeds the number of unemployed workers.

Table 2-1.

CBO's Economic Projections for Calendar Years 2022 to 2032

Percent

| | Actual, 2021 | 2022 | 2023 | 2024 | Annual Average | |
|--|-----------------|------|------|------|------------------|------------------|
| | | | | | 2025– 2026 | 2027– 2032 |
| Change From Fourth Quarter to Fourth Quarter | | | | | | |
| Gross Domestic Product | | | | | | |
| Real ^a | 5.5 | 3.1 | 2.2 | 1.5 | 1.5 | 1.7 |
| Nominal | 11.8 | 7.4 | 4.5 | 3.6 | 3.6 | 3.9 |
| Inflation | | | | | | |
| PCE price index | 5.5 | 4.0 | 2.3 | 2.1 | 2.0 | 2.0 |
| Core PCE price index ^b | 4.6 | 3.8 | 2.5 | 2.2 | 2.1 | 2.1 |
| Consumer price index ^c | 6.7 | 4.7 | 2.7 | 2.3 | 2.3 | 2.4 |
| Core consumer price index ^b | 5.0 | 4.4 | 2.9 | 2.5 | 2.4 | 2.4 |
| GDP price index | 5.9 | 4.0 | 2.3 | 2.1 | 2.1 | 2.1 |
| Employment Cost Index ^d | 5.0 | 5.4 | 4.1 | 3.7 | 3.3 | 3.1 |
| Fourth-Quarter Level | | | | | | |
| Unemployment Rate | 4.2 | 3.7 | 3.6 | 3.8 | 4.1 ^e | 4.5 ^f |
| Change From Year to Year | | | | | | |
| Gross Domestic Product | | | | | | |
| Real ^a | 5.7 | 3.8 | 2.8 | 1.6 | 1.5 | 1.7 |
| Nominal | 10.1 | 9.3 | 5.5 | 3.8 | 3.5 | 3.9 |
| Inflation | | | | | | |
| PCE price index | 3.9 | 5.1 | 2.7 | 2.2 | 2.0 | 2.0 |
| Core PCE price index ^b | 3.3 | 4.5 | 2.8 | 2.3 | 2.1 | 2.1 |
| Consumer price index ^c | 4.7 | 6.1 | 3.1 | 2.4 | 2.3 | 2.4 |
| Core consumer price index ^b | 3.6 | 5.1 | 3.3 | 2.6 | 2.4 | 2.4 |
| GDP price index | 4.2 | 5.2 | 2.7 | 2.1 | 2.1 | 2.1 |
| Employment Cost Index ^d | 4.0 | 5.6 | 4.5 | 3.8 | 3.4 | 3.1 |
| Annual Average | | | | | | |
| Unemployment Rate | 5.4 | 3.8 | 3.5 | 3.7 | 3.9 | 4.5 |
| Payroll Employment (Monthly change, in thousands) ^g | 514 | 345 | 123 | 58 | 41 | 56 |
| Interest Rates | | | | | | |
| 3-month Treasury bills | * | 0.9 | 2.0 | 2.5 | 2.6 | 2.3 |
| 10-year Treasury notes | 1.4 | 2.4 | 2.9 | 3.1 | 3.3 | 3.8 |
| Tax Bases (Percentage of GDP) | | | | | | |
| Wages and salaries | 44.9 | 44.7 | 44.2 | 44.1 | 44.0 | 44.0 |
| Domestic corporate profits ^h | 10.1 | 9.7 | 9.3 | 8.8 | 8.4 | 7.8 |
| Current Account Balance (Percentage of GDP) ⁱ | -3.6 | -3.8 | -3.4 | -3.0 | -2.8 | -2.9 |

Data sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve. See www.cbo.gov/publication/57950#data.

For economic projections for each year from 2022 to 2032, see Appendix C.

GDP = gross domestic product; PCE = personal consumption expenditures; * = between zero and 0.05 percent.

- a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.
- b. Excludes prices for food and energy.
- c. The consumer price index for all urban consumers.
- d. The employment cost index for wages and salaries of workers in private industry.
- e. Value for the fourth quarter of 2026.
- f. Value for the fourth quarter of 2032.
- g. The average monthly change, calculated by dividing by 12 the change in payroll employment from the fourth quarter of one calendar year to the fourth quarter of the next.
- h. Adjusted to remove distortions in depreciation allowances caused by tax rules and to exclude the effect of changes in prices on the value of inventories.
- i. Represents net exports of goods and services, net capital income, and net transfer payments between the United States and the rest of the world.

Comparison With CBO's Previous Projections

Last July, CBO projected that in 2021 nominal GDP would grow by 10.7 percent, real GDP would grow by 7.4 percent, and the GDP price index would increase by 3.0 percent.⁶ Nominal GDP grew by 11.8 percent in 2021—similar to the agency's projection—but the composition of that growth differed from the agency's projections: Real GDP growth was 1.8 percentage points lower than projected, and inflation in the GDP price index was 2.8 percentage points higher than projected.

Compared with what they were last July, the agency's projections of real GDP growth are similar for 2022, stronger for 2023 and 2024, and similar over the remainder of the projection period. The stronger economic growth in 2023 and 2024 is mainly the result of higher growth in three areas: real nonresidential fixed investment in 2023, real PCE in 2024, and real exports in both years. That stronger growth returns real GDP to a level that, at the end of 2026, is similar to what CBO previously projected.

CBO currently projects higher inflation in 2022 and 2023 than it did last July. Prices are increasing more rapidly across many sectors of the economy this year than CBO expected, largely because the combination of strong demand and restrained supply resulted in tighter markets for goods, services, and labor than the agency anticipated. For 2023, the agency's revisions are largely driven by higher inflation in housing services, which tends to be persistent. Inflation was higher in 2021 than CBO forecast it would be last summer, reaching a rate that had not been seen since the early 1980s. As a result, projections of nominal GDP and national income have increased throughout the forecast period, even though real GDP during the initial years of that period is slightly lower than the agency previously projected.

CBO now expects both short- and long-term interest rates over the coming decade to be higher, on average, than in its previous forecast. The upward revision in rates over the 2022–2026 period partly reflects the upward revision to inflation. The agency now expects that, in response to recent inflation that was higher than anticipated, the Federal Reserve will raise the target range

for the federal funds rate more rapidly than previously projected. As a result of that expectation, CBO raised its projections of short-term interest rates, on average, over the later years of the forecast period as well. It also raised its projections of long-term rates, which partly reflect the expected path of short-term rates.

Recent Economic Developments

Inflation surged in 2021 and persisted at an elevated rate in 2022 as unemployment fell sharply over that period. Both were the result of strong demand and disruptions to supply, which combined to cause considerable tightness in product and labor markets. Output and employment recovered from the pandemic-induced recession of early 2020 and then continued to expand. Ongoing pandemic-related disruptions caused the expansion to be unbalanced, however; soaring demand for goods strained domestic and international supply chains, and labor force participation remained below its prepandemic levels. Those factors contributed to the restrained growth of supply in product and labor markets. As a result, the growth rates of consumer prices, producer prices, and nominal wages increased markedly. The Federal Reserve ended purchases of long-term securities and raised interest rates in 2022.

Inflation

Inflation reached a high in 2021 that had not been seen since the early 1980s, and high inflation has persisted in 2022. In 2021, the PCE price index grew by 5.5 percent, and the consumer price index for all urban consumers (CPI-U) grew by 6.7 percent—notably faster than their averages of 1.5 percent and 1.7 percent, respectively, over the decade that preceded the pandemic. The high rates of inflation reflected widespread price increases for many types of goods and services. Some of the categories of goods and services that experienced the largest price increases were durable goods, energy, food, and housing services.

Inflation in the CPI-U substantially outpaced inflation in the PCE price index throughout 2021 and early 2022. An important reason for that difference is that the weights assigned to categories of goods and services differ in the two indexes, and certain categories—such as durable goods (like motor vehicles) and housing services—that weigh more in the CPI-U than in the PCE price

6. See Congressional Budget Office, *Additional Information About the Updated Budget and Economic Outlook: 2021 to 2031* (July 2021), www.cbo.gov/publication/57263.

index experienced historically high inflation in 2021 and early 2022.⁷

The PCE price index for goods rose by 8.1 percent in 2021; the index for services rose by 4.1 percent. Pronounced increases in the prices of certain products—notably, many durable goods—that were particularly affected by disruptions to supply chains drove the rapid growth in the price index for goods overall. For example, the PCE price index for motor vehicles and parts increased by 20 percent in 2021 as a result of the persistent shortage of semiconductors used in manufacturing new vehicles.

Historically, growth in the prices of services has outpaced that of goods. For example, from 2010 to 2020, the former averaged 2.3 percent, whereas the latter declined at an average annual rate of 0.1 percent. During the pandemic, however, growth in the prices of goods has outpaced that of services because of supply disruptions and an elevated demand for goods, particularly durable goods.

Energy and food prices also increased rapidly in 2021 and continued to rise sharply in 2022 because the supply of energy goods did not keep up with the demand for them as the economy rebounded. Energy prices grew by 30 percent in 2021. Food prices, which are particularly sensitive to fluctuations in transportation costs and other supply disruptions, grew by 5.3 percent that year.

Supply problems were compounded by effects of the invasion of Ukraine, which contributed to energy prices' surging by 43 percent (at an annualized rate) in the first quarter of 2022. Food prices surged as well. Prices in the PCE category "food purchased for off-premises consumption" grew by 13 percent (at an annualized rate) in the first quarter of 2022—the result of increased transportation costs and the disruption of Ukraine's role as a major exporter of wheat, corn, and sunflower seeds. Energy and food prices are historically more volatile

7. There are several other reasons that measures of inflation in the PCE price index and the CPI-U differ. The two indexes are developed using different formulas, and the scope of items included in each index is different. Other, smaller factors, such as seasonal adjustments, price differences, and residual differences, contribute to the two indexes' different measures of inflation. For more detailed information, see Bureau of Economic Analysis, "What Accounts for the Differences in the PCE Price Index and the Consumer Price Index?" (accessed May 6, 2022), www.bea.gov/help/faq/555.

than other prices; the inflation seen in those categories in 2021 was historically high.

In the second half of 2021, the price of housing services began rising quickly, following a rapid appreciation of home values that occurred over the previous 12 months.⁸ By the end of 2021, inflation in housing services reached 3.4 percent (it was 2.4 percent in 2020, the category's lowest growth rate since 2012). Housing services are a large and persistent component of inflation, constituting roughly 16 percent of the PCE market basket of goods and services and 30 percent of the CPI-U basket. During 2021, inflation in the CPI-U category "rent of primary residence" (part of housing services) was 3.0 percent (as measured from the fourth quarter of 2020 to the fourth quarter of 2021). Growth in the price of housing services accelerated in the first quarter of 2022; inflation in the "rent of primary residence" category was 6.0 percent (as measured by the annualized quarterly growth rate).

Output and the Labor Market

Economic output expanded at its fastest rate in more than three decades in 2021, following the pandemic-induced recession of early 2020; real GDP grew by 5.6 percent (as measured from the fourth quarter of 2020 to the fourth quarter of 2021). Real household consumption rose sharply during the first half of 2021 as people received federal payments in accordance with legislation enacted in late 2020 and early 2021. As the effects of those payments on consumer spending faded, real household consumption grew more slowly in the second half of 2021. In addition, disruptions to the supply of goods and the erosion of households' purchasing power because of higher inflation increasingly restrained real household consumption throughout the year. As a result, the growth of real GDP slowed from 6.5 percent in the first half of 2021 to 4.6 percent in the second half (at an annual rate).

In the first quarter of 2022, real household consumption continued to grow at about the same pace it grew during the second half of 2021; but a surge in imports suggests that a large share of that growth in consumption was of products produced abroad (and so would not imply greater domestic production). In addition, although businesses continued to restock inventories in the first

8. Housing services is the measure of the value of the services that housing provides, reflecting the rental value of housing occupied by tenants and the imputed rental value of owner-occupied housing.

quarter of 2022, the pace was not as strong as in the prior quarter. As a result, real GDP declined in the first quarter of 2022.

Because waves of COVID-19 infections dampened the growth of demand for many services in 2021, fiscal measures meant to support overall economic activity—especially direct cash transfers to households—mainly boosted demand for goods. The pandemic continued to hinder certain in-person activities, such as air travel, trips to amusement parks, and haircuts. Although demand for consumer services grew rapidly in the middle of 2021, it remained below its prepandemic level throughout the year. In contrast, demand for consumer goods grew sharply. Real personal consumption of goods exceeded its prepandemic level in the second half of 2020 and continued to exhibit strong growth thereafter. From the fourth quarter of 2019 to the fourth quarter of 2021, real personal consumption of durable goods increased at an average annual rate of 10.0 percent; real personal consumption of nondurable goods grew at an average annual rate of 6.2 percent.

In 2021, the surge in demand for goods strained domestic and international supply chains, leading to delayed deliveries and shortages of many products. Those disruptions included shortages of semiconductors (key components in automobiles and consumer electronics) and shipping containers. Despite strong demand, domestic production of automobiles declined during the year, falling further below its prepandemic level because of shortages of semiconductors and other supply-side disruptions. Backlogs formed as key U.S. ports struggled to keep up with the elevated volume of imported goods. The lack of availability of construction materials also limited the growth of the supply of new housing and nonresidential structures. Moreover, a shortage of workers in transportation and warehousing compounded those problems with supply chains.

Supported by the expansion of economic activity, conditions in labor markets were marked by rising employment and labor force participation, declining unemployment, and elevated job vacancies in 2021 and early 2022. Nonfarm payroll employment, which increased by an average of nearly 562,000 jobs per month in 2021, ended the year at roughly 3.3 million jobs (or 2.1 percent) below its prepandemic peak (it was 14.4 percent below that peak in April 2020). Growth in payroll employment continued in early 2022; job gains averaged 549,000 per month over the first three

months of the year. The unemployment rate was 6.4 percent in January 2021 and declined to 3.6 percent by April 2022—slightly above the prepandemic low of 3.5 percent in February 2020. Job vacancies (an indicator of demand for labor) increased to an all-time high in 2021.

At the same time, growth in the labor force was modest and did not keep up with the increase in the demand for labor. Various factors continued to inhibit growth in the labor force during 2021 and early 2022, including lingering pandemic-related health concerns and issues related to providing child care and other in-home care. Supplemental unemployment insurance payments and direct cash transfers to households might also have slowed the recovery of labor force participation in 2021. Moreover, rising asset prices boosted household wealth, which enabled older workers to retire earlier than previously expected. As of early 2022, the labor force was roughly two million people smaller than CBO had projected for that time in its last forecast before the pandemic, and it was roughly one million people smaller than the agency's estimate of the potential labor force. The extent of the labor market's recovery from the 2020 recession differed between women and men and among other demographic groups (see Box 2-1).

Nominal compensation grew markedly in 2021 and early 2022. The demand for workers, as measured by the number of job openings, increased faster than the number of available workers in 2021. The shortfall of available workers relative to the demand for them contributed to an increase in the growth of compensation.

Overall growth in nominal wages and salaries as measured by the employment cost index was 5.0 percent from the first quarter of 2021 to the first quarter of 2022—the largest annual increase since the early 1980s. But prices rose more—by 6.3 percent over that period as measured by the PCE price index—so overall real wages and salaries decreased. Although the employment cost index accounts for changes in the composition of employment over time (that is, changes in workers' occupations and the industries they work in), it is unclear how such changes over the past year have affected that index's measure of wages and salaries. But compared to an earlier period when the composition of employment was less affected by pandemic-related disruptions, overall real wages and salaries increased; from the fourth quarter of 2019 (before the pandemic) to the first quarter of

2022, nominal wages and salaries grew by 9.2 percent, and prices grew by 8.6 percent.

Nominal wage growth was strongest for low-wage workers, reflecting differences among industries in the imbalance between the supply and demand for labor. The average growth of median hourly wages for the year ending in March 2022 was 6.1 percent among the bottom quartile (or fourth) of wage earners and 3.3 percent among the top quartile.⁹

Interest Rates and Monetary Policy

In late 2021 and early 2022, the Federal Reserve began to adjust the stance of monetary policy as inflation substantially exceeded its long-run goal of 2 percent. In responding to the pandemic-induced recession of early 2020, the Federal Reserve provided monetary accommodation to support the economy by, among other actions, lowering the target for the federal funds rate to a range of zero to 0.25 percent and purchasing large quantities of assets, including Treasury securities and agency mortgage-backed securities (MBSs).¹⁰ In November 2021, the Federal Reserve began reducing its monthly purchases of assets; it further reduced those purchases over the following months. In 2022, the Federal Reserve raised the target for the federal funds rate by 0.25 percentage points in March and by 0.5 percentage points in May—moves aimed at reducing inflationary pressures in the economy.

Interest rates on Treasury securities increased in the second half of 2021 and early 2022 as participants in financial markets observed higher-than-expected inflation and anticipated a further tightening of monetary conditions. The interest rate on 3-month Treasury bills increased from slightly above zero in June 2021 to 0.8 percent in April 2022. The interest rate on 10-year Treasury notes increased from 1.5 percent to 2.8 percent over that period. The rise in interest rates on Treasury securities with maturities between 3 months and 10 years was even greater because participants in financial markets expected monetary conditions to tighten and inflation to be higher, on average, over that time horizon.

9. See Federal Reserve Bank of Atlanta, “Wage Growth Tracker” (accessed April 26, 2022), www.atlantafed.org/chcs/wage-growth-tracker.

10. Monetary accommodation refers to a central bank—in this case the Federal Reserve—setting low interest rates in an attempt to boost economic growth, thereby reducing unemployment or preventing its increase.

Fiscal and Monetary Policies

CBO’s current-law projections reflect the laws enacted and the policy measures taken through March 2, 2022. Those projections reflect the effects on the overall economy from changes in federal fiscal policies—that is, policies governing taxes and spending—including the Infrastructure Investment and Jobs Act (IIJA, Public Law 117-58), enacted in November 2021; supplemental appropriations provided to several federal agencies for the current fiscal year; and a preliminary estimate of the effects of the Consolidated Appropriations Act, 2022 (P.L. 117-103), which became law on March 15, 2022. The agency’s projections also reflect the expectation that the Federal Reserve will take actions to tighten monetary policy. Those actions include further raising the target range for the federal funds rate and reducing the size of the Federal Reserve’s balance sheet.

Fiscal Policy

Since CBO prepared its March 2020 budget projections (the final set of projections before most laws enacted in response to the pandemic took effect), legislation has increased the agency’s estimates of the federal budget deficit, excluding the costs of servicing the debt, by \$0.5 trillion in 2022 and by \$0.2 trillion in 2023, mostly by increasing federal spending.¹¹ The effects of legislative changes on the deficit will be considerably smaller in 2022 and 2023 than in 2020 (\$2.3 trillion) and 2021 (\$2.6 trillion) because several provisions of pandemic-related legislation will expire or wind down (see Figure 2-2 on page 30). In CBO’s assessment, diminishing fiscal support in 2022 and 2023 will provide a smaller boost to the overall demand for goods and services than the significant boost provided by fiscal policy in 2020 and 2021.

Changes in fiscal policy will also affect the economy in the longer term. CBO estimates that the IIJA will

11. See Appendix A in this report, and see Congressional Budget Office, “Table A-1. Changes in CBO’s Baseline Projections of the Deficit Since February 2021” (supplemental material for *Additional Information About the Updated Budget and Economic Outlook: 2021 to 2031*, July 2021), <https://go.usa.gov/xuDU9>, “Table 1-6. Changes in CBO’s Baseline Projections of the Deficit Since September 2020” (supplemental material for *The Budget and Economic Outlook: 2021 to 2031*, February 2021), <https://go.usa.gov/xuDP3>, and “Table A-1. Changes in CBO’s Baseline Projections Since March 6, 2020” (supplemental material for *An Update to the Budget Outlook: 2020 to 2030*, September 2020), <https://go.usa.gov/xuDPZ>.

Box 2-1.

Effects of the Coronavirus Pandemic on the Employment and Wages of Different Demographic Groups

The effects of the coronavirus pandemic on employment and wages varied considerably for workers with different demographic characteristics (see the figure and table below).

Effects on the Employment of Different Demographic Groups

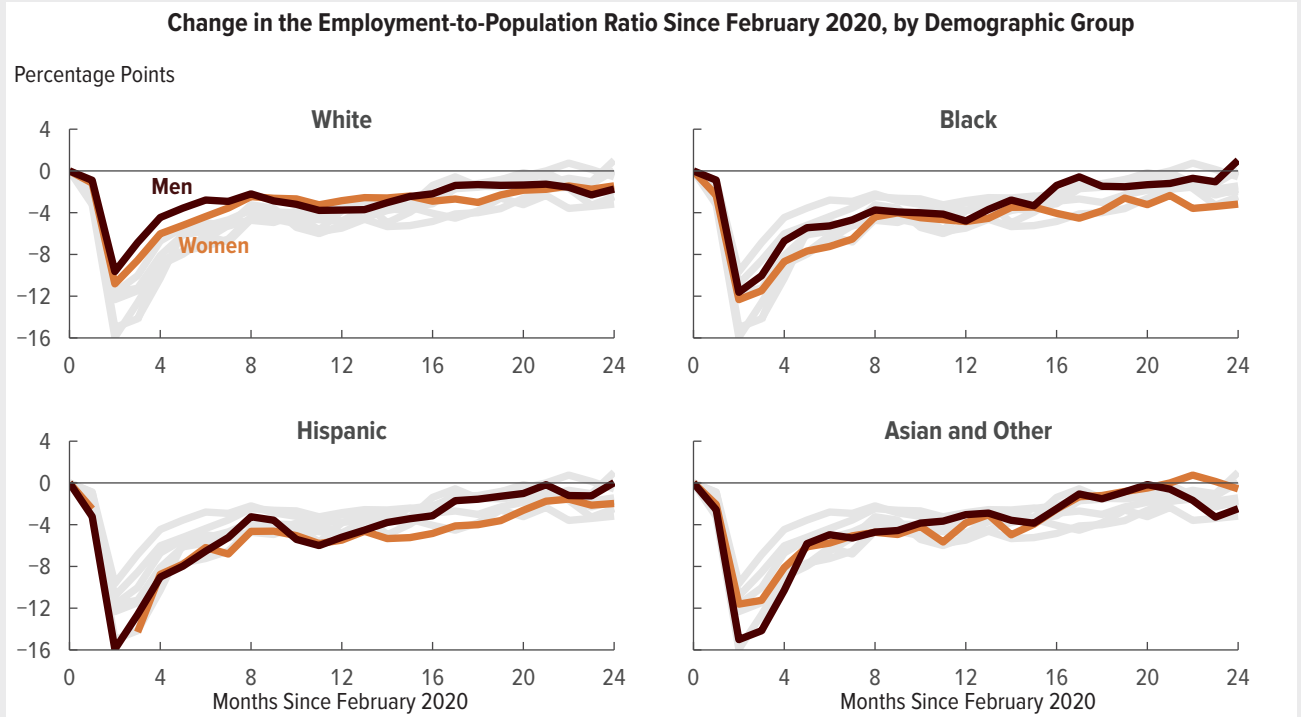
Between February and April 2020, the employment-to-population ratio declined by 11 percentage points for men and 12 percentage points for women.¹ In line with that

overall result, the decline in that ratio was similar for men and women in the White, Black, and Hispanic groups. By contrast, the decline for Asian and Other men was about 3 percentage points larger than for women in that group. (That pattern contrasts with the experience during the previous recession. In the 2007–2009 recession, the employment-to-population ratio for men fell more than that for women in each of the four race-ethnicity groups, and those declines occurred over a nearly two-year period.)

By February 2022, the employment-to-population ratio had rebounded substantially for each group, but it was still slightly below its prepandemic level for six of the eight groups. That ratio was farther below its prepandemic level for Black women and Asian and Other men than for the other groups. For men

1. Because a smaller share of women than men were employed in February 2020, a similar percentage-point decline in the employment-to-population ratio was associated with a greater percentage decline in employment: 21 percent for women (12 percentage points from their 56 percent employment-to-population ratio), compared with 17 percent for men (11 percentage points from their 66 percent employment-to-population ratio). The Congressional Budget Office’s calculation of employment-to-population ratios is based on data from the Current Population Survey (CPS). The Bureau of Labor Statistics, which publishes employment, unemployment, and other labor statistics using the CPS each month, noted that, starting in March 2020, many workers who should have been classified as “unemployed on temporary layoff” were probably misclassified as “employed absent from work” in the CPS, causing the employment

statistics to understate the magnitude of the decline in employment during the pandemic-induced recession. In calculating the employment-to-population ratio, CBO reclassified people “employed absent from work for other reasons, unpaid” as unemployed. Without that reclassification, the share of the population employed in April and May 2020 would have been 2.4 percentage points and 1.7 percentage points higher, respectively.



Data source: Congressional Budget Office, using Current Population Survey data from IPUMS-CPS. See www.cbo.gov/publication/57950#data.

The gray lines in each panel show the patterns of the other population groups for comparison. Data are not seasonally adjusted and are shown with final, not composite, weights. CBO reclassified people “employed, absent from work for other reasons, unpaid” as unemployed.

Box 2-1.

Continued

Effects of the Coronavirus Pandemic on the Employment and Wages of Different Demographic Groups

and women in the White group and Hispanic women, that ratio was 1 to 2 percentage points below its prepandemic level.²

Effects on the Wages of Different Demographic Groups

To understand how the pandemic affected the wages of different demographic groups, the Congressional Budget Office estimated the change in average hourly wages among those groups during the two years after the pandemic began (from February 2020 to February 2022) and the two years before its onset (from February 2018 to February 2020).

To estimate the change in wages, CBO calculated the various groups' average hourly wage rates for the same six months—September to February—during three different periods: one recent period (September 2021 to February 2022), another just before the onset of the pandemic (September 2019 to February 2020), and a third well in advance of it (September 2017

to February 2018). The agency then compared the hourly wage rates for the 2021–2022 period with the rates for the 2019–2020 period, and it compared the rates for the 2019–2020 period with the rates for the 2017–2018 period.³

On the basis of those comparisons, CBO estimates that average hourly nominal wages grew more during the two years after the pandemic began than during the two years before its onset—increases of about 11 percent and 9 percent, respectively. That was the case for seven of the eight demographic groups; for one group, Black women, the increase was less than before. Moreover, the amount of the increase during the most recent two-year period varied among the groups. The average hourly nominal wage rate of Asian and Other men and of Hispanic women increased the most—by about 15 percent and 14 percent, respectively, CBO estimates. Black women's average nominal hourly wage rate increased the least during that period—by about 9 percent.

2. CBO used race and ethnicity to define four race-ethnicity categories—Hispanic, Black, White, and Asian and Other—through the following steps. Respondents who identified their ethnicity as Hispanic were classified as Hispanic, regardless of the race or races they identified. Of respondents not already classified as Hispanic, those who identified their race as African American were classified as Black, regardless of whether they identified other races as well. Of respondents not already classified as Hispanic or Black, those who identified a race other than White were classified as Asian and Other. Finally, respondents not classified as Hispanic, Black, or Asian and Other were classified as White.

3. CBO calculated average wage rates over six-month periods to compensate for the small sample sizes of some demographic groups in any single month. To best estimate the change in wage rates over the two-year course of the pandemic, the agency chose the six months just before the pandemic's onset as one reference period; and likewise, the six months from September 2017 to February 2018 served as the reference period for the two years before the pandemic began.

Change in Average Hourly Wages, by Demographic Group

| Group | | Average Hourly Wage (Dollars) | | | Change (Percent) | |
|-----------------|-------|-------------------------------|-------------------------|-------------------------|-----------------------|--------------------|
| Race-Ethnicity | Sex | Sep. 2017– Feb. 2018 | Sep. 2019– Feb. 2020 | Sep. 2021– Feb. 2022 | Prepandemic Period | Pandemic Period |
| All | Both | 23.50 | 25.50 | 28.40 | 8.5 | 11.3 |
| White | Men | 28.40 | 30.70 | 33.70 | 8.1 | 9.6 |
| Black | Men | 19.50 | 21.40 | 23.60 | 9.7 | 10.1 |
| Hispanic | Men | 19.40 | 21.20 | 23.70 | 9.2 | 11.8 |
| Asian and Other | Men | 31.40 | 34.60 | 39.70 | 10.1 | 14.8 |
| White | Women | 22.60 | 24.30 | 27.20 | 7.8 | 11.8 |
| Black | Women | 17.70 | 20.10 | 21.80 | 13.2 | 8.7 |
| Hispanic | Women | 16.70 | 18.30 | 21.00 | 10.0 | 14.4 |
| Asian and Other | Women | 24.20 | 27.40 | 31.30 | 13.5 | 14.1 |

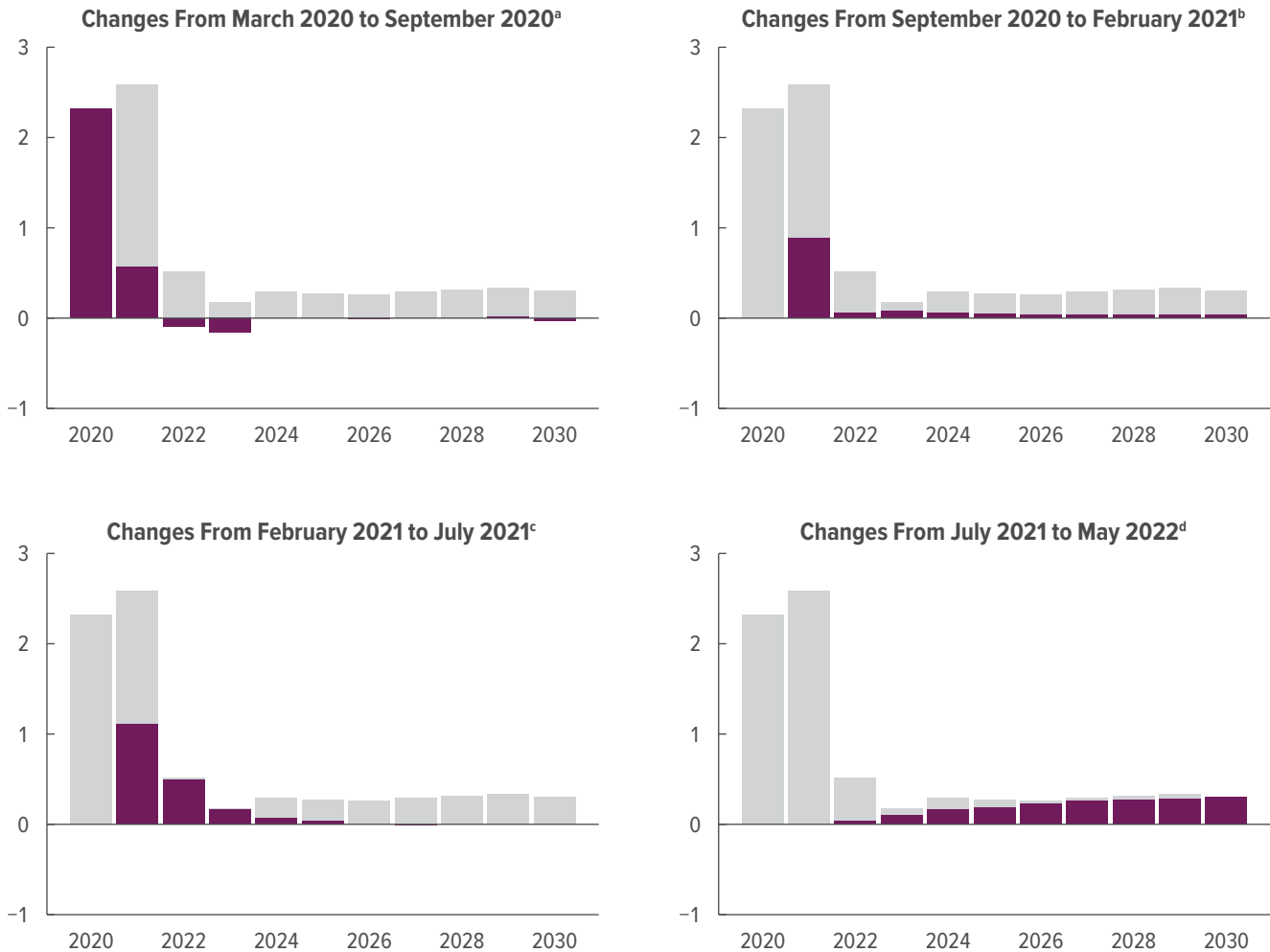
Data source: Congressional Budget Office, using Current Population Survey data from IPUMS-CPS. See www.cbo.gov/publication/57950#data.

The change over the pandemic period is the change in the average hourly wage rate between the six-month period before the onset of the pandemic (September 2019–February 2020) and the most recent six-month period analyzed (September 2021–February 2022). The change during the prepandemic period is the change in the average hourly wage rate between the six-month period two years before the pandemic (September 2017–February 2018) and the six-month period just before its onset.

Figure 2-2.

Deficit Effects of Legislative Changes Made Since March 6, 2020

Trillions of Dollars



In early March 2020, CBO prepared the last set of budget projections that it published before most laws enacted in response to the coronavirus pandemic took effect. CBO estimates that legislation enacted since then had much larger effects on the federal budget deficit in fiscal years 2020 and 2021 than it will have from 2022 to 2030.

Data source: Congressional Budget Office. See www.cbo.gov/publication/57950#data.

The amounts shown are the result of legislative changes that CBO has made to its baseline budget projections since March 2020. For more information, see Congressional Budget Office, *An Update to the Budget Outlook: 2020 to 2030* (September 2020), Table A-1, www.cbo.gov/publication/56517, *Additional Information About the Budget Outlook: 2021 to 2031* (March 2021), Table 2, www.cbo.gov/publication/56996, and *Additional Information About the Updated Budget and Economic Outlook: 2021 to 2031* (July 2021), Table A-1, www.cbo.gov/publication/57263. Also see Table A-1 in Appendix A of this report.

The purple bars show the effects of legislative changes in the given period; the gray bars show the net effect of the changes in all four periods.

The effects of legislative changes on deficits are shown in fiscal years and do not include costs of servicing the debt.

- a. Consist mostly of the effects of the Coronavirus Aid, Relief, and Economic Security Act (Public Law 116-136).
- b. Consist mostly of the effects of the Consolidated Appropriations Act, 2021 (P.L. 116-260).
- c. Consist mostly of the effects of the American Rescue Plan Act of 2021 (P.L. 117-2).
- d. Consist mostly of the effects of the Infrastructure Investment and Jobs Act (P.L. 117-58) and the Consolidated Appropriations Act, 2022 (P.L. 117-103).

Box 2-2.

Economic Effects of the Infrastructure Investment and Jobs Act

In the Congressional Budget Office's assessment, the Infrastructure Investment and Jobs Act (IIJA, Public Law 117-58) will increase real gross domestic product (GDP), employment, prices, and interest rates over the next decade. CBO estimates that the act will boost the level of real GDP (that is, GDP adjusted to remove the effects of inflation) by an average of 0.1 percent during the 2022–2032 period; its effect on output will peak in 2026 and then lessen before increasing again in 2029.¹

CBO's estimates of the economic effects of the IIJA are based on the agency's analysis of the act's effects on private-sector productivity and potential GDP (CBO's estimate of the maximum sustainable output of the economy). By providing federal funding for physical infrastructure, training, and research, the act will increase private-sector productivity and boost potential GDP. Because investment projects take time to complete and the benefits that result from those investments will take time to accrue, the increase in potential GDP will occur gradually. Moreover, the increase in federal borrowing that results from increased spending will reduce the amount of funds available for private investment—a phenomenon called crowding out. Crowding out of private investment will cause the stock of private capital and potential GDP to be lower than they would be otherwise. CBO estimates that the positive effects on potential GDP resulting from the increase in productivity will be larger than the negative effects from the crowding out of private investment over the 2022–2032 period.

1. For more information about CBO's methods for analyzing federal investment and infrastructure spending, see Congressional Budget Office, *Effects of Physical Infrastructure Spending on the Economy and the Budget Under Two Illustrative Scenarios* (August 2021), www.cbo.gov/publication/57327, and *The Macroeconomic and Budgetary Effects of Federal Investment* (June 2016), www.cbo.gov/publication/51628.

The increase in government spending will also add to overall demand for goods and services and boost real GDP in relation to real potential GDP over the next several years, CBO estimates. Increased overall demand will in turn boost businesses' demand for labor and cause employment to increase. Greater demand will also put upward pressure on the prices of goods and services, causing inflation to be higher than it would otherwise be for several years. As a result, CBO estimates, the GDP price index will increase by 0.1 percent by 2026. In CBO's assessment, the effect on the inflation rate will dissipate in the later years of the 2022–2032 period because the Federal Reserve will raise the target range for the federal funds rate to offset the effects of increased spending on overall demand and prevent inflation in those years from rising above its long-run goal.

The act will cause interest rates to be higher than they otherwise would be through three channels. First, increased productivity of the private sector will boost the return on private investment. That higher return will then raise the return on investments in financial assets of other types that compete for investors' money. Second, because increased federal borrowing reduces the amount of funds available for private investment, the stock of private capital will be smaller. As a result, the number of workers per unit of physical capital will increase, thereby boosting the productivity of capital and thus the return on private investment and other financial assets. Third, the Federal Reserve will raise the target range for the federal funds rate, offsetting the upward pressure on inflation. CBO estimates that, all told, the interest rate on 10-year Treasury notes will be about 0.1 percentage point higher, on average, from 2023 through 2032 than it would have been without the IIJA.

gradually boost real GDP by 0.1 percent by calendar year 2026 (see Box 2-2). Because provisions in the IIJA are expected to boost the economy's productivity over time, thus increasing potential GDP, the legislation will also increase real GDP in later years. Some of that increase will be offset because accumulated debt resulting from the legislation will raise interest rates, increase borrowing costs, and crowd out private investment, reducing the level of real GDP in later years. All told, the IIJA

will increase both real GDP and real potential GDP by 0.1 percent by calendar year 2032, CBO estimates.

CBO projects that high and rising levels of federal borrowing would reduce private investment activity in later years. In addition, the expiration of the temporary provisions of the 2017 tax act (P.L. 115-97, originally called the Tax Cuts and Jobs Act)—including the expiration of most of the provisions affecting individual income taxes at the end of 2025 and the phaseout of

bonus depreciation by the end of 2026—is projected to temporarily slow economic growth. (For details about those expiring provisions, see Chapter 4.)

Monetary Policy

CBO projects that, to contain inflationary pressures in the economy, the Federal Reserve will raise the target range for the federal funds rate. That rate will increase to 1.9 percent by the end of 2022 and to 2.6 percent by the end of 2023, the agency estimates. (CBO’s projections reflect economic developments as of March 2, 2022.) Over the 2024–2032 period, the federal funds rate averages 2.5 percent, a level that the agency estimates is consistent with the Federal Reserve’s long-run goal of 2 percent for inflation.

CBO projects that the Federal Reserve will begin reducing the size of its balance sheet in the middle of 2022. Specifically, the agency expects that the Federal Reserve will reinvest only a portion of the principal proceeds from maturing Treasury securities and agency MBSs, thus allowing slightly less than \$100 billion worth of assets to drop off its balance sheet each month. The balance sheet will thus shrink until 2026, at which point the Federal Reserve is expected to purchase enough Treasury securities to keep reserves, measured as a share of GDP, at a constant value consistent with their prepandemic levels.

CBO projects that the Federal Reserve’s policy actions will eventually slow the growth of overall demand—reducing inflationary pressures in the economy—by increasing real interest rates. The agency estimates that higher real interest rates will reduce the growth of household spending by making it more costly to finance large purchases (especially houses and motor vehicles) and will reduce the growth of business investment by making it more costly to borrow money to expand productive capacity. In CBO’s projections, real interest rates in the United States that are higher than the rates of major trading partners also increase the value of the dollar in foreign exchange markets, reducing the competitiveness of U.S. exports in global markets.

Moreover, the Federal Reserve’s policy actions signal to market participants its commitment to stabilize the growth of prices in the long run, which keeps expected future inflation from spiraling upward. Interest rates on long-term bonds depend in part on the path of future short-term interest rates. Raising the target range for the

federal funds rate therefore results in higher interest rates for securities with longer maturities. The agency also estimates that reducing the size of the Federal Reserve’s balance sheet will boost long-term interest rates by removing downward pressure on the premium paid to bondholders for the extra risk associated with holding longer-maturity bonds.

The Economic Outlook for 2022 to 2026

In CBO’s projections, the current economic expansion continues, and economic output grows rapidly over the next year. Consumer spending increases, driven by strong gains in spending on services. To fulfill the elevated demand for goods and services, businesses increase both investment and hiring, although supply disruptions hinder that growth in 2022. The growth of payroll employment is projected to continue at a rapid pace through 2022. In 2023, the growth of economic output slows as financial conditions tighten and fiscal support wanes further.

Elevated inflation persists in 2022 as both strong demand and disruptions to supply in product and labor markets continue to add upward pressure on many prices and wages. As product markets adjust, and as factors that discourage labor supply dissipate, those disruptions fade by the end of the year, in CBO’s projections. As a result, the inflation rate falls in 2023 but remains above the Federal Reserve’s long-run goal of 2 percent.

The agency expects short-term interest rates to increase rapidly in 2022. Long-term interest rates, which remained historically low at the end of 2021, are also expected to rise substantially in 2022. CBO expects both short- and long-term interest rates to rise less rapidly after 2022.

After 2023, in CBO’s projections, tightening monetary policy and several other factors combine to slow the growth of demand, slowing output growth and further reducing inflationary pressures.

Gross Domestic Product

Under the assumption that current laws governing federal taxes and spending generally remain unchanged, CBO projects that real GDP will grow by 3.1 percent in 2022 (as measured from the fourth quarter of 2021 to the fourth quarter of 2022). That expansion is driven by strong growth in consumer spending and real business

Table 2-2.

Projected Growth of Real GDP and Its Components

| | Actual, 2021 | 2022 | 2023 | 2024 | Annual Average | |
|--|-----------------|------|------|------|----------------|---------------|
| | | | | | 2025– 2026 | 2027– 2032 |
| Change From Fourth Quarter to Fourth Quarter (Percent) | | | | | | |
| Real GDP | 5.5 | 3.1 | 2.2 | 1.5 | 1.5 | 1.7 |
| Components of Real GDP | | | | | | |
| Personal consumption expenditures | 6.9 | 2.9 | 2.1 | 1.6 | 1.5 | 2.0 |
| Business investment ^a | 13.8 | 5.3 | 1.2 | 0.5 | 2.5 | 3.0 |
| Business fixed investment ^b | 6.6 | 6.6 | 3.3 | 2.1 | 2.4 | 2.9 |
| Residential fixed investment | -1.5 | 3.3 | -1.3 | -0.9 | -0.3 | -0.9 |
| Purchases by federal, state, and local governments ^c | 0.1 | 1.3 | 1.1 | 0.8 | 0.7 | 0.5 |
| Federal | -1.1 | 0.5 | 1.3 | 0.9 | 0.3 | 0.2 |
| State and local | 0.8 | 1.8 | 1.0 | 0.7 | 0.9 | 0.6 |
| Exports | 4.9 | 7.4 | 4.9 | 2.4 | 2.0 | 1.8 |
| Imports | 9.6 | 5.5 | 0.9 | 0.6 | 1.6 | 2.2 |
| Contributions to the Growth of Real GDP (Percentage points) | | | | | | |
| Components of Real GDP | | | | | | |
| Personal consumption expenditures | 4.6 | 2.0 | 1.4 | 1.1 | 1.0 | 1.4 |
| Business investment ^a | 1.8 | 0.7 | 0.2 | 0.1 | 0.3 | 0.4 |
| Business fixed investment ^b | 0.9 | 0.9 | 0.4 | 0.3 | 0.3 | 0.4 |
| Residential fixed investment | -0.1 | 0.2 | -0.1 | * | * | * |
| Purchases by federal, state, and local governments ^c | * | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| Federal | -0.1 | * | 0.1 | 0.1 | * | * |
| State and local | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| Exports | 0.5 | 0.8 | 0.6 | 0.3 | 0.2 | 0.2 |
| Imports | -1.4 | -0.8 | -0.1 | -0.1 | -0.2 | -0.3 |

Data source: Congressional Budget Office. See www.cbo.gov/publication/57950#data.

Real values are nominal values that have been adjusted to remove the effects of changes in prices.

Data are annual. Changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Data and definitions are based on the national income and products accounts.

GDP = gross domestic product; * = between -0.05 percentage points and 0.05 percentage points.

- a. Business fixed investment and investment in inventories.
- b. Nonresidential structures, equipment, and intellectual property products.
- c. Government spending on consumption of goods, services, and investment.

investment and by a shrinking U.S. trade deficit (see Table 2-2). The growth of real GDP declines steadily through 2024, led by slower growth in consumer spending and investment, before remaining almost constant through 2026. In the agency's projections, real GDP grows at an average annual rate of 1.6 percent from the beginning of 2023 through 2026.

Consumer Spending. Real consumer spending has rebounded rapidly since its trough near the beginning of the pandemic and is expected to grow at a more

moderate pace over the projection period. In CBO's projections, real consumer spending grows by 2.9 percent in 2022 and then grows at an average annual rate of 1.7 percent from 2023 to 2026. Spending on services drives overall spending growth in 2022 and 2023 as expenditures on in-person services continue to increase. Spending on goods declines from its elevated level as people return to their prepandemic patterns of consumption; by 2024, consumer spending returns to its prepandemic composition of goods and services.

In CBO's projections, large amounts of accumulated savings and elevated household net worth support consumer spending going forward. Personal saving rose to high levels during the pandemic, both because financial support provided by the government to many households more than offset declines in employment income and because many households cut back on expenditures. Large liquid balances, such as deposits in checking or money market accounts, suggest that some households plan to spend much of those accumulated savings over a relatively short period. CBO expects households to spend about half of accumulated savings by the end of 2026. Overall, the agency expects household balance sheets to remain healthy and consumers to continue to support economic growth.

Business Investment. CBO expects real business fixed investment—the purchase of new equipment, nonresidential structures, and intellectual property products, such as software—to increase by 6.6 percent from the fourth quarter of 2021 to the fourth quarter of 2022, building on a 6.6 percent gain in 2021. Each of the three major categories of business fixed investment is expected to post solid growth. That increase is projected to occur primarily in response to the strong growth of demand, since 2020, for the goods and services that businesses produce. Although stock prices fell early in 2022, they remain well above their prepandemic levels, providing another aid to the growth of investment. CBO anticipates that elevated prices for crude oil and natural gas will encourage drilling activity. High costs and shortages of labor and materials are headwinds, however. Further improvement in demand for businesses' output is expected to boost real business fixed investment by an average of 2.6 percent per year from 2023 to 2026.

Businesses accumulated real inventories (finished goods, work in process, and materials and supplies) at an unusually strong annual rate of \$193 billion in the fourth quarter of 2021, contributing 0.9 percentage points to GDP growth that year. Despite that surge, inventory investment for 2021 as a whole was negative. A combination of rising demand for goods and shortages of labor and certain commodities (notably semiconductors) kept the ratio of inventories to sales in December near its lowest level in the past 10 years. CBO expects shortages to ease during 2022 and 2023, allowing businesses to rebuild inventories to a level more commensurate with sales. Even so, inventory investment is unlikely to match the strong rate seen at the end of 2021. Rates of inventory investment lower than that in the fourth quarter of 2021 mean that inventories will be a modest drag

on GDP growth during the 2022–2026 period, CBO estimates.

Residential Investment. After increasing by 15.7 percent from the fourth quarter of 2019 to the fourth quarter of 2020 because of a variety of factors—including low mortgage rates, households' desire for more and updated living space, and a dearth of existing homes for sale—real residential investment decreased by 1.5 percent during 2021 because of shortages of labor and building materials. CBO expects real residential investment to increase by 3.3 percent in 2022 as shortages ease. Real residential investment is expected to shrink slightly, on average, from 2023 to 2026 as mortgage rates rise over that period and an increased supply of new homes reduces the imbalance between supply and demand.

A combination of rising demand for homes and a limited inventory of existing homes for sale caused house prices (as measured by the Federal Housing Finance Agency's price index for home purchases) to increase by 11.1 percent in 2020 and by 17.5 percent in 2021. With demand remaining strong and new supply restrained by shortages of materials and construction workers, CBO expects prices to rise by another 7.2 percent in 2022. As the supply of newly built homes increases, price growth will slow to an average of 2.8 percent from 2023 to 2026, CBO projects.

Government Purchases. Real government purchases of goods and services—such as public educational services, highways, and military equipment—grew by 0.1 percent in 2021. Although state and local governments increased their purchases as many public schools returned to in-person instruction last year, a decline in federal purchases largely offset increased purchases by state and local governments. CBO projects that, if current laws governing federal taxes and spending generally remain in place, real purchases by federal, state, and local governments will increase by 1.3 percent in 2022 as schools continue to return to more regular instruction and as strong state and local tax receipts and federal aid continue to support spending by state and local governments.

In CBO's projections, real government purchases grow by an average of 0.8 percent per year from 2023 to 2026. In particular, real purchases by state and local governments increase by an average of 0.9 percent per year during that period, as economic activity further bolsters those governments' tax revenues and as they spend funds, over a prolonged period, from federal fiscal

support, including grants from the Coronavirus State and Local Fiscal Recovery Funds program and education grants, both provided by the American Rescue Plan Act of 2021 (P.L. 117-2), and transportation grants provided by the IIJA. Real federal government purchases grow by an average of 0.7 percent per year over that same period, supported by higher discretionary spending as a result of the Consolidated Appropriations Act, 2022.¹²

Exports and Imports. CBO projects that, after remaining roughly stable during 2021, the U.S. trade deficit will rise in 2022 before shrinking between 2023 and 2026. In 2022, the projected larger trade deficit is driven by strong growth in imports. That increase in the trade deficit will reverse, CBO projects, starting in the beginning of 2023 as exports rise by 6.0 percent (at an annualized rate) but imports rise by only 1.6 percent over that year. CBO expects growth in exports to outpace growth in imports because economic conditions among major U.S. trading partners are expected to be stronger than economic conditions in the United States, and because the agency expects the recovery in services trade (a sector for which the United States runs a trade surplus) to continue. As a result, the trade deficit is projected to shrink from 4.3 percent of GDP at the beginning of 2022 to 2.8 percent of GDP in early 2026 (it was 2.8 percent of GDP in 2019) as the growth of exports continues to increase, driven by the increased trade in services.

CBO projects that the problems with supply chains that impeded U.S. trade flows in 2021 peaked late in that year and will continue to ease in 2022. In 2021, strong global demand for goods strained international supply chains, leading to delayed deliveries and shortages of some imported products and hindering the assembly and delivery of some U.S. exports. Those disruptions included shortages of semiconductors (key components in automobiles and consumer electronics) and shipping containers, logjams at key U.S. ports, and labor shortages in the trucking industry. Those developments also resulted in higher import and export prices; the price indexes for imported goods and exported goods rose by 11 percent and 17 percent, respectively, in 2021. CBO expects that those pressures on global supply chains will

ease in the coming year as consumer demand continues to shift back to services and away from goods and as labor shortages in the U.S. transportation industry begin to subside.

Exports. Real exports are expected to continue to rebound in 2022, increasing by 7.4 percent. One factor contributing to that rebound is the improvement in economic conditions abroad, which will boost international demand for U.S. goods and services. CBO projects that the real economic output of major U.S. trading partners will rise by 3.7 percent in 2022, having increased by 3.7 percent in 2021. In addition, as the global effects of the pandemic continue to wane and international travel restrictions are lifted, exports of services (mostly travel and transportation services) are expected to gradually return to their prepandemic levels. As that occurs, and as the pace of foreign economic growth returns to its prepandemic trend, the growth of exports is projected to rise slightly in early 2023 before slowing thereafter.

Imports. CBO projects that strong domestic demand for goods and services in 2022 will continue to bolster real imports, which are expected to rise by 5.5 percent this year. In CBO's projections, imports remain strong because demand for goods continues to be elevated (compared with such demand before the pandemic), disruptions to supply chains ease, and the recovery in domestic inventories boosts the demand for imports. As with exports of services, imports of services continue to rebound as global demand for international travel rises. CBO projects that the growth rate of real imports will decline in 2023 and 2024 as growth in domestic demand for goods slows.

Value of the Dollar. After increasing by 1.0 percent in 2021, the international exchange value of the dollar is projected to rise by 1.2 percent in 2022 before stabilizing in later years.¹³ CBO projects that the dollar will strengthen in 2022 because interest rates in the United States will rise by more than those of most of its trading partners, which will tend to increase the demand for the dollar and dollar-denominated assets in international markets. Beyond 2022, CBO's projection of a stable dollar reflects the agency's expectation that changes in economic performance and monetary policies will cause the value of the dollar to appreciate against

12. CBO's economic projections reflect a preliminary estimate of the budgetary effects of that act. For fiscal year 2023 and beyond, as specified in law, the agency projected discretionary funding under the assumption that appropriations for future years will match those for 2022, with adjustments for inflation. For more information about those procedures, see Chapter 3.

13. CBO's measure of the exchange value of the dollar is an export-weighted average of the exchange rates between the dollar and the currencies of leading U.S. trading partners.

advanced-economy currencies but depreciate against emerging-market currencies in a way that is roughly offsetting.

The Labor Market

The labor market is expected to continue its recovery through 2022. That trend reflects the ongoing expansion of the economy as well as the easing of constraints associated with the pandemic and social distancing. In CBO's projections, through the middle of 2023, the unemployment rate continues to decline, the rate of labor force participation gradually increases, employment continues to increase relative to its potential level, and the growth of wages and salaries remains elevated (see Figure 2-3). Thereafter, through 2026, the projections reflect the labor market's gradual return to its long-run average relationship to potential performance; employment growth slows, the unemployment rate rises gradually, and wage growth moderates.

Employment. Growth of payroll employment is projected to continue at a relatively rapid pace through 2022. Thereafter, that pace is expected to slow through 2026. In CBO's projections, nonfarm payroll employment increases by an average of 345,000 jobs per month in 2022. At that rate, nonfarm payroll employment is projected to reach its prepandemic level by the second half of 2022. Reflecting the increases in employment, the employment-to-population ratio continues to rise this year. After 2022, gains in payroll jobs are projected to gradually slow from an average of 123,000 per month in 2023 to less than 36,000 per month in 2026. That projected slowdown is mostly attributable to slower growth in economic output. Reflecting the increases in employment and a rise in the labor force participation rate, the employment-to-population ratio continues to rise through the middle of 2023 but then gradually declines through 2026.

Unemployment. The unemployment rate and the number of unemployed people are projected to decline gradually through the first half of 2023, reflecting the continued growth of the economy. In CBO's projections, the overall unemployment rate falls from 3.9 percent in the first quarter of 2022 to 3.5 percent by mid-2023, averaging 3.5 percent for all of 2023. That projected unemployment rate is very low by historical standards: The unemployment rate has not been lower than that for any year since 1953. The number of unemployed people falls to 5.8 million by early 2023.

Labor Force Participation. CBO expects continued strong demand for labor and rising wages to result in an increase in the labor force participation rate through the middle of 2023. The agency expects that increase to be more gradual than in past recoveries because of several factors related to the pandemic, including the increase in early retirements and the decrease in participation among women, who have disproportionately dropped out of the labor force to provide child care and other care at home during the pandemic. In CBO's projections, the labor force participation rate rises from 61.8 percent in the fourth quarter of 2021 to 62.4 percent by the middle of 2023, below its prepandemic peak of 63.4 percent in February 2020. Thereafter, it gradually declines as the effects of the aging of the population (which dampen the overall labor force participation rate) become more prominent in relation to the short-term effects of the expanding economy.

Hourly Wages and Salaries. The increase in the demand for labor is expected to continue to outpace the increase in the supply of labor, resulting in continued upward pressure on the growth of wages. In CBO's projections, the employment cost index for wages and salaries of workers in private industry—a measure of the hourly price of labor—is 5.9 percent higher in the second quarter of 2022 than it was in the second quarter of 2021; its annual growth rate in recent years (and before the pandemic began) was about 3.0 percent. Wage growth is projected to ease gradually but remain above its prepandemic average for the next few years. CBO expects wage growth to decline from 4.1 percent in 2023 to 3.2 percent in 2026.

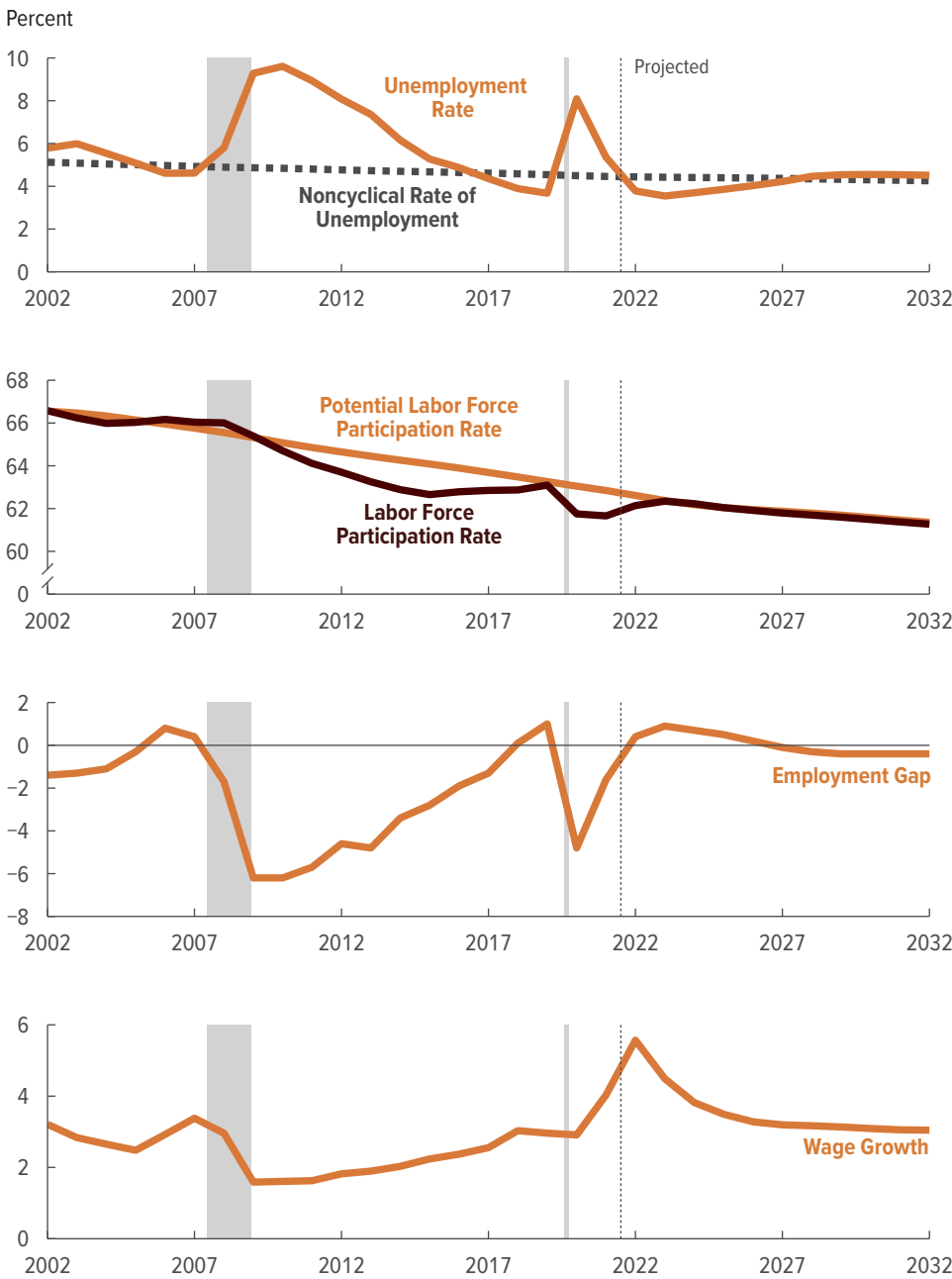
Inflation and Interest Rates

In CBO's projections, inflation remains elevated in 2022 as a variety of factors continue to cause supply to grow more slowly than demand in both product markets and labor markets. Inflation will continue to substantially exceed the Federal Reserve's 2 percent long-run goal in 2023, CBO projects, before nearing that level the following year. The agency expects short-term interest rates to increase rapidly in 2022. Long-term interest rates, which remained historically low at the end of 2021, are also expected to rise substantially in 2022. CBO expects both short- and long-term interest rates to rise less rapidly after 2022.

Inflation. In CBO's projections, high inflation persists in 2022 (see Figure 2-4 on page 39, top panel).

Figure 2-3.

Unemployment, Labor Force Participation, the Employment Gap, and Wage Growth



In CBO’s projections, the unemployment rate falls over the next year because of the ongoing expansion of the economy.

The labor force participation rate rises through early 2023. The rate then begins to decline as the negative effects of the aging population begin to offset the positive effects of the ongoing economic expansion.

CBO projects that employment will exceed its estimated potential in 2022. After 2023, the projection of the employment gap reflects the labor market’s gradual return to a rough balance between labor supply and labor demand.

Nominal wage growth is projected to ease gradually but remain above its pre-pandemic average for the next few years as growth in the demand for labor continues to outpace growth in the supply of labor.

Data sources: Congressional Budget Office; Bureau of Labor Statistics. See www.cbo.gov/publication/57950#data.

The unemployment rate is the number of people not working who are available for work and are either seeking work or expecting to be recalled from a temporary layoff, expressed as a percentage of the labor force. The noncyclical rate of unemployment is the rate that results from all sources except fluctuations in aggregate demand, including normal turnover of jobs and mismatches between the skills of available workers and the skills necessary to fill vacant positions.

The labor force participation rate is the share of the civilian noninstitutionalized population age 16 or older that has jobs or that is available for and actively seeking work. The potential labor force participation rate is CBO’s estimate of the rate that would occur if economic output and other key variables were at their maximum sustainable amounts.

The employment gap is the difference between employment and potential employment (that is, the number of people who would be employed in the absence of fluctuations in the overall demand for goods and services), expressed as a percentage of potential employment.

Wages are measured using the employment cost index for wages and salaries of workers in private industry. Growth in wages is measured as average annual growth. For the unemployment rate and labor force participation rate, data are annual averages.



The growth rate of the PCE price index—the Federal Reserve’s preferred measure of inflation—was well above the Federal Reserve’s long-run goal of 2 percent in 2021. That annual rate (as measured from the fourth quarter of 2020 to the fourth quarter of 2021) reached 5.5 percent in 2021, a value significantly higher than the 1.2 percent rate in 2020. CBO projects that inflation in the PCE price index will be 4.0 percent in 2022, thus remaining elevated. Growth in the core PCE price index, which excludes food and energy prices (because they tend to be volatile), rose from 1.4 percent in 2020 to 4.6 percent in 2021. The agency projects that the core PCE price index will grow by 3.8 percent in 2022.

CBO expects that many of the current disruptions to the supply of goods and services—as well as many of the effects of pandemic-related legislation on the demand for goods and services—will cause inflation to remain high in the first half of 2022; but those effects will fade by the middle of the year. In the agency’s projections, quarterly inflation—as measured from one quarter to the next—peaks in the first quarter of 2022 and then declines during the rest of the year and throughout 2023. CBO expects the core PCE price index to grow by 2.5 percent in 2023 before nearing the Federal Reserve’s long-run goal of 2 percent in 2024.

The agency expects that the gap between the PCE price index and the CPI-U will narrow to its historical average at the end of 2023. In CBO’s projections (completed on March 2, 2022), the core consumer price index for all urban consumers (which excludes food and energy prices) grows by 4.4 percent in 2022 and by 2.9 percent in 2023. That narrowing of the gap between inflation in the core CPI-U and inflation in the core PCE price index is largely driven by categories of goods and services that are assigned comparatively more weight in the calculation of the CPI-U. CBO projects that inflation in the prices of motor vehicles and housing services, two such categories, will decline as those prices approach their long-run average growth rates in 2023.

Since CBO completed its economic forecast on March 2, 2022, two additional months’ worth of data about inflation have accrued. Those data indicate that inflation was higher than the agency projected it would be during March and April and that inflation may end up being higher than projected in 2022 as a whole. CBO had two main reasons for projecting a decline in inflation throughout 2022. First, it expected problems with supply chains to abate in mid-to-late 2022. (However, the agency completed its projections before

the effect of the invasion of Ukraine on supply chains could be fully reflected in them.) Having fewer problems with supply chains would slow the growth of prices for durable goods, particularly motor vehicles. In fact, CBO estimated that prices of motor vehicles would decrease in 2022. The second reason CBO projected slowing inflation in 2022 was a shift in consumer spending away from durable goods and toward services as consumers become more comfortable with in-person economic activities. That shift in consumer spending would cause the growth in the prices of durable goods to decline sharply (see Figure 2-5). The agency projected that in 2022, stronger demand for services would not cause enough growth in the prices of services to offset the sharp decline in the growth in the prices of durable goods, because historically the prices of services are slower to respond to changes in demand.

Although CBO projects that inflation will decline among many categories of goods and services, the agency expects inflation in housing services to remain high in 2022. As the measure of the value of the services that housing provides, housing services are a large component of both the PCE price index and the CPI-U, constituting 16 percent of the PCE market basket of goods and services and roughly 30 percent of the CPI-U basket. CBO projects that, in 2022, increased prices for housing services will raise inflation in the CPI-U by 1.5 percentage points and inflation in the PCE price index by 0.7 percentage points. The aggregate inflation index most sensitive to an increase in the price of housing services is the core CPI-U; CBO projects that growth in the price of housing services will raise that measure by 1.9 percentage points in 2022.

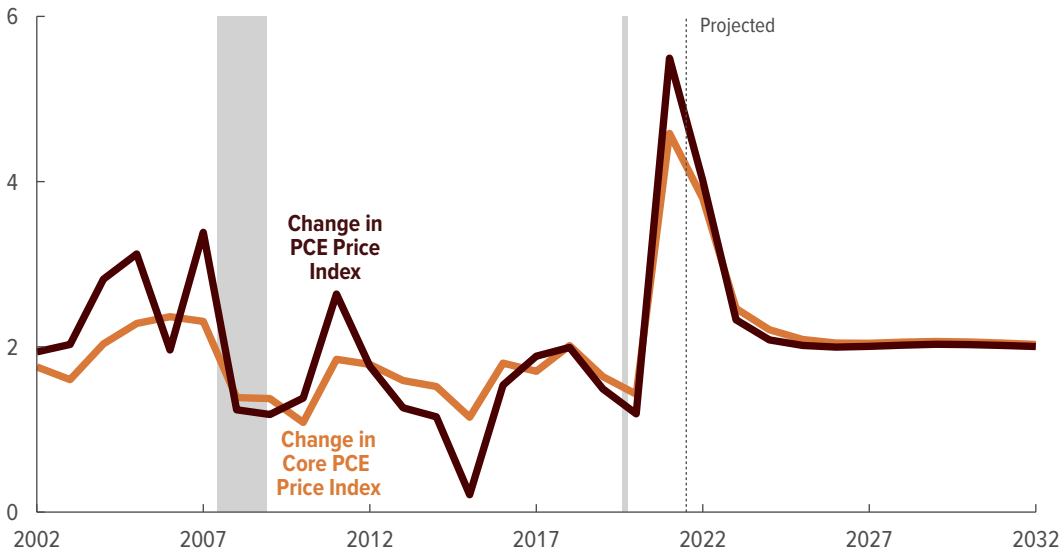
Over the 2023–2024 period, inflation declines gradually but stays above the Federal Reserve’s long-run goal of 2 percent in CBO’s projections. That decline is attributable to reduced supply disruptions, to slower growth in the prices of goods that more than offsets increasing growth in the prices of services, and to the actions the Federal Reserve has already begun to take to rein in inflation by reducing monetary accommodation. Those factors outweigh the upward pressure on prices resulting from tight conditions in the labor market.

Interest Rates. In CBO’s projections, interest rates on short-term Treasury securities rise in concert with the increases in the target range for the federal funds rate carried out by the Federal Reserve. In 2022 and 2023, the Federal Reserve rapidly increases the target range for the federal funds rate to reduce inflationary pressures in

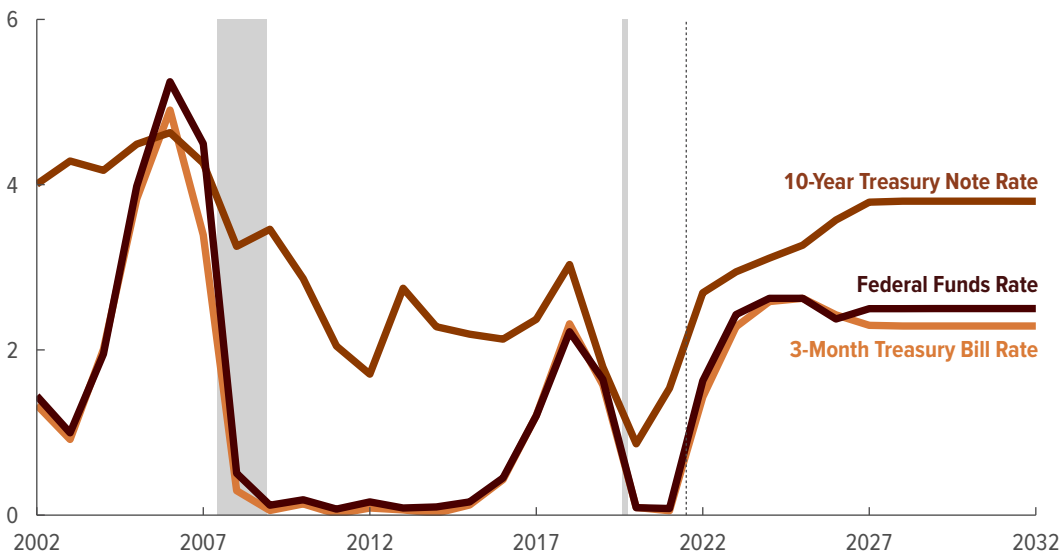
Figure 2-4.

Inflation and Interest Rates

Percent



In CBO’s projections, inflation remains high in 2022. It then declines over the next few years, nearing the Federal Reserve’s long-run goal of 2 percent in 2024.



CBO expects the Federal Reserve to rapidly increase the target range for the federal funds rate in 2022 and 2023. In CBO’s projections, the interest rate on 3-month Treasury bills rises in concert with that increase. The interest rate on 10-year Treasury notes is expected to increase through 2028, in part because short-term interest rates are expected to rise.

Data sources: Congressional Budget Office; Bureau of Economic Analysis; Federal Reserve. See www.cbo.gov/publication/57950#data.

The inflation rate is based on the price index for personal consumption expenditures; the core rate excludes prices for food and energy.

Inflation is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

The federal funds rate is the interest rate that financial institutions charge each other for overnight loans of their monetary reserves.

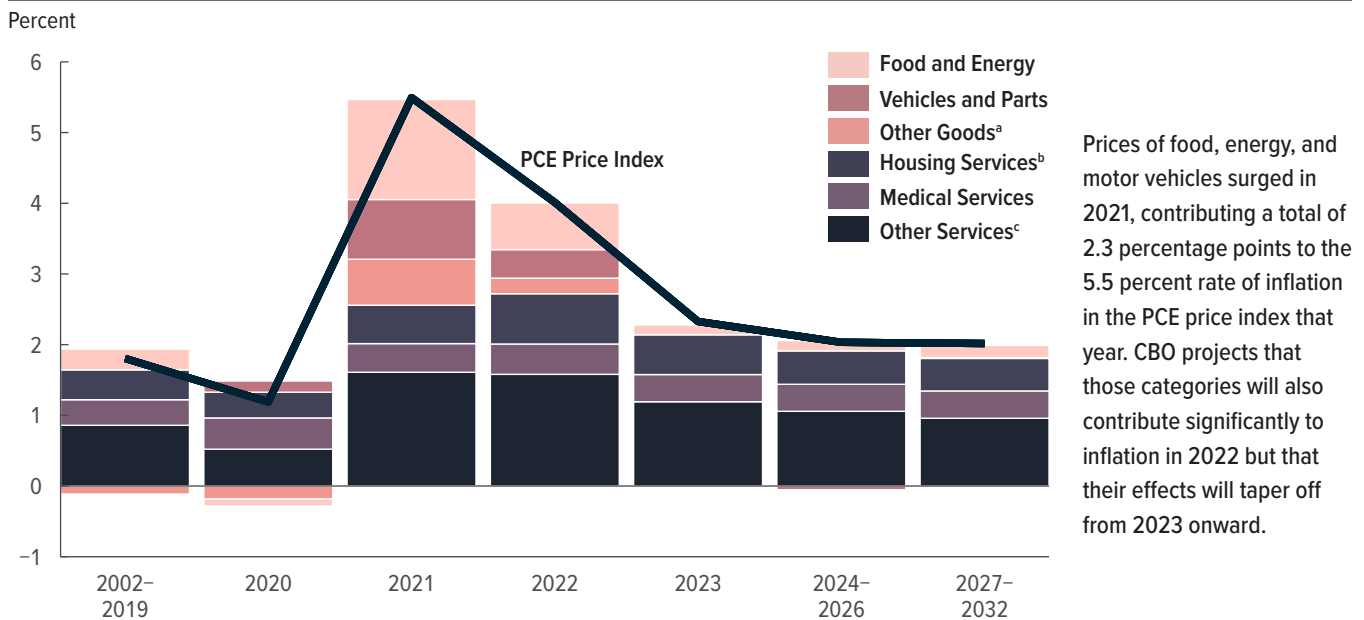
PCE = personal consumption expenditures.

the economy. In CBO’s projections, the interest rate on 3-month Treasury bills follows a similar path, rising to 1.4 percent by the fourth quarter of 2022, 2.3 percent by the fourth quarter of 2023, and 2.6 percent by the fourth quarter of 2024 (see Figure 2-4, bottom panel). The Federal Reserve reduces the target range for the

federal funds rate in 2025 to counteract the drag on economic growth stemming from the higher individual income tax rates that take effect at the beginning of 2026 under current law. Accordingly, in CBO’s projections, the 3-month Treasury bill rate falls to 2.4 percent by the fourth quarter of 2026.

Figure 2-5.

Contributions to Overall Inflation



Data sources: Congressional Budget Office; Bureau of Economic Analysis. See www.cbo.gov/publication/57950#data.

The overall inflation rate is the rate of growth in the PCE price index. The figure uses annual growth rates calculated from the fourth quarter of the year immediately preceding each period to the fourth quarter at the end of that period. Averages across multiple periods use compound annual growth rates over the specified period.

Values in the bars represent the contributions, in percentage points, of each category of goods and services to the growth rate of the PCE price index. The sum of the contributions of those categories equals the overall growth of that index.

PCE = personal consumption expenditures.

- Includes core durable and non-durable goods (other than vehicles and parts), including electronics, home furnishings, and apparel.
- Measures the value of the services that housing provides, reflecting the rental value of housing occupied by tenants and the imputed rental value of owner-occupied housing.
- Includes core services (other than housing services and medical services), including transportation and recreation services.

Interest rates on long-term Treasury securities are expected to increase through 2026, partly because short-term rates are expected to rise. Long-term interest rates are partially determined by investors' expectations about the future path of short-term interest rates. Potential purchasers of long-term bonds weigh those bonds' yields against the yields from purchasing a series of shorter-term bonds (for example, purchasing a 1-year bond each year for 10 years). When the expected future path of short-term interest rates rises, the yield on long-term bonds rises to ensure that there are enough buyers for all the long-term bonds currently for sale. In CBO's projections (which reflect economic developments as of March 2, 2022), the interest rate on 10-year Treasury notes rises from 1.5 percent in the fourth quarter of 2021 to 2.7 percent in the fourth quarter of 2022 as the Federal Reserve tightens monetary policy, signaling a higher future path

for short-term interest rates. After 2022, the interest rate on 10-year Treasury notes rises more gradually, increasing to 2.9 percent in the fourth quarter of 2023 and 3.1 percent in the fourth quarter of 2024.

Part of the increase in interest rates on long-term Treasury securities through 2026 is attributable to an increase in term premiums. A term premium is the additional return paid to bondholders for the extra risk associated with holding long-term bonds. Several factors pushed term premiums to historically low levels in the years that preceded the pandemic, including investors' heightened concern about relatively weak global economic growth and the increased demand for long-term Treasury securities as a hedge against unexpected declines in inflation. CBO expects those factors to dissipate, thus increasing term premiums.

CBO expects that the reduction in the Federal Reserve's portfolio of long-term assets will also boost interest rates on long-term Treasury securities, for two reasons: First, reducing the size of its balance sheet signals to investors that the Federal Reserve is committed to tightening monetary policy and is therefore likely to continue raising the target range for the federal funds rate, thus raising investors' expectations about the future path of short-term interest rates. Second, the Federal Reserve's method for reducing the size of its balance sheet tends to decrease the demand for long-term bonds more than it decreases the demand for short-term ones. All else being equal, that method leads to lower prices and higher yields for long-term bonds.

The Economic Outlook for 2027 to 2032

CBO's projections of GDP, unemployment, inflation, and interest rates for the later years of the forecast period are based mainly on the agency's projections of the underlying trends in the factors that determine those key variables and take into account the effects of federal tax and spending policies embodied in current law. In some cases, those fiscal policies, as well as monetary policy, may influence not only the demand for goods and services—and, therefore, the gap between actual output and potential output—but also potential output itself.

Actual Output and Potential Output

Although changes in the overall demand for goods and services strongly influence CBO's economic projections for the first part of the period covered in this report, the agency's projections for the latter part of the period are fundamentally determined by its assessment of the prospects for growth of key inputs: the potential number of workers in the labor force, capital services (that is, the flow of productive services from the stock of capital assets), and the potential productivity of those factors.

In CBO's projections, growth of real potential GDP slows from an annual average of nearly 1.9 percent over the 2022–2026 period to less than 1.8 percent, on average, over the 2027–2032 period—a rate roughly equal to the average during the most recent business cycle (see Table 2-3). Annual growth of the potential labor force accelerates from an average of about 0.3 percent in the first period to nearly 0.4 percent in the second, whereas growth of potential labor force productivity decreases from an average of nearly 1.6 percent to less than 1.4 percent (see Figure 2-6).

Potential output is an estimate of the economy's maximum sustainable level of production and indicates high rates of use of labor and capital, but it is not a strict constraint: Actual output can exceed potential output for a time, creating a positive output gap. Over an extended period, however, a positive output gap puts upward pressure on wages and prices, ultimately leading monetary authorities to take steps to relieve inflationary pressures. In response, the growth of output slows, bringing it closer in line with potential output.

That process is reflected in CBO's projection of a gradually narrowing positive output gap after mid-2023. As monetary policy continues to restrain demand, the growth of actual output slows and then gradually converges with that of potential output, averaging more than 1.7 percent per year over the 2027–2032 period. The output gap narrows to zero by early 2026 and decreases to –0.5 percent by early 2028; it remains at that level thereafter, consistent with the long-term relationship between actual and potential output.

Over the 2027–2032 period, growth of potential output in the nonfarm business sector (which accounts for about three-quarters of economic activity and the bulk of productivity growth) averages about 2.1 percent per year. About 1.1 percentage points of that growth are attributable to growth of potential total factor productivity (the average real output per unit of combined labor and capital services, excluding the effects of business cycles) in that sector; about 0.7 percentage points are attributable to growth of capital services, and the remaining 0.3 percentage points are attributable to growth of potential hours worked.

The Labor Market

CBO's projections of employment, labor compensation per hour, unemployment, and labor force participation over the 2027–2032 period primarily reflect the agency's assessment of the overall performance of the economy and the effects of long-term demographic trends, which will strongly influence the size and composition of the workforce in the coming decades.

Over the 2027–2032 period, the growth of employment is projected to moderate, and the growth of labor compensation is expected to increase, as compared with the first five years of the projection period. Nonfarm payroll employment increases by an average of about 53,000 jobs per month during the 2027–2032 period, in CBO's projections. The projected increase in employment is smaller than the average increase over

Table 2-3.

Key Inputs in CBO's Projections of Real Potential GDP

Percent

| | Average Annual Growth | | | | | | Projected Average Annual Growth | | | |
|--|-----------------------|------------|------------|------------|------------|------------|---------------------------------|------------|------------|--------------------|
| | 1950–1973 | 1974–1981 | 1982–1990 | 1991–2001 | 2002–2007 | 2008–2021 | Overall, 1950–2021 | 2022–2026 | 2027–2032 | Overall, 2022–2032 |
| Overall Economy | | | | | | | | | | |
| Real Potential GDP | 4.0 | 3.2 | 3.2 | 3.2 | 2.4 | 1.7 | 3.1 | 1.9 | 1.8 | 1.8 |
| Potential Labor Force | 1.6 | 2.5 | 1.6 | 1.2 | 1.0 | 0.5 | 1.4 | 0.3 | 0.4 | 0.4 |
| Potential Labor Force Productivity ^a | 2.3 | 0.7 | 1.6 | 2.0 | 1.4 | 1.2 | 1.7 | 1.6 | 1.4 | 1.5 |
| Nonfarm Business Sector | | | | | | | | | | |
| Real Potential Output | 4.1 | 3.5 | 3.5 | 3.7 | 2.6 | 2.0 | 3.4 | 2.2 | 2.1 | 2.1 |
| Potential Hours Worked | 1.4 | 2.3 | 1.7 | 1.2 | 0.3 | 0.6 | 1.3 | 0.3 | 0.4 | 0.4 |
| Capital Services ^b | 3.8 | 3.7 | 3.5 | 3.9 | 2.8 | 2.3 | 3.4 | 2.6 | 2.2 | 2.4 |
| Potential Total Factor Productivity ^c | 1.9 | 0.8 | 1.1 | 1.5 | 1.5 | 0.8 | 1.4 | 1.1 | 1.1 | 1.1 |
| Contributions to the Growth of Real Potential Output (Percentage points) | | | | | | | | | | |
| Potential hours worked | 0.9 | 1.5 | 1.1 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.3 | 0.2 |
| Capital services ^b | 1.2 | 1.2 | 1.1 | 1.3 | 0.9 | 0.8 | 1.1 | 0.9 | 0.7 | 0.8 |
| Potential total factor productivity | 1.9 | 0.8 | 1.1 | 1.5 | 1.5 | 0.8 | 1.4 | 1.1 | 1.1 | 1.1 |
| Total Contributions | 4.0 | 3.5 | 3.4 | 3.6 | 2.6 | 2.0 | 3.3 | 2.2 | 2.1 | 2.1 |
| Potential Labor Productivity ^d | 2.6 | 1.2 | 1.7 | 2.4 | 2.4 | 1.4 | 2.1 | 1.9 | 1.7 | 1.8 |

Data source: Congressional Budget Office. See www.cbo.gov/publication/57950#data.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Potential GDP is CBO's estimate of the maximum sustainable output of the economy. The potential labor force is CBO's estimate of the size of the labor force that would occur if economic output and other key variables were at their maximum sustainable amounts. Potential labor force productivity is the ratio of real potential GDP to the potential labor force.

The table shows compound annual growth rates over the specified periods. Those rates are calculated from the fourth quarter of the year immediately preceding each period to the fourth quarter at the end of that period.

GDP = gross domestic product.

- The ratio of potential GDP to the potential labor force.
- The services provided by capital goods (such as computers and other equipment) that constitute the actual input in the production process.
- The average real output per unit of combined labor and capital services, excluding the effects of business cycles.
- The ratio of potential output to potential hours worked in the nonfarm business sector.

the previous two decades because of the aging of the U.S. population, which CBO expects to result in slower growth of the labor force over the 2027–2032 period than during the previous two decades. Real compensation per hour in the nonfarm business sector, a measure of labor costs that is a useful gauge of longer-term trends, grows at an average annual rate of 1.8 percent over the 2027–2032 period—close to the projected average growth in labor productivity in that sector.

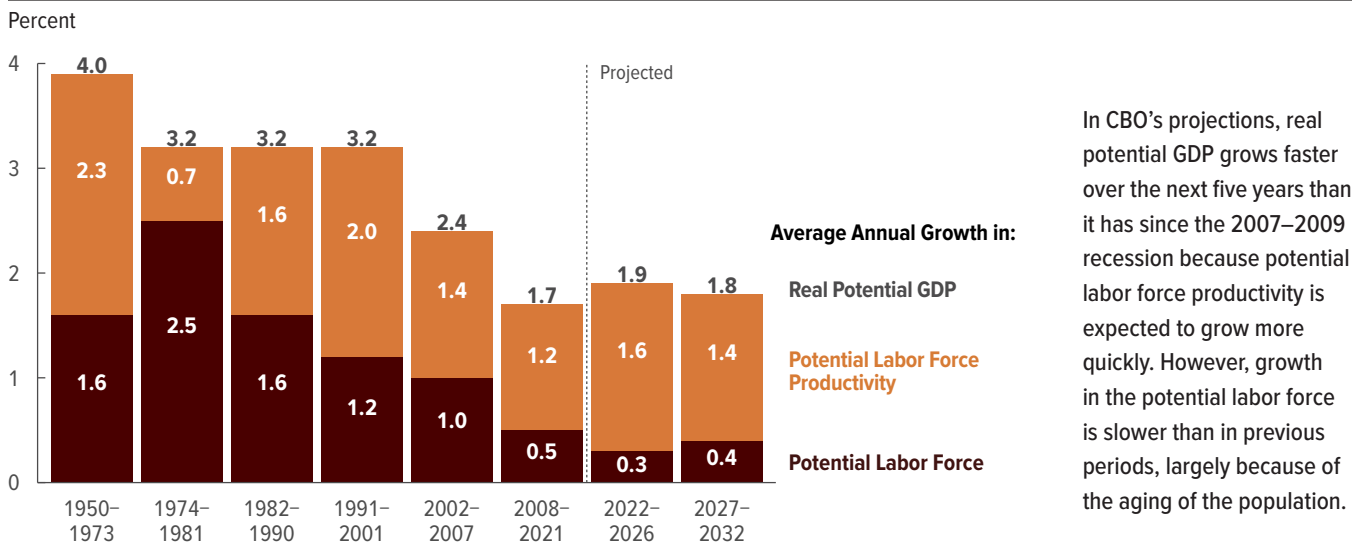
In CBO's projections, the unemployment rate rises from 2027 to 2030 as output returns to its historical relationship with potential output. After peaking at

nearly 4.6 percent at the end of 2030, the unemployment rate declines slowly through 2032. CBO expects the noncyclical rate of unemployment to decline slowly over the projection period, from 4.4 percent in 2022 to 4.3 percent by 2032.¹⁴ That decline reflects the continuing shifts in the composition of the workforce toward older workers, who tend to have lower rates of unemployment (when they participate in the labor force), and away from less educated workers, who tend to have higher rates of unemployment.

14. The noncyclical rate of unemployment is the rate of unemployment arising from all sources except fluctuations in aggregate demand.

Figure 2-6.

Composition of the Growth of Real Potential GDP



Data source: Congressional Budget Office. See www.cbo.gov/publication/57950#data.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Growth in real potential GDP is the sum of growth in the potential labor force and growth in potential labor force productivity. The potential labor force is CBO's estimate of the size of the labor force that would occur if economic output and other key variables were at their maximum sustainable amounts. Potential labor force productivity is the ratio of real potential GDP to the potential labor force.

The bars show average annual growth rates over the specified periods. Those rates are calculated using calendar year data.

GDP = gross domestic product.

CBO expects the labor force participation rate to fall during the second part of the 11-year projection period—from 62.0 percent at the beginning of 2026 to 61.2 percent by the end of 2032. That decline is mostly driven by the aging of the population and, in particular, the continued retirement of baby boomers. That rate in 2032 is close to the agency's estimate of the potential labor force participation rate, which falls from 62.6 percent in 2022 to 62.0 percent in 2026 and to 61.4 percent in 2032.

Inflation and Interest Rates

Over the 2027–2032 period, CBO expects conditions in labor and product markets to relieve upward pressure on prices, keeping inflation close to its projected long-run average. CBO expects interest rates on Treasury securities to be higher, on average, than they were over the first five years of the projection period.

Inflation. In CBO's forecast, inflation remains at its projected long-run average rate over the 2027–2032 period. The agency expects the growth rate of the PCE price index to average 2.0 percent (the Federal Reserve's

long-run goal for inflation) over that period. Similarly, inflation in the CPI-U is projected to grow at an average annual rate of 2.3 percent, that index's long-run average.

Interest Rates and Federal Reserve Policy. CBO expects interest rates on short- and long-term Treasury securities to be higher over the 2027–2032 period than over the 2022–2026 period but to remain below their historical average. Larger federal debt in relation to GDP and a reduction in the Federal Reserve's holdings of Treasury securities contribute to the higher level of short- and long-term interest rates. Nevertheless, projected interest rates remain below their average over the past four decades for several reasons, including lower average expected inflation, slower growth of the labor force, and slower growth of productivity.¹⁵

15. For further details about the factors affecting CBO's projections of interest rates, see Edward N. Gamber, *The Historical Decline in Real Interest Rates and Its Implications for CBO's Projections*, Working Paper 2020-09 (Congressional Budget Office, December 2020), www.cbo.gov/publication/56891.

Projections of Income for 2022 to 2032

Economic activity and federal tax revenues depend not only on the amount of total income in the economy but also on how that income is divided among labor income, domestic corporate profits, proprietors' income, income from interest and dividends, and other categories. (Labor income includes wage and salary payments as well as other forms of compensation, such as employer-paid benefits and the part of proprietors' income corresponding to compensation for hours worked.) The shares of income for wages and salaries and for domestic profits are particularly important in projecting federal revenues because those types of income are taxed at higher rates than others.

Labor Income

Compensation of employees fell by less than GDP did in the pandemic-induced recession of early 2020; as a result, labor income as a share of GDP rose sharply that year. In CBO's projections, that share decreases to 57.9 percent in 2025, which is slightly above its prepandemic value (in the fourth quarter of 2019) of 57.8 percent. Strong demand for goods and services drives further gains in employment and compensation, resulting in a modest uptick in labor income as a share of GDP after 2025. Labor income as a share of GDP averages 58.2 percent from 2026 through 2032. Nevertheless, CBO's forecast of labor income as a share of GDP remains below 60 percent, the average from 1947 to 2000.

Wages and salaries as a share of GDP also rose sharply in 2020. In CBO's projections, that share falls through 2023 and then remains roughly stable from 2024 to 2032. The agency projects that wages and salaries as a share of GDP will average 44.2 percent over the 2022–2025 period and 44.0 percent over the 2026–2032 period.

Corporate Profits

Projections of domestic corporate profits as a share of GDP decrease over the 11-year projection period. At 10.1 percent, domestic profits as a share of GDP were elevated in 2021 because of the federal subsidies that flowed to businesses as part of pandemic-related support. In CBO's projections, that share drops to 9.7 percent in 2022 as those subsidies end. The share then decreases steadily, reaching 7.7 percent by 2032, as businesses' interest payments increase with rising interest rates.

Uncertainty About the Economic Outlook

CBO's economic projections are subject to a high degree of uncertainty. Projections of economic output and labor market conditions are highly uncertain, both in the short term, when the pandemic's continued effects on overall demand for services, supply chains, and participation in the labor market could be larger or smaller than expected, and in the longer term, when the pace of growth in potential output in the aftermath of the pandemic could be faster or slower than expected. The agency's projections of price and wage inflation are also highly uncertain, particularly because the upward pressure on wages and prices from strong conditions in the labor market could be greater or less than expected. The path of asset prices in the short term and the pace of the tightening of monetary policy may differ from the agency's projections of them. Other key sources of uncertainty are future monetary policy and the path of interest rates. Uncertainty about the path of interest rates contributes to the uncertainty of the agency's estimates of the impact of higher deficits and debt on the economy. Furthermore, geopolitical events, including Russia's invasion of Ukraine, add to the uncertainty of the economic outlook, notably the outlook for inflation.

CBO's baseline projections reflect the assumption that current laws governing federal taxes and spending generally remain in place. Although new laws could be enacted that significantly alter federal taxes and spending, the following discussion is restricted to uncertainty stemming from other sources.

Output and the Labor Market During the Pandemic and Its Aftermath

The speed at which disruptions to supply chains will ease is uncertain. If consumers and businesses return to prepandemic patterns of spending and production quickly, then such disruptions will abate more quickly, and price pressures will ease more quickly, than they otherwise would. But if that transition takes longer than CBO expects, the pressure on those strained supply chains will persist, dampening and delaying consumption and investment and increasing inflationary pressures. If governments abroad relax measures aimed at mitigating the spread of the virus more quickly than the agency expects, then the strain on global supply chains might ease more rapidly. But if governments abroad pursue more aggressive mitigation measures than CBO anticipates, that might further exacerbate disruptions in global supply chains, and production might increase less rapidly than it otherwise would.

The uncertainty of the labor market's recovery in the near term is particularly great. Labor demand and supply will be affected by several factors, including the future course of the pandemic, the pace of economic expansion, and various government policies supporting households, workers, and businesses. If, for example, labor force participation rates rise less, or consumer demand increases less, than CBO currently expects, then the labor market's overall recovery will be slower than anticipated in CBO's projections. However, if the factors currently dampening the supply of labor diminish faster than CBO currently projects, then the labor force participation rate and labor markets overall could rebound more strongly than projected.

As the fitful effects of the pandemic on certain in-person activities linger—both domestically and abroad—CBO's projections of the overall demand for services are subject to significant uncertainty. In particular, the path of the pandemic is unknown. Over time, the virus will continue to evolve in ways that make it either more or less contagious, make its symptoms either more or less severe, and make it more or less resistant to vaccines. Medical science will also continue to evolve, and more effective vaccines and treatments may be available in the future. If, in response to any of those developments, people become more likely to avoid certain in-person activities, the overall demand for services could be less than expected. But if people become less likely to avoid those activities, then the overall demand for services could be greater than expected.

In the agency's projections, the magnitude of inflationary pressure resulting from historically low levels of slack in the labor market is highly uncertain. Few periods over the past 50 years have had less slack in the labor market than the agency is projecting for the next few years, making historical comparison more difficult. Little slack in the labor market could cause wages to increase more rapidly than the agency projects, which might lead businesses to raise prices more than expected.

CBO's estimates of the economic effects of pandemic-related legislation represent the middle of the range of likely outcomes. Still, those estimates are subject to considerable uncertainty. Some important sources of that uncertainty are how consumers, businesses, and state and local governments may respond to various policy changes included in the legislation; how the timing, scale, and breadth of the legislation may affect prices in labor and product markets; how responses to policy changes may be altered by the ongoing pandemic; how

quickly disruptions to the supply of labor are resolved; and what the aftermath of the pandemic may be.

In addition, how the IIJA will affect the private sector's productivity is highly uncertain. As a result, that legislation's effect on potential GDP in the longer term could be greater or less than the agency estimates.

In the longer term, the effects of the pandemic on the growth rate of potential total factor productivity in the nonfarm business sector are uncertain. The pandemic sped the adoption of new technologies, such as teleconferencing and telemedicine, but the effects on productivity of a more rapid adoption of such technologies remain unknown. The swift adaptation to remote work by existing businesses and households could create many opportunities for new businesses and new jobs and could spur sectoral and geographic reallocations that help improve both productivity and social and economic welfare. Innovations associated with remote work could lead to substantial reductions in costs and improvements in productivity. If, in evolving and quickly expanding parts of the economy, more businesses are formed and more jobs are created than CBO expects, then the recovery of the labor market could be faster and stronger than the agency projects. At the same time, uncertainty exists about the extent to which such dynamic forces could make existing businesses and business models obsolete, as well as about the negative consequences for output and labor markets.

Furthermore, the longer workers remain out of the labor force, the more likely it is that they will experience unfavorable long-term outcomes in the labor market—including reduced future employment rates and earnings. Workers who are particularly vulnerable to such unfavorable outcomes, which could last a decade or more, include those who experience long periods of unemployment, young people who enter the labor market in a weak economy, and women, who have disproportionately dropped out of the labor force to provide child care and other care at home during the pandemic.

Disruptions to the education system could have lasting effects on the future productivity of workers: Students whose schooling has been disrupted during the pandemic could face long-term adverse consequences, and the potential harm is skewed toward those who have already been most disadvantaged. For many students graduating from school during the pandemic, the recession and social distancing made it much more difficult to gain work experience that would benefit them in the future.

Finally, long-term health risks—including potential long-term effects of COVID-19 infections, exacerbation of the opioid crisis by the pandemic, and the toll on people’s mental health—could influence the prospects of many workers as well as the strength of the overall labor market.

Price and Wage Inflation

There is much uncertainty about the rate at which wages and consumer prices will grow. The projected path of wages is highly uncertain and is related to uncertainty about the increase in the labor force, the effect of that increase on wage growth, and the degree to which the increase in inflation will feed into wages in the future. To some extent, the uncertainty about the path of wages is related to the uncertainty about the continuation of the pandemic. Further outbreaks could slow or even reverse the recent increase in the labor force, which could result in a more persistent increase in wage growth than CBO projects. But if the labor force returns to its potential level faster than CBO expects, and past inflation does not create additional upward pressure on wages, then the growth of wages could be slower than the agency anticipates. If wage growth is faster than CBO projects, businesses could pass through those higher wages in the form of higher consumer prices, especially in the prices for services, which might result in higher inflation than the agency expects.

Supply-side issues were a key determinant of inflation in 2021. Those issues remain a large source of uncertainty in 2022, as businesses continue to face difficulties restocking many goods and hiring workers. If supply-side issues persist throughout the year, the result could be higher inflation than CBO projects, particularly in key categories such as durable goods, energy, food, and housing services. But if, in response to strong incentives, businesses soon overcome a variety of supply disruptions, the result could be lower inflation than CBO projects.

Additionally, overall measures of inflation are affected by volatility in energy and food markets. One potential source of uncertainty in CBO’s forecast for energy and food prices is the duration and severity of the war in Ukraine (and the sanctions levied on Russia). Supply disruptions and further sanctions on Russia, a major exporter of petroleum and natural gas, could further drive up energy prices in the United States. In addition, because Russia and Ukraine account for a large portion of the world’s wheat exports, the conflict is likely to affect food prices. Higher energy prices would further

strain global supply chains by increasing transportation costs for merchandise trade. On net, CBO projects that the conflict will lead to higher inflation in the short term, but the magnitude of that effect depends on how long the conflict lasts and how disruptive it is to global markets—two factors that remain highly uncertain.

Finally, CBO’s long-term projections of inflation depend on people’s expectations about inflation, which, in the agency’s estimation, are not very responsive to changes in actual inflation. The agency expects that, for the most part, consumers and businesses will view recent price increases as temporary and as having little effect on future inflation in the long run. However, if price increases prove longer lasting, then inflation expectations could rise more materially, and inflation could be higher than CBO projects. Alternatively, if actual inflation turns out to be less than expected inflation over the next several years, expectations of future inflation could be lower as consumers revise their inflation expectations downward.

The Financial Sector and Asset Prices

High inflation and rising interest rates could lead to a sharp decrease in asset prices if investors’ appetite for risk changes quickly. Lower prices for stocks and corporate debt would reduce business investment. Moreover, demand for housing grew rapidly over the past year, and inventories decreased over that period, leading to a large increase in home prices. A sudden drop in asset values, coupled with the increase in mortgage rates that has occurred, could cause spending on housing to stall.

The path of financial conditions over the next several years and its impact on the overall economy are highly uncertain. Financial conditions might tighten more rapidly than CBO anticipates, which would result in a sharp decline in the availability of credit to consumers and businesses and might lead to a recession. Alternatively, the Federal Reserve’s tightening of monetary policy might not lead to as significant a change in financial conditions as CBO anticipates, which could lead to higher inflation in the coming years than CBO projects. In addition, any disruptions to financial markets in Europe resulting from the war in Ukraine might have negative spillover effects on financial conditions in the United States, and the interaction of such spillover effects with the impact of the Federal Reserve’s domestic policy actions is also highly uncertain.

Interest Rates and Monetary Policy

The path of monetary policy is uncertain as well. The Federal Reserve raised the target range for the federal funds rate in March and May 2022 and thus began to tighten monetary conditions in the economy. In CBO's projections, the pace of the increase in the federal funds rate and the terminal level of that policy rate are uncertain, contributing to uncertainty about the path of interest rates on Treasury securities. If inflation is higher than CBO expects over the next few quarters, the Federal Reserve may increase the policy rate more quickly, and interest rates on Treasury securities will probably be higher than CBO projects. But if the improvement in the labor market falters significantly at some point during the next few years, the Federal Reserve may pause or even reverse policy rate hikes, and interest rates on Treasury securities will probably be lower than CBO expects.

The path of term premiums is an additional source of uncertainty for CBO's projections of interest rates on Treasury securities, especially those of longer duration. If term premiums increase more rapidly than the agency expects, interest rates on longer-term Treasury securities will be higher than projected. But if term premiums do not increase as much as the agency expects, then interest rates on those securities will be lower than projected. Contributing to the uncertainty of the agency's projections of interest rates on longer-term Treasury securities is uncertainty about the pace at which the Federal Reserve will reduce the size of its balance sheet and uncertainty about the effect that such a reduction will have on interest rates.

The path of monetary policy is uncertain in the longer term as well. In the fall of 2020, the Federal Reserve's Federal Open Market Committee adopted a new asymmetric policy framework that focuses more on the downward risks to its long-run goals (that is, risks of employment or inflation being lower than desired) than on the upward risks (that is, risks of employment or inflation being higher than desired). The committee did so because it judged that the downward risks to employment and inflation have increased in recent decades.¹⁶ Because that framework is new, it is uncertain how it will

be implemented in practice. If inflation returns to a level that is persistently below the Federal Reserve's long-run goal of 2 percent, the implementation of the new asymmetric policy framework could cause interest rates to be lower, on average, than CBO expects. But the recent bout of high inflation could cause the Federal Reserve to return to a more symmetric framework going forward, which would result in interest rates that are higher, on average, than the agency projects.

Another source of long-term uncertainty is the global economy's longer-term response to the substantial increases in budget deficits and debt that occurred as governments spent significant amounts of funds in an attempt to mitigate the impact of the pandemic and the economic downturn it caused. A significant increase in the extent to which national governments, financial institutions, and other entities hold other nations' debt can raise the risk that financial stress in one country will affect the financial stability of other countries. In addition, changes in foreign demand for U.S. assets or the international role of the dollar would affect interest rates. If, for example, foreign demand for U.S. Treasury securities is weaker than CBO projects, U.S. interest rates will be higher than they otherwise would be. But if foreign demand for those securities is stronger than projected, perhaps because of heightened geopolitical concerns, interest rates will be lower.

Uncertainty about the path of interest rates in the long term contributes to uncertainty about the impact of higher federal deficits and debt on the economy. Factors such as increased foreign and domestic saving, slower growth in total factor productivity, and lower labor force participation have contributed to the downward trend in interest rates over the past several decades. Much uncertainty remains about how much those factors will continue to weigh on interest rates over the next several years. In addition, the extent and timing of upward pressure on interest rates stemming from increased federal borrowing is highly uncertain.

Quantifying the Uncertainty in CBO's Projections

CBO's forecast of the economy, especially its projection of nominal GDP, is a primary input into the agency's baseline budget projections. As a result, the uncertainty of the GDP forecast contributes to some of the uncertainty of the baseline budget projections.

16. For a description of the Federal Reserve's new framework, see Board of Governors of the Federal Reserve System, "2020 Statement on Longer-Run Goals and Monetary Policy Strategy" (January 14, 2021), <https://go.usa.gov/x6BKv>.

Table 2-4.

A Comparison of CBO's Projections of Probabilities for the Unemployment Rate With Those in the Survey of Professional Forecasters

Percent

| Unemployment Rate (Range) | Projected Probability That the Annual Average of the Unemployment Rate Will Be Within the Indicated Range | | | | | |
|---------------------------|---|-----|------|-----|------|-----|
| | 2023 | | 2024 | | 2025 | |
| | CBO | SPF | CBO | SPF | CBO | SPF |
| Less than 3 percent | 1 | 8 | 9 | 7 | 15 | 7 |
| 3 to 3.9 percent | 74 | 46 | 53 | 37 | 35 | 36 |
| 4 to 4.9 percent | 16 | 31 | 16 | 38 | 19 | 37 |
| 5 to 5.9 percent | 7 | 10 | 12 | 14 | 16 | 15 |
| 6 percent or more | 2 | 4 | 9 | 4 | 16 | 5 |

Data sources: Congressional Budget Office; Federal Reserve Bank of Philadelphia, "Probability Variables: Survey of Professional Forecasters" (May 13, 2022), <https://tinyurl.com/ycx7evnr>. See www.cbo.gov/publication/57950#data.

Estimates from the Survey of Professional Forecasters are the averages of responses from roughly 30 forecasters. For the basis of CBO's estimates, see Michael McGrane, *A Markov-Switching Model of the Unemployment Rate*, Working Paper 2022-05 (Congressional Budget Office, March 2022), www.cbo.gov/publication/57582.

SPF = Survey of Professional Forecasters.

To quantify the uncertainty of its projections for the next five years, CBO analyzed its past forecasts of several key macroeconomic variables. On the basis of that analysis, the agency estimates that—if the errors in its current economic forecast are similar to those in its previous forecasts, and if the agency's economic forecast balances the risks of such errors, on average, so that outcomes could differ from the forecast in either direction—there is approximately a two-thirds chance that the average annual rate of real GDP growth (on a calendar year basis) will be between 0.9 percent and 3.5 percent over the next five years.¹⁷ In 2023, there is roughly a three-quarters chance that the unemployment rate will be between 3.0 percent and 3.9 percent, CBO estimates (see Table 2-4).

In addition, the agency expects that there is a two-thirds chance that the average annual rate of nominal GDP growth will be between 3.8 percent and 6.4 percent over the next five years. That is, there is a two-thirds chance that GDP in 2026 will be within roughly \$1.9 trillion of the projected value of \$29.5 trillion (see Figure 2-7).

17. Some of those historical differences are associated with turning points in the business cycle, which are difficult to anticipate. For more information, see Congressional Budget Office, *CBO's Economic Forecasting Record: 2021 Update* (December 2021), www.cbo.gov/publication/57579.

Comparison With CBO's July 2021 Economic Projections

CBO's current projections can be usefully compared with its most recent projections, which were published in July 2021 (see Table 2-5). The comparison illuminates aspects of the current projections and highlights the kinds of uncertainty that affect all such projections.

Inflation

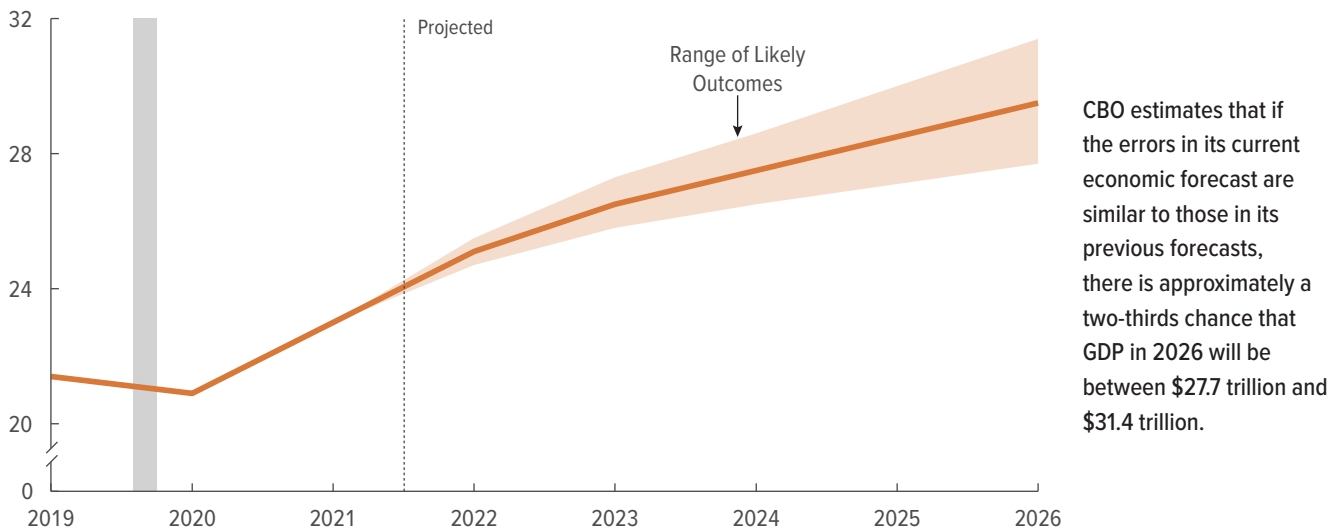
The agency's current projection of inflation for 2022 is substantially higher than last summer's projection. In July 2021, CBO expected that inflation in the PCE price index would be 2.0 percent in 2022, whereas the current projection is 4.0 percent. Similarly, the agency forecast in July that inflation in the CPI-U would be 2.3 percent in 2022, whereas the current projection is 4.7 percent.

Those large upward revisions are the result of data that now show prices increasing more rapidly across many sectors of the economy than CBO expected, largely because the combination of strong demand and restrained supply resulted in tighter markets for goods, services, and labor than the agency anticipated. CBO expects that supply-side issues will continue to put pressure on prices in 2022 and will gradually resolve midway through the year. In current projections, price increases for most goods and services are larger than the agency expected them to be last July; in fact, increases for several

Figure 2-7.

Uncertainty of CBO's Projections of GDP

Trillions of Dollars



Data sources: Congressional Budget Office; Bureau of Economic Analysis; Federal Reserve. See www.cbo.gov/publication/57950#data.

The shaded areas around CBO's baseline projections of nominal GDP illustrate the uncertainty of those projections. The area is based on the root mean square of the forecast errors in CBO's one-, two-, three-, four-, and five-year projections of the average annual growth rate of GDP for calendar years 1976 through 2021.

GDP = gross domestic product.

components of the PCE price index and the CPI-U, including housing services and motor vehicles, are now projected to be larger than at any point over the past several decades.

CBO's projection of inflation for 2023 is now higher than it was last July. At that time, the agency forecast that inflation in the PCE price index would be 2.1 percent in 2023, whereas the current projection of inflation in that index for 2023 is 2.3 percent. Likewise, the projection of inflation in the CPI-U for 2023 was 2.3 percent in July's forecast, whereas the current projection of inflation in that index for 2023 is 2.7 percent. A large driver of the agency's revisions is inflation in housing services, which tends to be persistent. CBO's projection of inflation in residential rents (one component of the housing services category) for 2023 has also been revised upward, from 3.5 percent to 4.1 percent.

CBO's current projections of inflation after 2023 are similar over the remainder of the projection period to what the agency forecast last summer. That is because, in the long term, inflation is expected to return to the Federal Reserve's long-run goal of 2 percent growth in the PCE price index.

Actual Output, Potential Output, and Income

The agency's projections of real GDP growth for 2022 are similar to what they were last summer; projections of such growth for 2023 and 2024 are now higher than they were. In the projections for 2022, stronger growth in both real nonresidential fixed investment and real residential fixed investment offsets weaker growth in real PCE and stronger growth in real imports (which subtract from the growth of real GDP). The revision to real GDP growth for 2023 results largely from two sources. First, growth in real nonresidential fixed investment is projected to be stronger as businesses expand capacity in response to strong demand for their products. Second, CBO now projects faster growth in real exports in those years as a result of an upward revision to the rate of projected economic growth among major U.S. trading partners and stronger projected growth in exports of services. The revision to real GDP growth for 2024 results largely from faster projected growth in real PCE, in addition to continuing higher projected growth in real exports.

Real GDP is forecast to be about the same from 2027 to 2031 as the agency expected last July. The level of real GDP was lower at the end of 2021 than previously forecast because real GDP grew more slowly over the second

Table 2-5.

CBO's Current and Previous Economic Projections for Calendar Years 2021 to 2031

Percent

| | 2021 | 2022 | 2023 | Annual Average | | Overall, 2021–2031 |
|---|------|------|------|----------------|-----------|-----------------------|
| | | | | 2021–2025 | 2026–2031 | |
| Change From Fourth Quarter to Fourth Quarter | | | | | | |
| Real GDP ^a | | | | | | |
| May 2022 | 5.5 | 3.1 | 2.2 | 2.8 | 1.7 | 2.2 |
| July 2021 | 7.4 | 3.1 | 1.1 | 2.8 | 1.6 | 2.1 |
| Nominal GDP | | | | | | |
| May 2022 | 11.8 | 7.4 | 4.5 | 6.1 | 3.8 | 4.9 |
| July 2021 | 10.7 | 5.3 | 3.3 | 5.2 | 3.7 | 4.4 |
| PCE Price Index | | | | | | |
| May 2022 | 5.5 | 4.0 | 2.3 | 3.2 | 2.0 | 2.5 |
| July 2021 | 2.8 | 2.0 | 2.1 | 2.2 | 2.1 | 2.1 |
| Core PCE Price Index ^b | | | | | | |
| May 2022 | 4.6 | 3.8 | 2.5 | 3.0 | 2.1 | 2.5 |
| July 2021 | 2.4 | 2.0 | 2.2 | 2.2 | 2.1 | 2.1 |
| Consumer Price Index ^c | | | | | | |
| May 2022 | 6.7 | 4.7 | 2.7 | 3.7 | 2.4 | 3.0 |
| July 2021 | 3.4 | 2.3 | 2.3 | 2.6 | 2.4 | 2.5 |
| Core Consumer Price Index ^b | | | | | | |
| May 2022 | 5.0 | 4.4 | 2.9 | 3.4 | 2.4 | 2.8 |
| July 2021 | 2.7 | 2.4 | 2.5 | 2.5 | 2.4 | 2.5 |
| GDP Price Index | | | | | | |
| May 2022 | 5.9 | 4.0 | 2.3 | 3.2 | 2.1 | 2.6 |
| July 2021 | 3.0 | 2.1 | 2.2 | 2.3 | 2.1 | 2.2 |
| Employment Cost Index ^d | | | | | | |
| May 2022 | 5.0 | 5.4 | 4.1 | 4.3 | 3.1 | 3.7 |
| July 2021 | 3.7 | 3.3 | 3.6 | 3.5 | 3.1 | 3.3 |
| Real Potential GDP ^a | | | | | | |
| May 2022 | 1.8 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 |
| July 2021 | 2.0 | 2.1 | 2.0 | 2.0 | 1.7 | 1.8 |

Continued

half of that year than the agency expected. However, CBO's upward revision to the projected growth of real GDP in 2023 and 2024 returns real GDP to a level that is similar at the end of 2026 to what the agency projected last July. The agency's forecast of real GDP growth after 2026 is about 0.1 percentage point higher over the remainder of the projection period than the agency previously projected.

The projected level of real consumer spending is 1 percent lower, on average, over the 2022–2031 period than in CBO's July forecast, partly because of revisions to historical spending data and partly because of a delayed recovery of spending on services. Downward revisions made by the Bureau of Economic Analysis to historical spending data for the 2015–2021 period lowered the level of real consumer spending at the outset of the projection period.

In July, CBO forecast that widespread vaccinations would bring about strong growth in spending on services in 2021 and early 2022, as people rapidly returned to their prepandemic consumption habits. Real spending on services did indeed accelerate in 2021, but by less than was projected. In the current forecast, real spending on services nearly returns to its prepandemic trend in 2024, two years later than CBO projected in July.

Updates to data caused revisions to potential output in recent history. Revised data from the Census Bureau indicate that the number of people age 16 and older in the civilian noninstitutionalized population (the number that underlies the calculation of the potential labor force) has been larger than previously reported; a larger population results in a larger projected potential labor force in the near term. That upward revision more than offset

Table 2-5.

Continued

CBO's Current and Previous Economic Projections for Calendar Years 2021 to 2031

Percent

| | 2021 | 2022 | 2023 | Annual Average | | Overall, 2021–2031 |
|---|------|------|------|----------------|-----------|-----------------------|
| | | | | 2021–2025 | 2026–2031 | |
| | | | | Annual Average | | |
| Unemployment Rate | | | | | | |
| May 2022 | 5.4 | 3.8 | 3.5 | 4.0 | 4.4 | 4.2 |
| July 2021 | 5.5 | 3.8 | 3.7 | 4.2 | 4.4 | 4.3 |
| Interest Rates | | | | | | |
| 3-month Treasury bills | | | | | | |
| May 2022 | * | 0.9 | 2.0 | 1.6 | 2.3 | 2.0 |
| July 2021 | * | 0.1 | 0.2 | 0.3 | 1.9 | 1.2 |
| 10-year Treasury notes | | | | | | |
| May 2022 | 1.4 | 2.4 | 2.9 | 2.6 | 3.7 | 3.2 |
| July 2021 | 1.6 | 1.9 | 2.0 | 2.1 | 3.2 | 2.7 |
| Tax Bases (Percentage of GDP) | | | | | | |
| Wages and salaries | | | | | | |
| May 2022 | 44.9 | 44.7 | 44.2 | 44.4 | 44.0 | 44.2 |
| July 2021 | 43.7 | 43.3 | 43.4 | 43.5 | 43.7 | 43.6 |
| Domestic corporate profits ^e | | | | | | |
| May 2022 | 10.1 | 9.7 | 9.3 | 9.3 | 7.9 | 8.5 |
| July 2021 | 9.9 | 9.8 | 9.1 | 9.2 | 7.8 | 8.4 |

Data sources: Congressional Budget Office; Bureau of Labor Statistics; Federal Reserve. See www.cbo.gov/publication/57950#data.

GDP = gross domestic product; PCE = personal consumption expenditures; * = between zero and 0.05 percent.

- a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.
- b. Excludes prices for food and energy.
- c. The consumer price index for all urban consumers.
- d. The employment cost index for wages and salaries of workers in private industry.
- e. Adjusted to remove distortions in depreciation allowances caused by tax rules and to exclude the effects of changes in prices on the value of inventories.

two important downward revisions. One was a revision by the Bureau of Economic Analysis to the output of the nonfarm business sector, which resulted in a smaller estimate of potential total factor productivity in that sector. The second was a revision to the output of the household sector (largely the estimated services provided by owner-occupied housing), which yielded a smaller estimate of potential output in that sector as well. Altogether, CBO now estimates that actual output was about 1.3 percent less in 2021—but potential output was about 0.2 percent greater—than the agency expected last July.

In terms of underlying trends that contribute to growth of real potential GDP over the 2022–2031 period, revisions are very modest, and the average annual growth rate over the period, slightly greater than 1.8 percent, is practically unchanged. In nominal terms, however, the

agency's projections of output and income are higher throughout the projection period because projected inflation over the next several years is above the rates anticipated in July. Nominal GDP is 4.9 percent higher, and national income is 3.9 percent higher, in 2031 than CBO projected last summer.

The Labor Market

CBO currently projects the unemployment rate to be slightly lower and the labor force participation rate to be slightly higher over the 2022–2031 period than in the agency's July 2021 forecast. CBO's current projection of the average unemployment rate over the 2022–2026 period is slightly lower than it was in that earlier forecast—now 3.8 percent, down from 4.0 percent. The current projection of the labor force participation rate is also lower—now 62.1 percent instead of

62.4 percent. CBO has also revised its projection of the average unemployment rate over the 2027–2031 period, which is 4.5 percent, up from 4.4 percent. The agency made that upward revision because it now expects output to return to its historical relationship with potential output sooner than was projected in July. Thus, the unemployment rate is also projected to rise sooner as it returns to its historical relationship with the noncyclical rate of unemployment sooner as well.

CBO also made an upward revision to its projection of the labor force participation rate over the 2027–2031 period—now an average of 61.6 percent over that period, up from 61.2 percent in July’s projections. That revision is mainly attributable to an upward revision to CBO’s projection of the share of the population ages 25 to 54 in response to newly released data.¹⁸ People in that age group have the highest average rates of labor force participation, so an increase in their share of the population tends to raise the overall participation rate.

Interest Rates

CBO now expects both short- and long-term interest rates over the coming decade to be higher, on average, than it forecast in July. The upward revision in rates over the 2022–2026 period partly reflects the upward revision to inflation. The agency now anticipates that, in response to recent inflation that was higher than expected, the Federal Reserve will raise the target range for the federal funds rate more rapidly than previously projected.

CBO raised its forecasts of both short- and long-term interest rates, on average, over the later years of the projection period as well. The more aggressive tightening of monetary conditions means that short-term rates are projected to be higher, on average, over the 2027–2031 period than the agency expected in July. It also means that long-term rates, which partly reflect the expected path of short-term rates, will be higher, on average. The agency also expects that the IJA will cause a slight increase, on average, in long-term interest rates for several reasons, including a higher level of debt relative

to GDP and a slightly higher growth rate of total factor productivity.

Comparison With Other Economic Projections

CBO’s economic projections for 2022 and 2023 can be usefully compared with the consensus (that is, the average) of the forecasts of about 50 private-sector economists published in the May 2022 *Blue Chip Economic Indicators* (see Figure 2-8).¹⁹ The agency’s projections of real GDP growth for those years are higher than most of the *Blue Chip* forecasts. CBO’s projections of inflation, both in GDP prices (as measured by the GDP price index) and in consumer prices (as measured by the CPI-U), are lower than the consensus of *Blue Chip* forecasts in 2022 and are within the middle two-thirds of those forecasts for 2023. The agency’s projections of interest rates on 3-month Treasury bills for those two years are lower than the consensus of *Blue Chip* forecasts, and its projections of rates on 10-year Treasury notes are near the bottom of the middle two-thirds of the ranges of *Blue Chip* forecasts.

CBO’s economic projections can also be compared—over more years—with the projections of 34 forecasters participating in the Federal Reserve Bank of Philadelphia’s Survey of Professional Forecasters (SPF).²⁰ CBO’s projections of real GDP growth for the second half of 2022 and for 2023 are, respectively, above and near the top of the middle two-thirds of the ranges of SPF forecasts (see Figure 2-9). After 2023, the agency’s projections of real GDP growth are generally weaker than those in the SPF. CBO projects that the probabilities of unemployment rates being less than 3 percent or more than 6 percent in the years 2024 and 2025 are greater than the average probabilities for those ranges in the SPF (see Table 2-4 on page 48). CBO’s projections of inflation in consumer prices (as measured by both the

18. See Bureau of Labor Statistics, *Adjustments to Household Survey Population Estimates in January 2022* (February 2022), <https://go.usa.gov/xuDh6> (PDF, 73 KB).

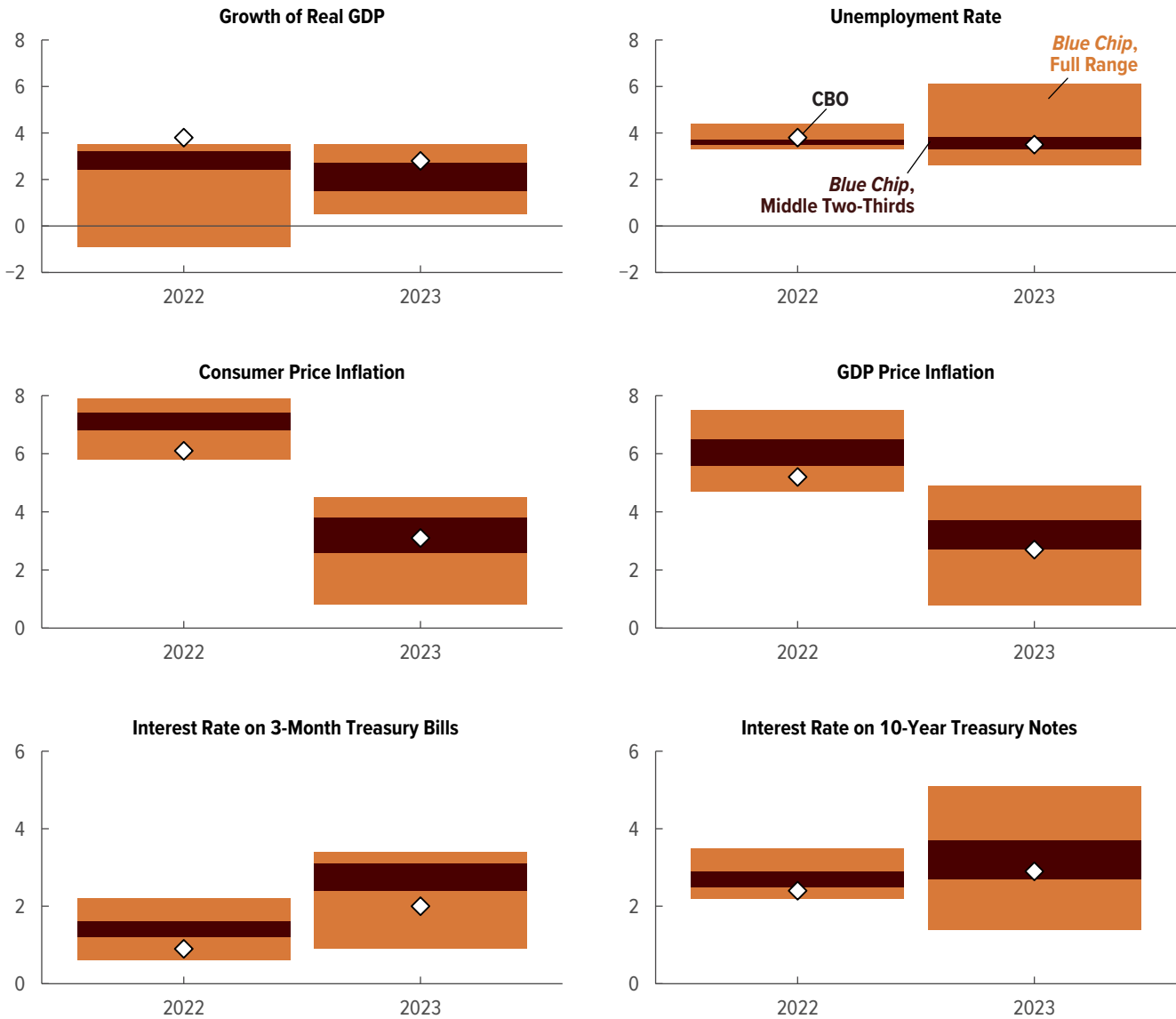
19. See Wolters Kluwer, *Blue Chip Economic Indicators*, vol. 47, no. 5 (May 10, 2022). For comparisons with *Blue Chip* forecasts from March 2022, which were published at about the same time that CBO’s forecast was prepared and which extend beyond two years, see the supplemental data for this analysis (www.cbo.gov/publication/57950#data).

20. See Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters: Second Quarter 2022* (May 13, 2022), <https://tinyurl.com/2p87bj3y>.

Figure 2-8.

A Comparison of CBO’s Economic Forecasts With Those of the *Blue Chip* Forecasters

Percent



Data sources: Congressional Budget Office; Wolters Kluwer, *Blue Chip Economic Indicators*, vol. 47, no. 5 (May 10, 2022). See www.cbo.gov/publication/57950#data.

The full range of forecasts from the *Blue Chip* survey is based on the highest and lowest of the roughly 50 forecasts. The middle two-thirds of that range omits the top one-sixth and the bottom one-sixth of the forecasts.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Consumer price inflation is based on the consumer price index for all urban consumers. Real GDP growth and inflation rates are measured from the average of one calendar year to the next.

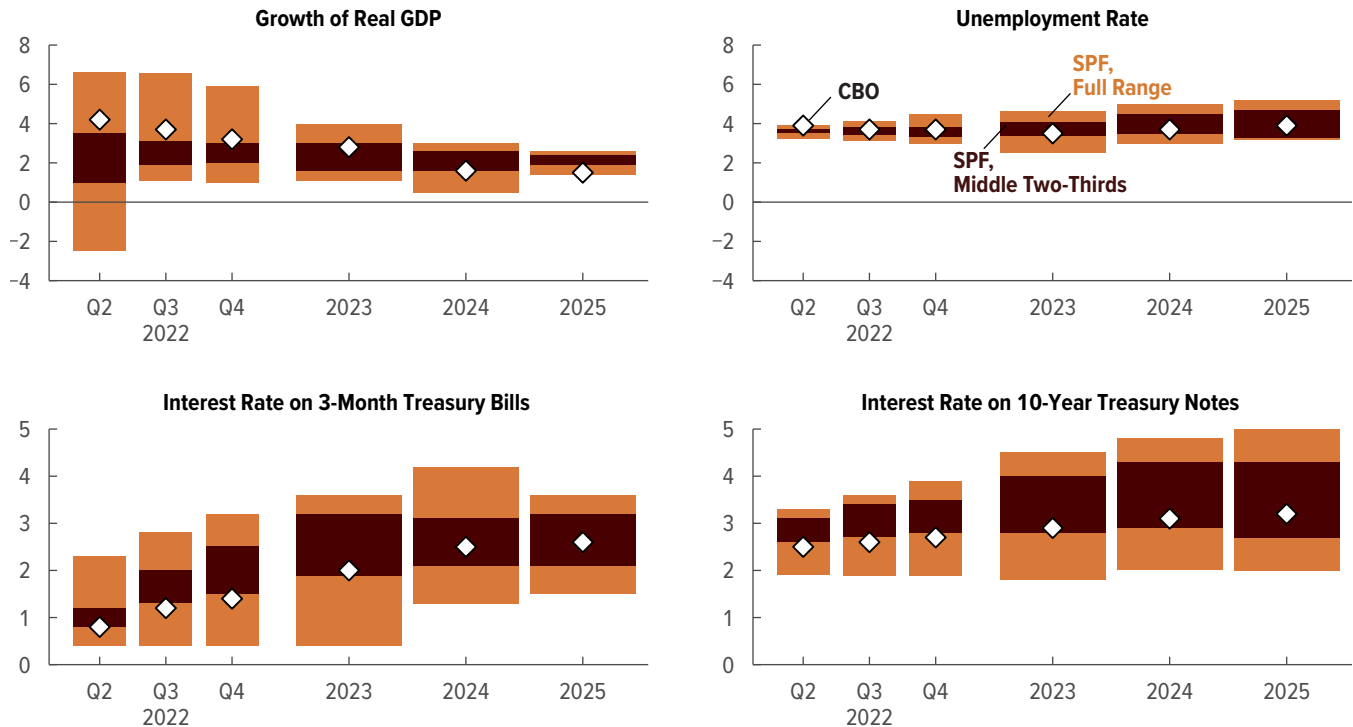
The unemployment rate is the number of people not working who are available for work and are either seeking work or expecting to be recalled from a temporary layoff, expressed as a percentage of the labor force. The unemployment rate and interest rates are calendar year averages.

GDP = gross domestic product.

Figure 2-9.

A Comparison of CBO's Forecasts of Output, Unemployment, and Interest Rates With Those in the Survey of Professional Forecasters

Percent



Data sources: Congressional Budget Office; Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters: Second Quarter 2022* (May 13, 2022), <https://tinyurl.com/2p87bj3y>. See www.cbo.gov/publication/57950#data.

The full range of forecasts from the Survey of Professional Forecasters is based on the highest and lowest of the roughly 30 forecasts. The middle two-thirds of that range omits the top one-sixth and the bottom one-sixth of the forecasts.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Quarterly growth of real GDP is measured from one quarter to the next and expressed as an annual rate; annual growth is measured from the average of one calendar year to the next.

The unemployment rate is the number of people not working who are available for work and are either seeking work or expecting to be recalled from a temporary layoff, expressed as a percentage of the labor force.

GDP = gross domestic product; SPF = Survey of Professional Forecasters.

CPI-U and the PCE price index) are near or below the bottom of the middle two-thirds of the ranges of SPF forecasts for 2022 but are within the middle two-thirds of the ranges for 2023 through 2031 (see Figure 2-10).

CBO's projections of real GDP growth and the unemployment rate in 2022 are slightly above the central tendency in the Federal Reserve's most recent *Summary of Economic Projections* (see Figure 2-11).²¹ The agency's

projection of inflation in the PCE price index for 2022 is slightly below the central tendency in the Federal Reserve's forecast. For 2023, CBO's projections of real GDP growth, the unemployment rate, and inflation (as measured by the growth rate of the PCE price index) are all within the central tendency in the Federal Reserve's forecast. For 2024 and the longer term, the agency's

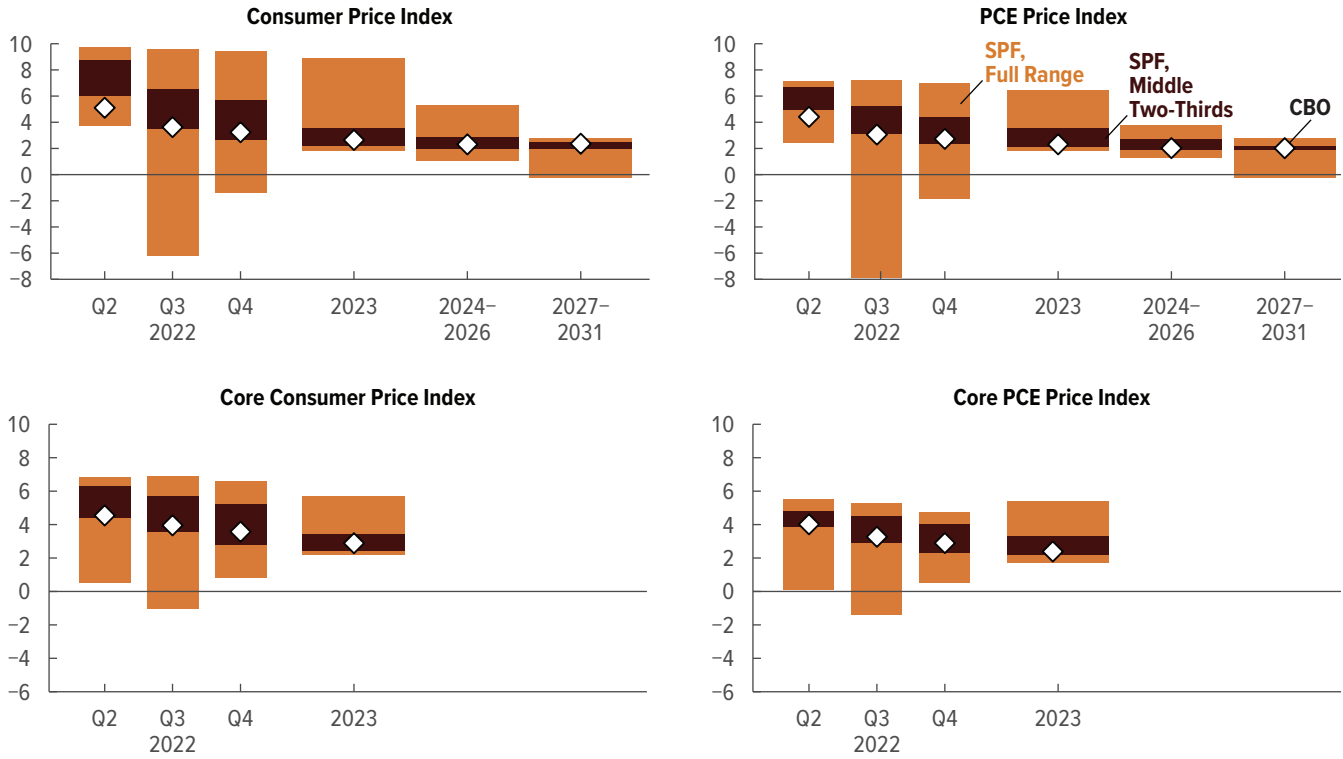
21. See Board of Governors of the Federal Reserve System, "Table 1. Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents, Under Their Individual Assumptions of Projected Appropriate Monetary Policy, March 2022" (March 16, 2022), p. 2, <https://go.usa.gov/xupxX> (PDF, 1.5 MB). The range of Federal Reserve forecasts is based on the highest and lowest projections made by the members of

the Board of Governors of the Federal Reserve System and the presidents of the Federal Reserve Banks; the central tendency is the range formed by removing the three highest and three lowest Federal Reserve forecasts. The median is the middle projection (or, if the number of projections is even, the average of the two middle projections) when the projections are arranged from highest to lowest. For comparison with the Federal Reserve's longer-term projections, CBO uses its projections for the last quarter of the projection period.

Figure 2-10.

A Comparison of CBO’s Forecasts of Inflation With Those in the Survey of Professional Forecasters

Percent



Data sources: Congressional Budget Office; Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters: Second Quarter 2022* (May 13, 2022), <https://tinyurl.com/2p87bj3y>. See www.cbo.gov/publication/57950#data.

The full range of forecasts from the Survey of Professional Forecasters is based on the highest and lowest of the roughly 30 forecasts. The middle two-thirds of that range omits the top one-sixth and the bottom one-sixth of the forecasts.

Quarterly inflation is measured from one quarter to the next and expressed as an annual rate. Annual inflation is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Consumer price inflation is based on the consumer price index for all urban consumers. Core indexes exclude prices for food and energy.

Multiyear averages are calculated using the 5-year and 10-year averages reported in the SPF. The SPF did not provide forecasts of inflation in the core consumer price index or the core PCE price index beyond 2023.

PCE = personal consumption expenditures; SPF = Survey of Professional Forecasters.

projections of the economy are, on balance, generally weaker than those by the Federal Reserve.

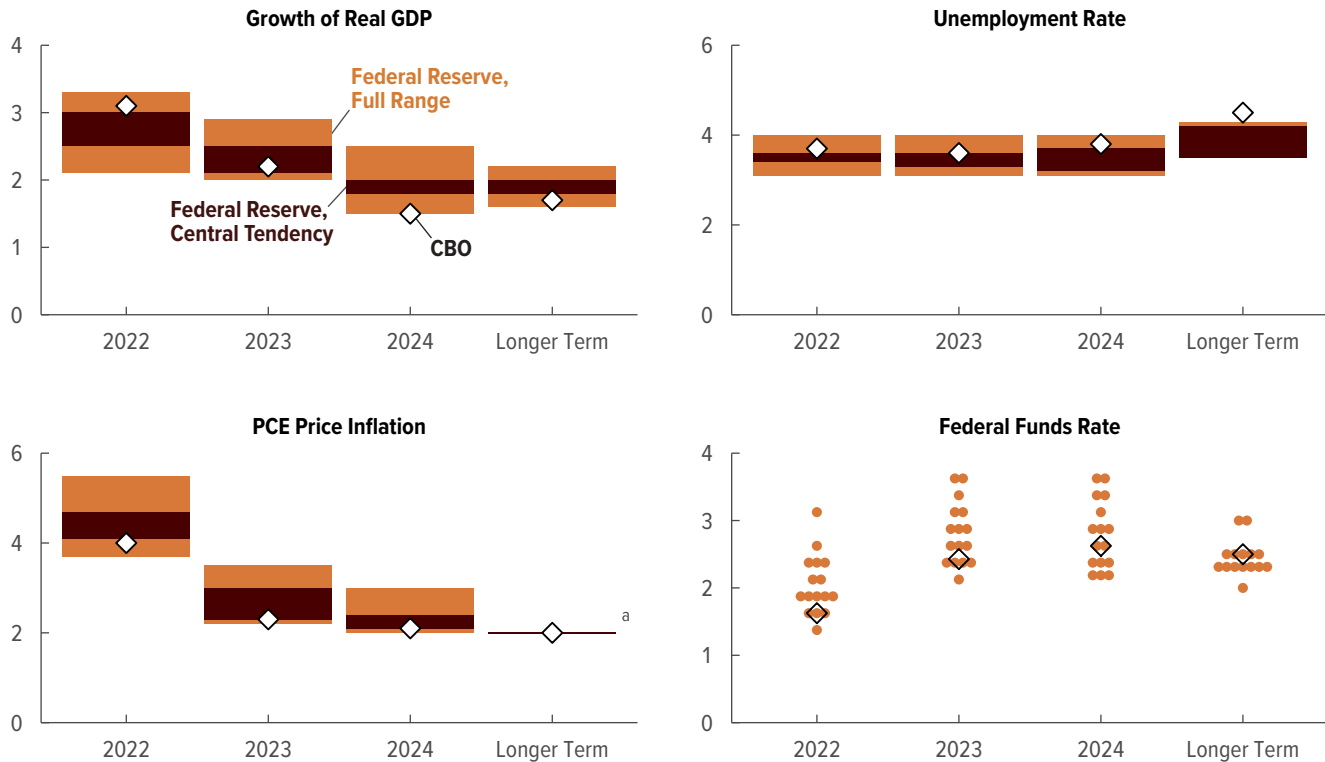
Part of the difference between CBO’s projections and those of other forecasters is attributable to differences in the economic data available when the forecasts were completed and to differences in the economic and statistical models used to prepare them. Moreover, other forecasts may reflect an expectation that additional legislation will be enacted, whereas CBO’s projections reflect the assumption that current laws generally remain unchanged.

A key difference between CBO’s economic projections and those made by Federal Reserve officials is that CBO develops its projections so that they fall in the middle of the range of likely outcomes under current law. By contrast, the Federal Reserve reports a different concept: Each Federal Reserve official provides a modal forecast—a forecast of the most likely outcome—reflecting his or her individual assessment of appropriate monetary policy, and the Federal Reserve reports ranges of those modal values. As with other forecasters (and unlike CBO), officials may assume in their individual forecasts that additional legislation will be enacted.

Figure 2-11.

A Comparison of CBO’s Economic Forecasts With Those of the Federal Reserve

Percent



Data sources: Congressional Budget Office; Board of Governors of the Federal Reserve System, “Table 1. Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents, Under Their Individual Assumptions of Projected Appropriate Monetary Policy, March 2022” (March 16, 2022), p. 2, <https://go.usa.gov/xukq8> (PDF, 1.5 MB). See www.cbo.gov/publication/57950#data.

The full range of forecasts from the Federal Reserve is based on the highest and lowest of the 16 projections by the Board of Governors and the presidents of the Federal Reserve Banks. (One Federal Reserve official did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate.) The central tendency is, roughly speaking, the middle two-thirds of the full range, formed by removing the three highest and three lowest projections.

The federal funds rate is the interest rate that financial institutions charge each other for overnight loans of their monetary reserves.

Each of the data points for the federal funds rate represents a forecast made by one of the members of the Federal Reserve Board or one of the presidents of the Federal Reserve Banks in March 2022. The Federal Reserve officials’ forecasts of the federal funds rate are for the rate at the end of the year, whereas CBO’s forecasts are fourth-quarter values.

For CBO, longer-term projections are values for the last quarter of 2032. For the Federal Reserve, longer-term projections are described as the value at which each variable would settle under appropriate monetary policy and in the absence of future shocks to the economy.

Real values are nominal values that have been adjusted to remove the effects of changes in prices.

The unemployment rate is the number of people not working who are available for work and are either seeking work or expecting to be recalled from a temporary layoff, expressed as a percentage of the labor force.

Real GDP growth and inflation rates are measured from the fourth quarter of one calendar year to the fourth quarter of the next. The unemployment rate is a fourth-quarter value.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. All officials forecast a 2 percent rate of inflation in the longer term.