
Chapter 2: The Economic Outlook

Overview

This chapter provides details about the Congressional Budget Office's February 2023 economic projections, which the agency used as the basis for updating its budget projections. Inflation continued at a high rate in 2022, reflecting supply disruptions, the effects of the Russian invasion of Ukraine on food and energy prices, a tight labor market, and the effects of fiscal policy. In response, the Federal Reserve sharply raised interest rates. Output showed modest growth during 2022. In 2023, economic activity is projected to stagnate, with rising unemployment and falling inflation.

The Economic Outlook for 2023 to 2027

CBO's projections reflect economic developments as of December 6, 2022; the agency's initial assessments of full-year discretionary funding for the federal government for fiscal year 2023 (which were 4 percent lower in total than CBO's current estimates); and the assumption that current laws governing federal taxes and spending generally remain in place. In those projections, elevated inflation initially persists as shelter (housing) costs and wages continue to rise and as supply disruptions gradually decline:

- **Inflation**, which was slightly lower in 2022 than in 2021 but higher than in any other year since 1981, continues to exceed the Federal Reserve's long-run goal of 2 percent through 2023 and 2024 before nearing that rate by 2026. As measured by the price index for personal consumption expenditures (PCE), inflation is 3.3 percent in 2023, reflecting the lagged effects of higher home prices on rents as well as tight labor markets.¹ In 2024, inflation falls to 2.4 percent as labor markets soften and increases in rents slow. After 2024, inflation approaches the Federal Reserve's goal of 2 percent, reaching 2.2 percent in 2025 and 2.1 percent in 2026.
- **Interest rates** on Treasury securities rise further in early 2023 and then gradually recede beginning

in late 2023. To reduce inflationary pressures, the Federal Reserve raises the federal funds rate (the rate that financial institutions charge each other for overnight loans of their monetary reserves) again in early 2023. That rate reaches 5.1 percent by the end of the first quarter of 2023 and remains there through the end of the third quarter of 2023; it averages 4.8 percent during the fourth quarter of 2023. As inflation slows and unemployment rises, the federal funds rate continues to fall, reaching 3.0 percent by the end of 2024. The interest rate on 10-year Treasury notes remains at 3.8 percent after 2023.

- **Output growth** comes to a halt in early 2023 in response to the sharp rise in interest rates during 2022. Real gross domestic product (that is, GDP adjusted to remove the effects of inflation) grows by just 0.1 percent in 2023, restrained by declining home building and inventory investment (see Figure 2-1). As financial conditions gradually ease after 2023, the annual growth rate of real GDP averages 2.4 percent from 2024 to 2027.
- **Conditions in the labor market** deteriorate in 2023. Payroll employment stagnates, and the unemployment rate rises from 3.6 percent in the fourth quarter of 2022 to 5.1 percent at the end of 2023. The unemployment rate then gradually declines to 4.5 percent by the end of 2027 (see Table 2-1). The size of the labor force, which finally regained its prepandemic level in the second half of 2022, continues to rise, although at a modest pace.

The Economic Outlook for 2028 to 2033

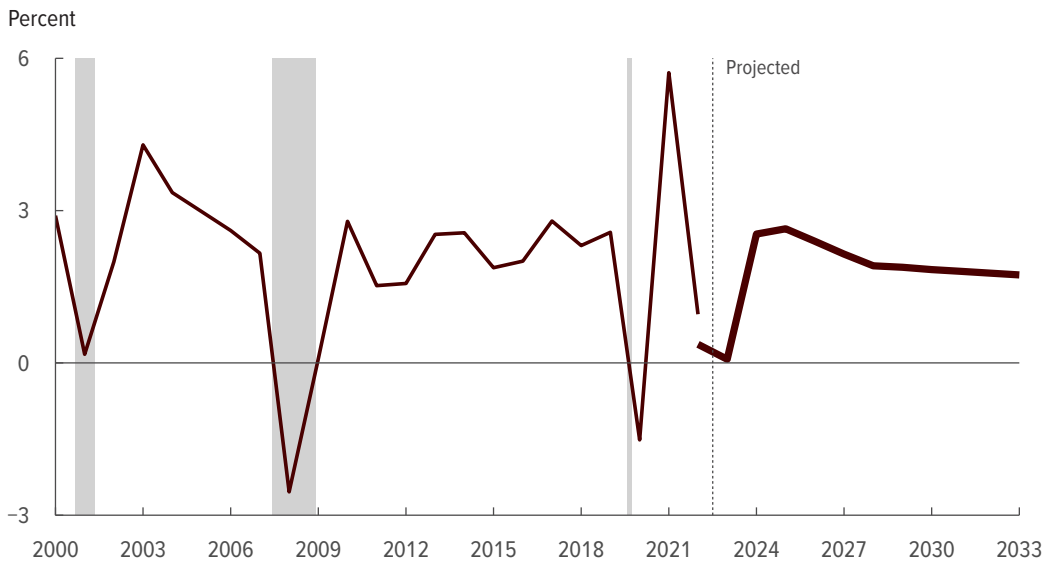
In CBO's forecast, economic output expands slightly less rapidly from 2028 to 2033 than it does over the 2024–2027 period. Real GDP grows by 1.8 percent per year, on average, the same as the growth rate of real potential GDP (that is, the maximum sustainable output of the economy). The level of real GDP is slightly below the level of real potential GDP from 2028 to 2033, in line with their historical relationship, on average.

In CBO's projections for the 2028–2033 period, the growth rate of potential output is similar to the average

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.

Figure 2-1.

Growth of Real GDP



In CBO's projections, output growth comes to a halt in 2023 in response to the sharp rise in interest rates during 2022. Then, as falling inflation allows the Federal Reserve to reduce the target range for the federal funds rate, the growth of real GDP rebounds, led by the interest-sensitive sectors of the economy.

Data source: Congressional Budget Office. See www.cbo.gov/publication/58848#data.

Real values are nominal values that have been adjusted to remove the effects of inflation.

Growth of real GDP is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Values for 2000 to 2022 (the thin line) reflect data available from the Bureau of Economic Analysis in early February 2023. The data contain values for the fourth quarter of 2022, which were not available when CBO developed its current projections for 2022 to 2033 (the thick line).

GDP = gross domestic product.

growth rate of potential output since the business cycle peak in late 2007; however, the growth rate of the potential labor force is slower, and the growth rate of potential labor force productivity is more rapid. Nevertheless, potential output grows much more slowly than it has over the past 30 years, partly because of slower productivity growth but mainly because of an ongoing, long-term slowdown in the growth of the labor force.

Uncertainty About the Economic Outlook

CBO develops its projections so that they fall in the middle of the likely range of outcomes under current law. But those projections are highly uncertain, and many factors could lead to different outcomes. The upward pressure on wages and prices from conditions in the labor market could be greater or less than the agency expects. Economic output and conditions in the labor market could also vary from those in CBO's forecast. In the short run, higher interest rates could have larger- or smaller-than-expected effects on overall demand for goods and services and demand for labor. In the long run, the pace of potential output in the aftermath of the coronavirus pandemic could be faster or

slower than expected. Other key sources of uncertainty are future monetary policy and the path of interest rates. Uncertainty about that path contributes to the uncertainty of the agency's estimates of the effect of larger deficits and debt on the economy. Geopolitical events, including Russia's ongoing invasion of Ukraine, add to the uncertainty of the economic outlook, notably the outlook for inflation.

Comparison With CBO's Previous Projections

Real GDP grew more slowly in each quarter of 2022 than the agency expected.² An upward revision to GDP in 2021 mitigated some of the effect of slower growth in 2022 on the level of GDP at the end of 2022.

Compared with its May 2022 projections, CBO's current projections show weaker economic growth in 2023 (0.1 percent versus 2.2 percent) and stronger growth in 2024 (2.5 percent versus 1.5 percent) and the

2. See Congressional Budget Office, *The Budget and Economic Outlook: 2022 to 2032* (May 2022), www.cbo.gov/publication/57950.

Table 2-1.

CBO's Economic Projections for Calendar Years 2023 to 2033

Percent

	Actual, 2022	2023	2024	2025	Annual Average	
					2026– 2027	2028– 2033
Change From Fourth Quarter to Fourth Quarter						
Gross Domestic Product						
Real ^a	1.0	0.1	2.5	2.6	2.3	1.8
Nominal	7.3	3.1	4.9	4.8	4.3	3.8
Inflation						
PCE price index	5.5	3.3	2.4	2.2	2.0	2.0
Core PCE price index ^b	4.7	3.4	2.7	2.4	2.2	2.0
Consumer price index ^c	7.1	4.0	2.4	2.1	2.1	2.3
Core consumer price index ^b	6.0	4.2	2.8	2.3	2.2	2.3
GDP price index	6.3	3.0	2.3	2.1	2.0	2.0
Employment Cost Index ^d	5.1	4.5	3.8	3.5	3.3	3.2
Fourth-Quarter Level						
Unemployment Rate	3.6	5.1	4.8	4.6	4.1 ^e	4.5 ^f
Change From Year to Year						
Gross Domestic Product						
Real ^a	2.1	0.3	1.8	2.7	2.4	1.8
Nominal	9.2	4.0	4.4	4.9	4.4	3.9
Inflation						
PCE price index	6.2	3.8	2.7	2.2	2.1	2.0
Core PCE price index ^b	5.0	3.9	2.9	2.5	2.2	2.0
Consumer price index ^c	8.0	4.8	3.0	2.2	2.1	2.3
Core consumer price index ^b	6.1	4.9	3.3	2.5	2.2	2.3
GDP price index	7.0	3.7	2.5	2.1	2.0	2.0
Employment Cost Index ^d	5.3	4.9	4.0	3.6	3.4	3.2
Annual Average						
Unemployment Rate	3.6	4.7	4.9	4.7	4.5	4.5
Payroll Employment (Monthly change, in thousands) ^g	427	9	66	97	80	67
Interest Rates						
3-month Treasury bills	2.0	4.5	3.2	2.5	2.2	2.3
10-year Treasury notes	3.0	3.9	3.8	3.8	3.8	3.8
Tax Bases (Percentage of GDP)						
Wages and salaries	43.8	44.3	44.5	44.5	44.3	44.0
Domestic corporate profits ^h	9.7 ⁱ	7.9	7.5	7.9	8.2	8.0
Current Account Balance (Percentage of GDP) ^j	-4.0 ⁱ	-4.1	-3.7	-3.3	-3.2	-3.2

Data sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve. See www.cbo.gov/publication/58848#data.

For economic projections for each year from 2023 to 2033, see Appendix B.

Actual values for 2022 reflect data available from the Bureau of Economic Analysis and the Bureau of Labor Statistics in early February 2023. The data contain values for the fourth quarter of 2022, which were not available when CBO developed its current projections.

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

a. Real values are nominal values that have been adjusted to remove the effects of inflation.

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 2027.

f. Value for the fourth quarter of 2033.

g. The average monthly change is calculated by dividing by 12 the change in nonfarm payrolls from the fourth quarter of one calendar year to the fourth quarter of the next.

h. Adjusted to remove the effect of tax rules on depreciation allowances and to exclude the effect of changes in prices on the value of inventories.

i. Estimated value for 2022.

j. Represents net exports of goods and services, net capital income, and net transfer payments between the United States and the rest of the world.



following three years. As a result, the level of real GDP is 3.7 percent lower than in the previous forecast for the end of 2023 but only 0.2 percent lower for the end of 2027.

The weaker economic growth in 2023 is largely the result of slower growth of exports, private investment, and consumption. Those components of GDP then drive the more rapid growth of real GDP through 2027. Real GDP growth is 0.1 percentage point per year faster from 2028 to 2032 than it was in the agency's forecast last spring because of greater net immigration and faster growth of output per worker.

CBO currently projects higher inflation in 2023 and 2024 than it did last May. Inflation in 2022 reached the highest rates seen in the past four decades by some measures; it was higher than CBO forecast last spring mainly because of higher-than-expected food and energy prices resulting from the war in Ukraine and higher inflation in shelter costs following a surge in house prices. As a result, projections of nominal GDP and national income have increased through most of the forecast period, even though real GDP is lower than the agency projected last May. Expected growth of labor compensation has also increased.

CBO now expects short-term interest rates to be higher in 2023 and 2024 than it did in its previous forecast. That upward revision reflects the upward revision to inflation as well as higher-than-expected short-term interest rates during 2022. After 2024, short-term rates are similar to those forecast last spring. CBO expects higher long-term interest rates over the first five years of the projection period.

Recent Economic Developments

Inflation remained high in 2022 as the war in Ukraine added to upward price pressures in an economy already experiencing high inflation from buoyant demand, tight labor markets, and supply constraints. In response, the Federal Reserve sharply raised interest rates. Real GDP showed little net growth during the year because a downturn in housing construction and a cooling of inventory accumulation offset higher consumer spending. In addition, the recovery of labor force participation was slow. Even so, employment grew at a strong pace, the unemployment rate hovered near 60-year lows throughout much of the year, and job vacancies remained high.

Inflation and Interest Rates

In 2022, the PCE price index grew by 5.5 percent, and the consumer price index for all urban consumers (CPI-U) grew by 7.1 percent—notably faster than their averages of 1.5 percent and 1.7 percent, respectively, over the decade that preceded the pandemic. Inflation in the CPI-U during 2022 was the highest it has been since the early 1980s. Growth in the PCE price index peaked at 7.0 percent in June 2022 (as measured from 12 months earlier), and growth in the CPI-U peaked at 9.0 percent, also in June 2022. The high rates of inflation reflected widespread price increases among goods and services. The PCE price index for goods rose by 6.0 percent in 2022; the index for services rose by 5.3 percent.

Energy and food prices increased rapidly in the first half of 2022, boosted by the effects of Russia's invasion of Ukraine. Energy prices grew by 12.9 percent in 2022, although quarterly measures fell in the second half of the year. Food prices, which are particularly sensitive to fluctuations in transportation costs and to disruptions in trade of key inputs such as fertilizer, grew by 11.3 percent in 2022.

Other price increases, in addition to those for food and energy, were broad-based. For example, in the PCE price index, the price of shelter services rose by 7.4 percent in 2022.³ That increase followed a rapid appreciation of home values in 2021, which put upward pressure on rents.

Other prices that had contributed disproportionately to high inflation in 2021 began to cool in 2022. For instance, the index for new and used motor vehicles grew by 3.8 percent in 2022, a historically high inflation rate for the index but well below its 2021 growth rate of 16.8 percent.

In 2022, the Federal Reserve tightened monetary policy in response to high inflation. The Federal Reserve raised the target range for the federal funds rate at each meeting of the Federal Open Market Committee since last March; in December 2022, the federal funds rate was 4.1 percent, the highest rate since December 2007. The interest rate on 10-year Treasury notes increased

3. Shelter costs or shelter services, as defined by the Bureau of Labor Statistics, measure the flow of housing services that housing units provide to their occupants. Shelter costs are a component of inflation as measured by the PCE price index and the CPI-U, whereas house prices are not included in those measures.

from 1.5 percent in December 2021 to 3.6 percent in December 2022.

Output and the Labor Market

Real GDP grew by 1.0 percent in 2022, following growth of 5.7 percent in 2021. A downturn in residential investment and a slower pace of inventory accumulation restrained growth in 2022.

Despite the slow growth of output, conditions in the labor market remained tight throughout much of 2022, as labor supply remained subdued. Nonfarm payroll employment, which increased by an average of more than 400,000 jobs per month in 2022, ended the year at roughly 2.2 million jobs (or 1.4 percent) above its prepandemic peak in February 2020. The unemployment rate declined from 3.9 percent at the end of 2021 to 3.5 percent at the end of 2022—equal to the prepandemic low in February 2020.

Even so, CBO estimates that the labor force in 2022 had, on average, 1.1 million fewer people than it would have if labor force participation rates had remained at their prepandemic levels. It had roughly 1.5 million fewer people than the agency's estimate of the potential labor force.⁴

The demand for workers, as indicated by the number of job openings, increased at a faster pace, on average, than did the number of available workers in 2022. The shortfall of available workers relative to the demand for them contributed to strong growth of compensation.

Fiscal and Monetary Policies

CBO's economic projections reflect the laws enacted and the policy measures taken through December 6, 2022, as well as the agency's initial assessment at that time of discretionary funding for all of fiscal year 2023.⁵ Those

4. The labor force consists of people age 16 or older in the civilian noninstitutionalized population who have jobs or who are available for work and are either seeking work or expecting to be recalled from a temporary layoff. The labor force participation rate is the labor force expressed as a percentage of the civilian noninstitutionalized population age 16 or older. 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.
5. The Consolidated Appropriations Act, 2023 (Public Law 117-328), was enacted after CBO had already completed its economic forecast. The forecast incorporates the agency's initial assessments of full-year discretionary funding for the federal government for fiscal year 2023, which were 4 percent lower in total than CBO's current estimates.

projections reflect the effects on the overall economy of changes in federal fiscal policies—that is, policies governing taxes and spending—including the Honoring our PACT Act of 2022 (Public Law 117-168), the CHIPS Act of 2022 (division A of the CHIPS and Science Act of 2022, P.L. 117-167), and the 2022 reconciliation act (P.L. 117-169). In addition, the agency's projections reflect the effects of some executive actions, including some affecting student loans.⁶

CBO's projections also reflect the expectation that the Federal Reserve will take actions to continue tightening monetary policy this year. Those actions include further raising the target range for the federal funds rate and reducing the Federal Reserve's holdings of Treasury securities and other assets; that reduction is expected to put upward pressure on longer-term interest rates.

Fiscal Policy

CBO estimates that legislation enacted since the agency prepared its May 2022 budget projections will increase the federal deficit, excluding the costs of servicing the debt, by \$17 billion in fiscal year 2023, or 0.1 percent of GDP, and by \$135 billion in fiscal year 2024, or 0.5 percent of GDP, mostly by increasing federal spending.⁷ In CBO's assessment, those legislative changes will increase the overall demand for goods and services in the short term, boosting real GDP by 0.1 percent in calendar years 2023 and 2024. Fiscal policy changes since May 2022

6. In CBO's projections, the pause on student loan repayment, interest accrual, and involuntary collections is in effect until August 2023, and cancellation of some student loan debt takes effect later in 2023. (Debt cancellation is currently on hold as a result of court decisions.) For more information on the agency's estimates of the costs of the Administration's actions as announced, see Congressional Budget Office, *Costs of Suspending Student Loan Payments and Canceling Debt* (September 2022), www.cbo.gov/publication/58494. Future updates to baseline projections will incorporate the effects of additional court decisions and any further administrative actions regarding student loans made after January 9, 2023. The Administration's plan for debt cancellation is currently being reviewed by the Supreme Court. If the plan is invalidated or revised in response to the Court's ruling, CBO's future projections will change accordingly. In addition, the current projections do not include any effects of proposed rules affecting income-based repayment plans.
7. Legislation enacted since CBO prepared its May 2022 budget projections will increase the federal deficit, excluding the costs of servicing the debt, by \$1.3 trillion from 2023 to 2032, CBO estimates; most of that increase will occur after 2024 and has little effect on CBO's economic projections because potential effects are assumed to be anticipated and offset through tighter monetary policy by the Federal Reserve than would have occurred otherwise. See Appendix A in this report.

are also projected to add to inflationary pressures, pushing the PCE price index slightly higher than it would have been otherwise in 2023 and 2024 (see Box 2-1).

Changes in fiscal policies also affect the economy in the longer term. In CBO's projections, high and rising levels of federal borrowing reduce private investment activity in later years. In addition, the expiration of the temporary provisions of the 2017 tax act (P.L. 115-97)—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 slow economic growth.

Monetary Policy

CBO anticipates that the Federal Reserve will continue to tighten monetary policy in 2023, resulting in an increase in the federal funds rate to 5.1 percent in early 2023. The agency expects the Federal Reserve to leave the target range for the federal funds rate unchanged for several months, at a high enough level and for a long enough time that the Federal Reserve expects inflation to be on a path back to its 2 percent long-run goal. Thereafter, in CBO's projections, the Federal Reserve begins to reduce the target range for the federal funds rate in late 2023 and continues lowering the target range through 2024.

Additionally, CBO projects that the Federal Reserve will continue reducing the size of its balance sheet until 2026. After that point, the Federal Reserve is expected to purchase enough Treasury securities to keep reserves constant as a share of GDP.

CBO projects that the Federal Reserve's policy tightening will slow the growth of overall demand in 2023 and 2024 and thus reduce inflationary pressures 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 purchases (especially large purchases, such as houses and motor vehicles). In addition, those higher rates will reduce the growth of business investment by making it more costly to borrow money to expand productive capacity, and they will reduce the growth of residential investment by raising mortgage rates. In CBO's projections, interest rates in the United States rise faster than the rates of its major trading partners, increasing the value of the dollar,

reducing the competitiveness of U.S. exports in global markets, and reducing the costs of imports (which, in turn, places downward pressure on inflation).

CBO estimates that interest rates on long-term bonds will depend in part on the expected path of future short-term interest rates. Raising the target range for the federal funds rate will therefore result in higher interest rates for securities with longer maturities. In addition, the agency estimates that reducing the size of the Federal Reserve's balance sheet will also contribute to higher interest rates for longer-maturity bonds.

The Economic Outlook for 2023 to 2027

In CBO's projections, real GDP shrinks during the first half of 2023 and is barely positive for the year as a whole as residential investment, exports, and inventory investment decline. Growth resumes after the first half of 2023 as falling inflation eventually allows the Federal Reserve to reduce interest rates, causing interest-sensitive sectors to rebound. Payroll employment is projected to decline during the middle two quarters of 2023 before returning to positive growth by the end of the year.

Inflation is expected to decline over the next few years as the projected slowdown in economic growth, lessening of supply constraints, and increased slack in the labor market put downward pressure on prices and wages. In CBO's forecast, inflation reaches the Federal Reserve's long-run goal of 2 percent by 2027. Wage growth is expected to follow a similar path, declining from 4.5 percent in 2023 to 3.3 percent in 2027.

The agency expects short-term interest rates to continue to rise during the first half of 2023. In CBO's forecast, long-term interest rates, which also increased during 2022, show little further movement in 2023. Short-term interest rates fall beginning in late 2023, and long-term rates decline only slightly in subsequent years.

Gross Domestic Product

In CBO's projections, which reflect the assumption that current laws governing federal taxes and spending generally remain unchanged, real GDP grows by just 0.1 percent in 2023. The slowdown is caused by declining exports and residential investment and a decrease in inventory investment, all influenced by higher interest

Box 2-1.

Economic Effects of Recent Changes in Fiscal Policy

In the Congressional Budget Office’s assessment, changes in federal fiscal policies since spring 2022 will increase both the level of real gross domestic product (that is, GDP adjusted to remove the effects of inflation) and the rate of inflation over the next few years as a result of the effect of greater government spending on demand. In particular, three major pieces of legislation enacted recently—the Honoring our PACT Act of 2022 (Public Law 117-168), the CHIPS Act of 2022 (division A of the CHIPS and Science Act of 2022, P.L. 117-167), and the 2022 reconciliation act (P.L. 117-169)—will boost the level of real GDP by about 0.1 percent in 2023 and 2024.¹ In addition, the Administration’s executive actions on student loans, primarily from the pause on repayment, will raise real GDP by about 0.1 percent in 2023.

CBO estimates the short-term effects of changes in fiscal policies by focusing on how those changes affect the overall demand for goods and services. The effects on overall demand result from changes in purchases of goods and services by federal agencies and by the people and organizations that receive federal payments or pay federal taxes, which in turn depend on the characteristics of the households, businesses, and governments affected by the policy changes. For example, a same-sized increase in transfer payments or decrease in taxes is likely to boost purchases by lower-income households more than purchases by higher-income households because lower-income households typically consume more of their additional disposable income than do higher-income households. CBO’s estimates also incorporate the effects on inflation of increased demand.

Recent Legislation

Three recently enacted major pieces of legislation will affect the economy. The Honoring our PACT Act expands health care and benefits for veterans exposed to burn pits and toxic substances. The CHIPS Act provides funding for semiconductor manufacturing, research, and development. Some of the roughly 150 provisions of the 2022 reconciliation act increase health insurance subsidies and provide energy-related subsidies. Those increases in government purchases and financial support to households and businesses will add to overall demand. In addition, the 2022 reconciliation act will raise tax

revenues through a new alternative minimum tax on corporations and increased funding for tax-enforcement activities, thereby reducing overall demand. CBO estimates that the positive effects on overall demand resulting from increases in government spending will be larger than the negative effects from increases in revenues. On net, the increase in overall demand will boost real GDP by an average of 0.1 percent over the next two years, CBO estimates.

Greater demand will also put upward pressure on the prices of goods and services, causing inflation to be higher than it would be otherwise. In CBO’s assessment, the effect on inflation will dissipate in later years because the Federal Reserve will raise the target range of 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 of 2 percent. (The federal funds rate is the rate that financial institutions charge each other for overnight loans of their monetary reserves.) CBO estimates that the level of the GDP price index will be slightly higher than it would be otherwise.

Executive Actions on Student Loans

The Administration has taken executive actions that affect student loans, including extensions of the pause on repayment—begun on March 13, 2020, under the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136) and extended several times thereafter—as well as cancellation of up to \$20,000 of debt and a new income-driven repayment plan. In CBO’s projections, the pause on repayment is in effect until August 2023, and debt cancellation takes effect later in 2023. (The Administration’s plan for debt cancellation is currently being reviewed by the Supreme Court.) The agency’s forecast does not include any effects of a proposed rule issued after CBO’s projections were completed that would change income-driven repayment plans.

The actions taken will reduce borrowers’ repayment of student debt compared with what they would otherwise have paid, thereby boosting their spending on goods and services. CBO used data on borrowers’ characteristics to estimate the number of borrowers affected by the executive actions and the resulting changes in loan repayment and overall demand. In CBO’s assessment, the level of real GDP will be 0.1 percent higher in 2023, primarily as a result of the repayment pause. The effect on real GDP will be smaller in later years. The executive actions will have a modest effect in increasing inflation.

1. The three pieces of legislation described here represent recent changes in fiscal policy, whereas the Consolidated Appropriations Act, 2023 (P.L. 117-328), mostly provides continued funding for fiscal year 2023.

rates (see Table 2-2). As falling inflation allows the Federal Reserve to reduce interest rates, the growth of real GDP accelerates in subsequent years, led by the interest-sensitive sectors of the economy. The agency expects real GDP to grow at an average annual rate of 2.4 percent from the beginning of 2024 through 2027.

Consumer Spending. In CBO's projections, growth in real consumer spending moderates at the beginning of the projection period, as rising interest rates and unemployment cause consumers to pull back. Real consumer spending increases by 1.1 percent in 2023 and by 1.5 percent in 2024. It then rises at an average annual rate of 1.9 percent from the beginning of 2025 through 2027.

CBO expects the shift from spending on goods to spending on services to continue in the near future. In 2023 and 2024, real spending on goods declines from an elevated level and real spending on services increases, as people gradually return to their prepandemic patterns of consumption. Over the 2025–2027 period, real spending on goods and real spending on services roughly follow their prepandemic trends.

In CBO's projections, elevated levels of accumulated savings continue to contribute to consumer spending. Personal saving rose to high levels during the pandemic, partly because financial support provided by the government to households more than offset declines in employment income, but also because households cut back on expenditures. The stock of excess savings peaked at the end of 2021 and is being spent down by consumers. Although the aggregate stock of excess savings is large, evidence as of mid-2022 suggests that the majority is held by top earners, who tend to consume less of any additional savings.⁸ Consumers' declining confidence as unemployment rises may also slow the spend-down of savings. CBO anticipates that by the end of 2025, about half of the stock of peak excess savings will remain.

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 just 0.3 percent from the fourth quarter of 2022 to the fourth quarter of 2023,

restrained by slowing demand for businesses' output and by rising costs of debt and equity. Real investment would have been projected to decline in 2023 without the easing of the semiconductor shortage, which is expected to increase businesses' ability to purchase new light vehicles. CBO anticipates that real investment in equipment and real investment in nonresidential structures, which are more affected by cyclical conditions and rising costs of debt and equity, will both decline in 2023. Investment in intellectual property products will grow, but at a much slower pace than in recent years.

Businesses' accumulation of real inventories (finished goods, work in process, and materials and supplies) slowed during the second half of 2022. A rapid rate of investment during the first half of the year pushed the ratio of inventories to sales, excluding light vehicles, back up to normal levels, allowing the pace to slow to a more typical rate during the second half of the year. Slowing demand for goods will cause inventory investment to slow further in 2023. CBO anticipates that real inventory investment will be close to zero in the final quarter of 2023, subtracting from the growth rate of GDP. If auto dealers were not expected to rebuild their depleted stocks as the semiconductor shortage eases, the projection for real inventory investment would turn negative.

Business investment will rebound strongly after 2023, in CBO's estimation. The Federal Reserve will ease financial conditions as inflation is observed to have slowed, and businesses will find it more profitable to invest as the costs of debt and equity decline. In addition, stronger demand for businesses' output will encourage them to expand capacity and to add to their inventories. In CBO's projections, real business fixed investment grows at an average annual rate of 4.2 percent from 2024 through 2027.

Residential Investment. Real residential investment decreased by 19.2 percent during 2022, primarily because of a sharp rise in mortgage rates. The rate on 30-year fixed-rate mortgages jumped from 3.1 percent in the fourth quarter of 2021 to 6.7 percent a year later. That increase slowed both the construction of new homes and the brokers' commissions associated with home purchases. CBO expects that continued high mortgage rates and the prospect of falling home prices will cause real residential investment to decline by another 13.6 percent in 2023. Thereafter, falling mortgage rates and the pent-up demand from strong

8. See Aditya Aladangady and others, "Excess Savings During the COVID-19 Pandemic," *FEDS Notes* (Board of Governors of the Federal Reserve System, October 21, 2022), <https://tinyurl.com/2e99hm27>.

Table 2-2.

Projected Growth of Real GDP and Its Components

	Actual, 2022	2023	2024	2025	Annual Average	
					2026– 2027	2028– 2033
	Change From Fourth Quarter to Fourth Quarter (Percent)					
Real GDP	1.0	0.1	2.5	2.6	2.3	1.8
Components of Real GDP						
Consumer spending	1.9	1.1	1.5	1.7	2.0	2.0
Business fixed investment ^a	3.7	0.3	3.3	4.9	4.4	2.9
Residential fixed investment ^b	-19.2	-13.6	5.7	11.5	7.8	-0.2
Purchases by federal, state, and local governments ^c	0.8	1.4	0.9	0.8	0.7	0.4
Federal	0.2	1.9	0.9	0.6	0.5	0.1
State and local	1.3	1.1	1.0	1.0	0.8	0.6
Exports	5.3	-5.1	7.6	4.6	2.5	2.0
Imports	1.7	-3.0	2.4	2.7	2.5	1.7
Memorandum:						
Inventory Investment (Billions of 2012 dollars) ^d	-68	-67	42	24	-1	1
	Contributions to the Growth of Real GDP (Percentage points)					
Components of Real GDP						
Consumer spending	1.3	0.8	1.1	1.2	1.3	1.4
Business fixed investment ^a	0.5	*	0.4	0.6	0.6	0.4
Residential fixed investment ^b	-1.0	-0.5	0.2	0.4	0.3	*
Purchases by federal, state, and local governments ^c	0.1	0.3	0.2	0.1	0.1	0.1
Federal	*	0.1	0.1	*	*	*
State and local	0.1	0.1	0.1	0.1	0.1	0.1
Exports	0.6	-0.6	0.8	0.5	0.3	0.2
Imports	-0.3	0.5	-0.3	-0.4	-0.4	-0.2
Inventory investment ^d	-0.3	-0.3	0.2	0.1	*	*

Data source: Congressional Budget Office. See www.cbo.gov/publication/58848#data.

Real values are nominal values that have been adjusted to remove the effects of inflation or, in the case of components of GDP, 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.

Actual values for 2022 reflect data available from the Bureau of Economic Analysis in early February 2023. The data contain values for the fourth quarter of 2022, which were not available when CBO developed its current projections.

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

- a. Purchases of equipment, nonresidential structures, and intellectual property products.
- b. Construction of single-family and multifamily structures, manufactured homes, and dormitories; spending on home improvements; and brokers' commissions and other ownership transfer costs.
- c. Based on the national income and product accounts.
- d. Inventory investment is the change in private inventories (in billions of 2012 dollars) from one quarter to the next at an annual rate. Growth in inventory investment is measured as the change in inventory investment from the fourth quarter of one year to the fourth quarter of the next.

household formation in 2020 and 2021 is expected to trigger a rebound in residential activity. Real residential investment is projected to grow at an average annual rate of 8.2 percent over the 2024–2027 period.

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 11.2 percent in 2020, by 17.8 percent in 2021, and at an annual rate of 17.4 percent in the first half of 2022. Home

prices began to fall in the second half of 2022 as higher mortgage rates choked off demand. CBO expects prices to fall by 3.8 percent in 2023, by 3.0 percent in 2024, and by 0.7 percent in 2025 before they begin to rise again in subsequent years.

Government Purchases. Real government purchases of goods and services—such as public educational services, highways, and military equipment—increased by 0.8 percent in 2022. Federal purchases grew more slowly than 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 1.4 percent in 2023 as recent strength in state and local tax receipts and federal aid support greater spending by state and local governments and as increases in discretionary spending stemming from the Consolidated Appropriations Act, 2023, boost federal purchases.

In CBO’s projections, real government purchases grow by an average of 0.8 percent per year from 2024 to 2027. In particular, real purchases by state and local governments increase by an average of 0.9 percent per year during that period, supported by federal assistance, including federal education grants provided by the American Rescue Plan Act of 2021 (P.L. 117-2) and transportation grants provided by the Infrastructure Investment and Jobs Act (P.L. 117-58). Although those grant programs originated in 2021, their spending is expected to continue throughout the 2024–2027 period.⁹ Real federal government purchases are projected to grow by an average of 0.6 percent per year over that same period.

Exports and Imports. CBO projects that the U.S. trade deficit will rise in 2023 before shrinking in 2024 and 2025 and then stabilizing as a share of GDP in later years. In 2023, the projected larger trade deficit is driven by a decline in exports. As a result, CBO projects that the trade deficit will rise from 3.2 percent of GDP at the end of 2022 to 3.9 percent of GDP by the end of 2023. That increase in the trade deficit will reverse, CBO anticipates, as exports rise by 9.1 percent (at an annualized rate) in 2024 and by 6.0 percent in 2025 but imports rise by only 3.7 percent and 4.0 percent, respectively, in those years.

CBO expects growth in exports to outpace growth in imports in 2024 and 2025 for two reasons: The foreign exchange value of the dollar is expected to weaken, and

the recovery in services trade (a sector for which the United States runs a trade surplus) is expected to continue. As a result, the trade deficit is projected to shrink from 3.7 percent of GDP at the beginning of 2024 to 3.1 percent of GDP by the end of 2025 (it was 2.7 percent of GDP in 2019) as the growth of exports continues to increase. Beyond 2025, the trade deficit is expected to remain roughly stable as export growth moderates and imports continue to grow with domestic demand.

Value of the Dollar. CBO’s projections of export and import flows are connected to its projection of the foreign exchange value of the dollar. The agency projects that, after increasing by 12.1 percent between the middle of 2021 and the end of 2022, the exchange value of the dollar will stabilize in the first quarter of 2023 before declining over the rest of the period.¹⁰ In CBO’s view, the dollar appreciated because interest rates in the United States rose by more than those of most of its trading partners, which increased demand for the dollar and dollar-denominated assets in international markets. After the first quarter of 2023, CBO’s projection of a declining dollar reflects the agency’s expectation that interest rates of major U.S. trading partners will rise more than interest rates in the United States, which will cause the value of the dollar to depreciate against the currencies of those trading partners. CBO projects that the foreign exchange value of the dollar will decline by 7.0 percent between the first quarter of 2023 and the end of 2026.

Exports. Real exports are expected to contract in 2023, decreasing by 5.1 percent. One factor contributing to that decline in exports is the expected deterioration in economic conditions abroad, which will reduce international demand for U.S. goods and services. CBO projects that the real economic output of major U.S. trading partners will rise by 1.4 percent in 2023, after having increased by 2.1 percent in 2022.¹¹ As the global effects of the pandemic continue to wane, exports of services

9. CBO used its preliminary estimates for those acts to project discretionary funding for fiscal years 2024 and beyond, in accordance with procedures specified in law. For more information on those procedures, see Chapter 1.

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

11. The projected decline in the growth of major U.S. trading partners in 2023 is driven mostly by slower growth in the United Kingdom, China, and the economies of the euro area. In the United Kingdom and the euro area, high energy prices over the winter months are expected to weigh on consumption and industrial production, and rising interest rates are expected to reduce investment. In China, CBO projects slow economic growth in 2023 as the government’s looser COVID-19 restrictions lead to economic disruptions (resulting from wider spread of the virus), and investment growth is expected to remain weak. CBO expects those headwinds to subside in 2024 and beyond as growth returns to its long-run trend rate for major U.S. trading partners.

(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 in 2024 before slowing in later years.

Imports. Imports were unusually strong early in 2022 as firms rebuilt inventories and recovered from problems in supply chains. CBO projects that weak domestic growth in consumption and a contraction in domestic investment in 2023 will restrain growth of real imports, which are expected to decline by 3.0 percent. As growth in consumption and investment returns to a more robust pace from 2024 to 2027, CBO projects that the growth rate of real imports will rise, averaging 2.5 percent over those years.

The Labor Market

Labor market conditions are expected to deteriorate as the slowdown in growth in early 2023 reduces the demand for workers. In CBO's projections for 2023, employment growth wanes, the unemployment rate rises, and the growth of wages and salaries slows (see Figure 2-2). The labor force participation rate declines through 2024. The downward pressure on the labor force participation rate stemming from slower growth and the aging of the population more than offsets the continued return of workers who had dropped out of the labor force during the pandemic. Thereafter, through 2027, the projections reflect the labor market's gradual return to its long-run average relationship to potential performance; employment growth rises, the unemployment rate gradually declines, and wage growth moderates.

Employment. The growth of nonfarm payroll employment is projected to slacken in 2023 as the slowdown in real output growth dampens the demand for workers. CBO expects employment growth to increase in 2024 as economic growth rebounds but to remain moderate through 2027. In CBO's projections, employment growth is positive from the end of 2023 through the end of 2027, with an average increase of 78,000 jobs per month.

Unemployment. The unemployment rate and the number of unemployed people are projected to rise through the end of 2023, reflecting the slowdown in economic growth. In CBO's projections, the overall unemployment rate increases from 3.6 percent in the fourth quarter of 2022 to 5.1 percent by the end of 2023, averaging 4.7 percent

for all of 2023. The number of unemployed people rises from 6.8 million in the first quarter of 2023 to 8.5 million in early 2024. Beginning in the second quarter of 2024, CBO projects, the unemployment rate gradually declines, reaching 4.5 percent by the end of 2027.

Labor Force Participation. In CBO's projections, the labor force participation rate remains roughly unchanged at 62.2 percent in 2023. Slowing demand for labor, which is expected to put downward pressure on the labor force participation rate, roughly offsets the reentry of some workers who dropped out of the labor force during the pandemic because of health concerns, difficulties arising from child care and other in-home care responsibilities, and early retirements. The labor force participation rate declines after 2023 as the effects of the aging of the population (which dampens the overall labor force participation rate) become more prominent in relation to the short-term effects of the expanding economy. CBO expects the labor force participation rate to decline from 62.2 percent in 2023 to 61.8 percent in 2027. In CBO's projections, people who dropped out of the labor force during the pandemic continue to return to the workforce over the next several years; in 2026, the labor force reaches the size that it would be if participation rates by demographic group had remained at their prepandemic averages (see Box 2-2).

Hourly Wages and Salaries. In CBO's projections, slowing demand for labor and falling inflation put downward pressure on the growth of nominal wages. As a result, the agency expects the growth of the employment cost index for wages and salaries of workers in private industry—a measure of the hourly price of labor, excluding fringe benefits—to decline from 5.1 percent in 2022 to 3.8 percent in 2024. Wage growth is projected to continue to gradually decline after 2024 but remain above 2.7 percent—its annual average from 2015 to 2019—through 2027. CBO expects wage growth to decline from 3.5 percent in 2025 to 3.3 percent in 2027.

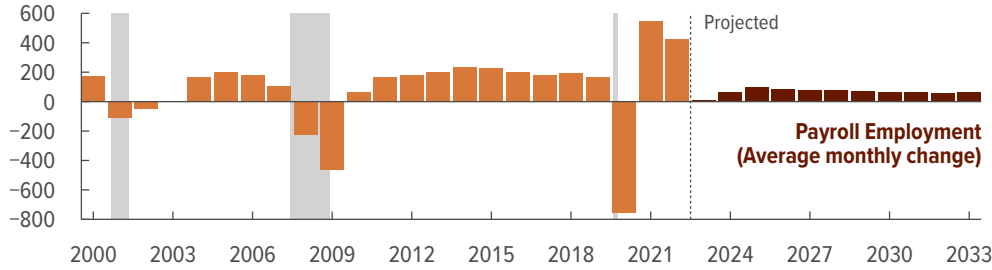
Inflation and Interest Rates

In CBO's projections, inflation gradually slows in 2023 as factors that caused demand to grow more rapidly than supply following the pandemic ease. The rate of inflation will continue to substantially exceed the Federal Reserve's long-run goal of 2 percent in 2023, CBO projects, and will then decline toward that goal, reaching it in 2027. The agency expects short-term interest rates to continue to increase in early 2023. Throughout 2023,

Figure 2-2.

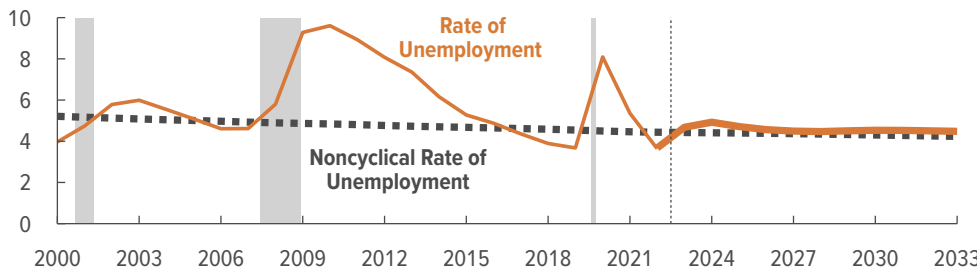
Employment, Unemployment, Labor Force Participation, and Wage Growth

Thousands of People



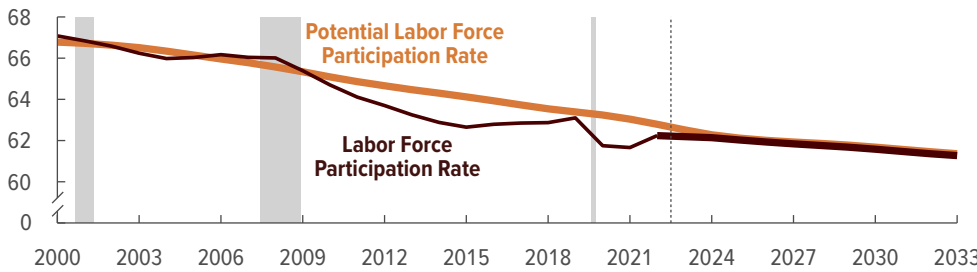
In CBO’s projections, the growth of payroll employment declines in 2023 as the slowdown in real output growth dampens the demand for workers.

Percent



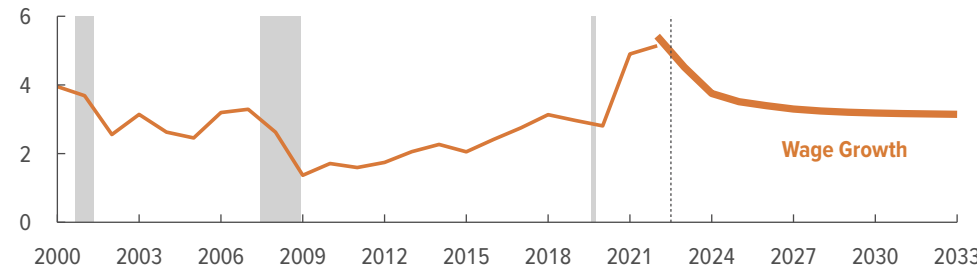
The unemployment rate rises through early 2024, reflecting the slowdown in economic growth. The rate falls thereafter as output returns to its historical relationship with potential output.

Percent



The labor force participation rate declines after 2023 as the negative effects of the aging of the population offset the short-term effects of the expanding economy.

Percent



Over the next two years, slowing demand for labor and falling inflation put downward pressure on the growth of wages. Nominal wage growth continues to gradually decline after 2024 but through 2027 remains above its annual average for the 2015–2019 period.

Data sources: Congressional Budget Office; Bureau of Labor Statistics. See www.cbo.gov/publication/58848#data.

Payroll employment is the number of employed workers, excluding proprietors, private household employees, unpaid volunteers, farm employees, and unincorporated self-employed workers. The average monthly change in payroll employment is calculated by dividing by 12 the change in nonfarm payrolls from the fourth quarter of one calendar year to the fourth quarter of 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 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 work and is either seeking work or expecting to be recalled from a temporary layoff. 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. Wages are measured using the employment cost index for wages and salaries of workers in private industry. Annual wage growth is measured from the fourth quarter of one calendar year to the fourth quarter of the next. For the unemployment rate and labor force participation rate, data are annual averages.

Values for 2000 to 2022 (the orange bars in first panel and the thin line in the bottom three panels) reflect data available from the Bureau of Labor Statistics in early February 2023. The data contain values for the fourth quarter of 2022, which were not available when CBO developed its current projections for 2022 to 2033 (the brown bars in the first panel and the thick line in the bottom three panels).



Box 2-2.

Missing Labor Force Participants

The labor force declined by more than 6 million workers from the end of 2019 to May 2020 as schools and businesses closed in the wake of the coronavirus pandemic. Many people dropped out of the labor force or retired early because of health concerns, income from government support during the pandemic, or child care and other in-home care responsibilities. Increased mortality and reduced immigration also contributed to the decline. Since that time, the labor force has rebounded significantly, but it remains below the size that would be expected if people had participated in the labor force at the same rate as before the pandemic. Specifically, the Congressional Budget Office projected what the size of the labor force would have been if the labor force participation rates of 516 demographic groups defined by age, sex, race, and education equaled their averages over the period from 2015 to 2019. The agency estimates that the labor force in 2022 had 1.1 million fewer people than would otherwise have been expected (see the figure).

After increasing in 2023, the number of missing labor force participants—the difference between the expected and projected numbers—is projected to gradually decline over the next several years as labor force participation rates of certain groups increase. CBO projects that the number of missing participants will reach zero by 2026. Increased labor force participation by people with at least some college who are age 55 or older is the largest factor reducing the number of missing participants (see the table). CBO also projects that men, who make up a larger share of the labor force, will return in greater numbers than women over the next several years.

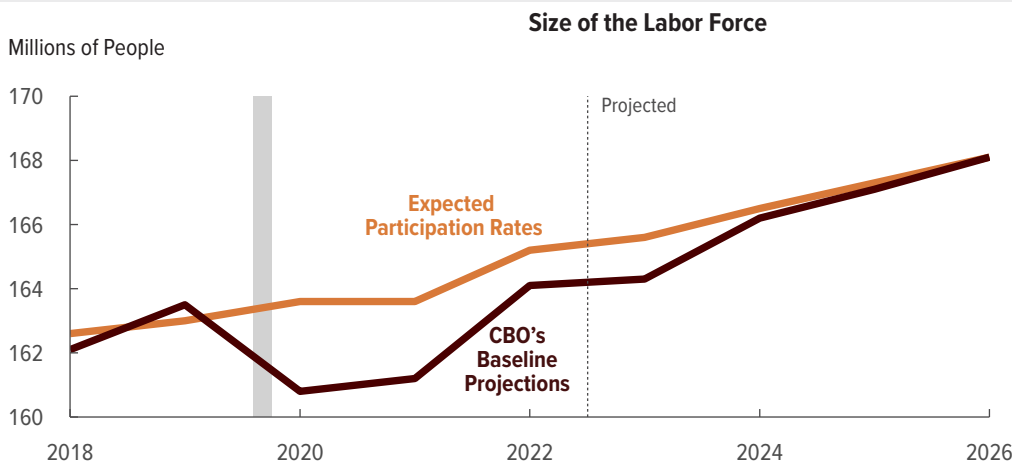
Change in the Number of Missing Labor Force Participants, 2022 to 2026

Millions of People

	Age				
	16–24	25–54	55–64	Over 64	16 or Older
Level of Education					
Less than high school	0.3	-0.1	-0.1	-0.1	0
High school	0.2	0	-0.1	-0.3	-0.2
Some college	0	-0.1	-0.1	-0.2	-0.4
Bachelor’s degree	0	0.1	-0.1	-0.2	-0.3
Graduate school	0	-0.1	-0.1	-0.2	-0.3
All	0.4	-0.2	-0.4	-0.9	-1.1
Sex					
Men	0.3	-0.4	-0.3	-0.3	-0.7
Women	0.1	0.2	-0.2	-0.6	-0.4
All	0.4	-0.2	-0.4	-0.9	-1.1

Data source: Congressional Budget Office, using Current Population Survey data from IPUMS-CPS. See www.cbo.gov/publication/58848#data.

CBO estimated the total number of missing labor force participants for 516 demographic groups defined by age, sex, race, and education and then added the number of missing participants—the difference between the expected numbers (based on historical participation rates) and the projected numbers—from each group to arrive at the total.



In CBO’s current projections, the number of missing labor force participants—the difference between the expected and projected numbers—increases in 2023 and then gradually declines over the next several years as participation by older people with more education increases.

Data source: Congressional Budget Office, using Current Population Survey data from IPUMS-CPS. See www.cbo.gov/publication/58848#data.

The labor force consists of people age 16 or older in the civilian noninstitutionalized population who have jobs or who are available for work and are either seeking work or expecting to be recalled from a temporary layoff.

CBO estimated the total number of missing labor force participants for 516 demographic groups defined by age, sex, race, and education and then added the number of missing participants—the difference between the expected numbers (based on historical participation rates) and the projected numbers—from each group to arrive at the total.

The underlying analysis and historical values reflect data available from the Census Bureau in September 2022.

long-term interest rates, which also rose during 2022, are expected to remain near the values seen at the end of 2022. CBO expects that short-term interest rates will decline beginning in late 2023 but remain high well into 2024 and that long-term interest rates will fall slightly.

Inflation. CBO expects that the recent 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 continue to fade. In CBO’s projections, inflation declines in 2023 but remains elevated (see Figure 2-3, top panel). The growth rate of the PCE price index—the Federal Reserve’s preferred measure of inflation—reached 5.5 percent last year. CBO projects that PCE inflation (that is, inflation in the PCE price index) will be 3.3 percent in 2023 and 2.4 percent in 2024. The core PCE price index, which excludes food and energy prices, rose by 4.7 percent in both 2021 and 2022. The agency projects that the core PCE price index will grow by 3.4 percent in 2023 and by 2.7 percent in 2024.

CBO projects a decline in inflation throughout 2023 and 2024 for three main reasons. First, the agency expects that problems with supply chains will continue to abate, which will continue to slow the growth of prices for goods. Second, in CBO’s projections, the slowing economy in 2023 and the higher unemployment rate put downward pressure on prices through two mechanisms: slowed demand and reduced upward pressure on prices because of slowing wage growth. Third, CBO projects that higher interest rates will put downward pressure on certain price categories, such the price of shelter services, in 2023. High rent inflation persists into 2023, in CBO’s projections, but begins to decline in the second half of the year, in accordance with declines already present in house price indexes. The alleviation of upward price pressures in the goods sector, including food and energy, and the downward pressure on inflation in shelter services stemming from monetary policy are key forces driving the decline in CBO’s projections of inflation in 2023 and 2024 (see Figure 2-3, bottom panel).

In CBO’s projections, the overall and core measures for both the PCE price index and the CPI-U decline throughout 2023 and 2024. Core CPI-U inflation usually grows faster than core PCE inflation by roughly 0.3 percentage points, but in 2022 price growth in the core CPI-U outpaced growth in the core PCE price index by 1.3 percentage points because of the greater

weight the CPI-U places on shelter costs. The agency expects the gap between those two measures of inflation to decline and eventually dip below its historical average at the beginning of 2024. By the end of 2024, PCE inflation is expected to outpace CPI-U inflation. That behavior of the gap between CPI-U inflation and PCE inflation is largely driven by categories of goods and services that are assigned comparatively more weight in the calculation of the CPI-U.

Over the 2025–2027 period, PCE inflation gradually declines to the Federal Reserve’s long-run goal of 2 percent, in CBO’s projections. That decline is attributable to slower economic growth and the actions the Federal Reserve has already begun to take to rein in inflation by reducing monetary accommodation. Those actions affect inflation by reducing demand for goods and services and by boosting the unemployment rate, which the agency expects to remain above the noncyclical rate of unemployment over that period.¹² The effects on the unemployment rate will put further downward pressure on both wage and price inflation as an increased unemployment rate reduces bargaining power for higher wages and the spending power of households.

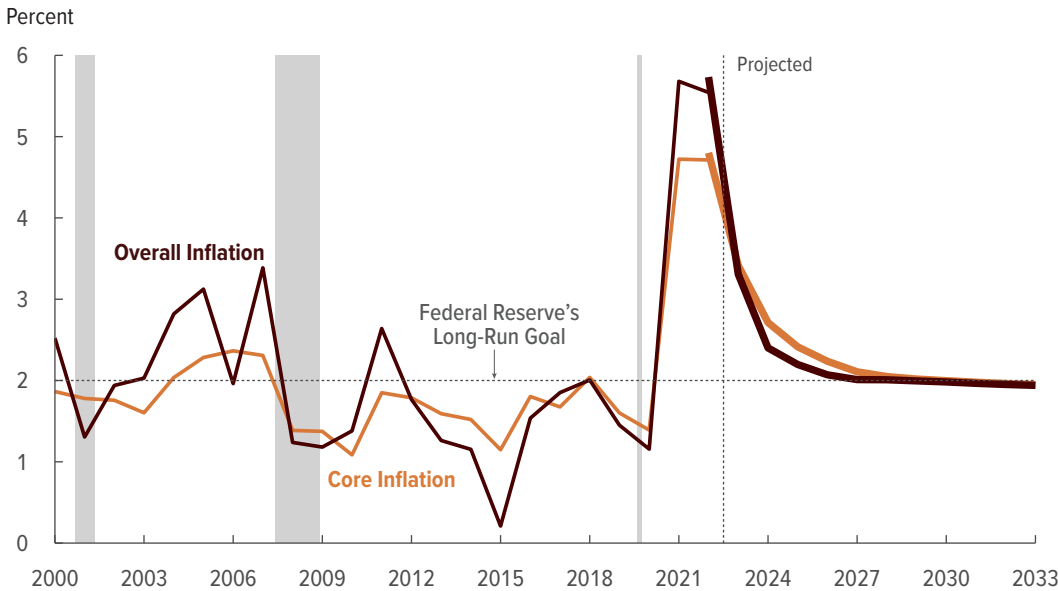
Interest Rates. In CBO’s projections, interest rates on short-term Treasury securities move largely in concert with movements in the target range for the federal funds rate carried out by the Federal Reserve. To reduce inflationary pressures in the economy, the Federal Reserve increases the target range for the federal funds rate in early 2023 and leaves the target range for the federal funds rate unchanged for several months thereafter (see Figure 2-4). In CBO’s projections, the interest rate on 3-month Treasury bills follows a similar path, rising to 4.7 percent in early 2023 and remaining above 4.0 percent through the end of the year. After 2023, the Federal Reserve normalizes the stance of monetary policy by lowering the target range for the federal funds rate as inflation falls toward its 2 percent long-run goal.

Interest rates on long-term Treasury securities are expected to rise slightly in 2023, largely because of 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

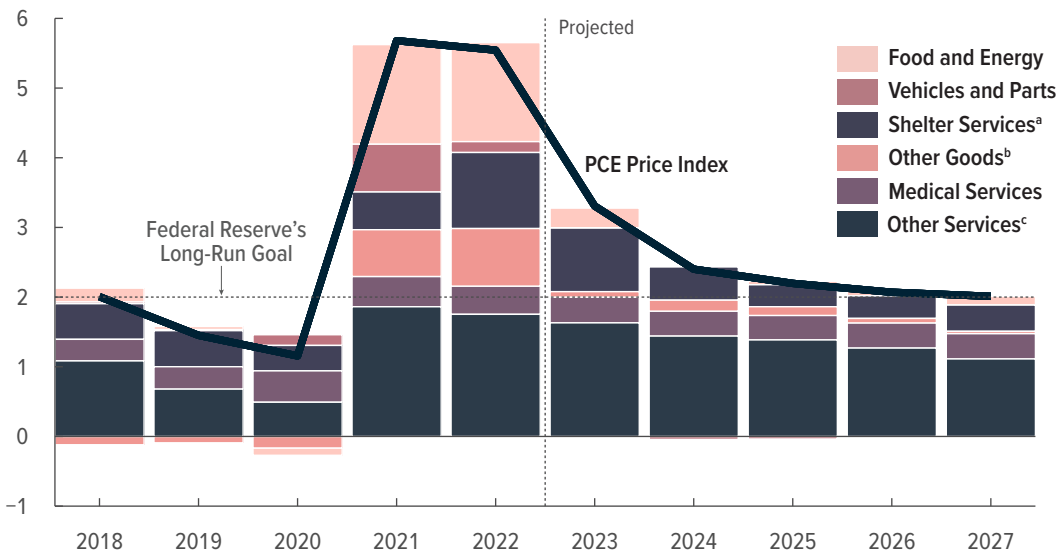
12. The noncyclical rate of unemployment is the rate of unemployment arising from all sources except fluctuations in aggregate demand.

Figure 2-3.

Overall Inflation, Core Inflation, and Contributions to Overall Inflation



In CBO’s projections, inflation declines in 2023 as pressures ease from factors that, since mid-2020, have caused demand to grow more rapidly than supply. That decline continues until 2027, when the rate of inflation reaches the Federal Reserve’s long-run goal.



The alleviation of upward pressure on the prices of food, energy, and other goods and the downward pressure on prices in shelter services are the two main causes of falling inflation in 2023 and 2024.

Data sources: Congressional Budget Office; Bureau of Economic Analysis. See www.cbo.gov/publication/58848#data.

The overall inflation rate is the rate of growth in the PCE price index; the core inflation 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.

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.

Values for 2000 to 2022 (in the upper panel, the thin lines) reflect data available from the Bureau of Economic Analysis in early February 2023. The data contain values for the fourth quarter of 2022, which were not available when CBO developed its current projections for 2022 to 2033 (in the upper panel, the thick lines).

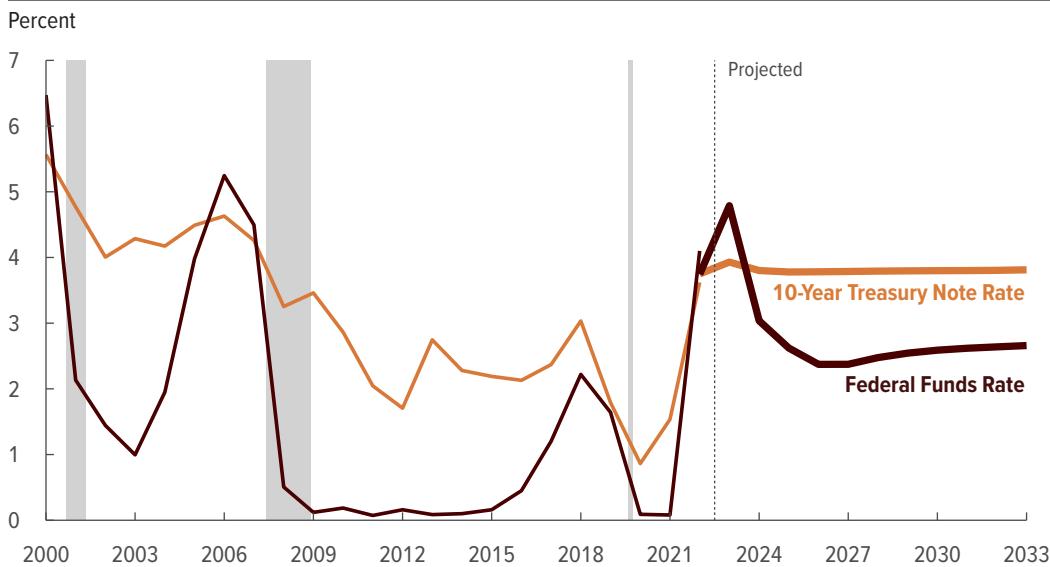
PCE = personal consumption expenditures.

- a. Measures the flow of housing services that housing units provide to their occupants.
- b. Includes core durable and nondurable goods (other than vehicles and parts), such as electronics, home furnishings, and apparel.
- c. Includes core services (other than housing services and medical services), such as transportation and recreation services.



Figure 2-4.

Interest Rates



In CBO's projections, the Federal Reserve further increases the target range for the federal funds rate in early 2023 to reduce inflationary pressures in the economy. That rate is projected to fall in 2024, as inflation slows and unemployment rises. The interest rate on 10-year Treasury notes, however, remains at 3.8 percent from 2024 to the end of the projection period.

Data sources: Congressional Budget Office; Federal Reserve. See www.cbo.gov/publication/58848#data.

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

Values for 2000 to 2022 (the thin lines) reflect data on interest rates for the full month of December 2022. Those data were not available when CBO developed its current projections for 2022 to 2033 (the thick lines).

years that preceded the pandemic, including diminished perceived risk of unexpectedly high inflation, reduced uncertainty about the future path of monetary policy, and a strongly negative correlation between stock and bond returns. CBO expects those factors to continue to dissipate, thus increasing term premiums to a level close to their average over the past 40 years.

After 2023, interest rates on long-term Treasury securities are expected to fall slightly, largely because short-term rates are expected to decline. 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 falls, the yield on long-term bonds also falls. In CBO's projections, the interest rate on 10-year Treasury notes falls from 3.9 percent in the fourth quarter of 2023 to 3.8 percent in the fourth quarter of 2024 as the Federal Reserve begins to normalize monetary policy, signaling a lower future path for short-term interest rates. After 2024, the interest rate on 10-year Treasury notes remains roughly flat at 3.8 percent through the end of 2027.

The Economic Outlook for 2028 to 2033

CBO's projections of GDP, unemployment, inflation, and interest rates for the later years of the forecast period are based mainly on its projections of the underlying trends in the factors that determine those key variables, taking into account the effects of federal tax and spending policies embodied in current law. Those policies, as well as monetary policy, can influence not only the demand for goods and services—and, therefore, the gap between actual output and potential output—but also potential output itself. The projections also reflect the Federal Reserve's goal of eventually returning the rate of inflation to 2 percent.

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 second 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.

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	2008–2022	Overall, 1950–2022	2023–2027	2028–2033	Overall, 2023–2033
Overall Economy										
Real Potential GDP	4.0	3.2	3.2	3.2	2.4	1.8	3.1	1.8	1.8	1.8
Potential Labor Force	1.6	2.5	1.6	1.2	1.0	0.5	1.4	0.4	0.4	0.4
Potential Labor Force Productivity ^a	2.3	0.7	1.6	2.0	1.4	1.2	1.7	1.3	1.4	1.4
Nonfarm Business Sector										
Real Potential Output	4.1	3.5	3.5	3.7	2.6	2.1	3.4	2.1	2.1	2.1
Potential Hours Worked	1.4	2.3	1.7	1.2	0.3	0.6	1.3	0.4	0.4	0.4
Capital Services ^b	3.8	3.7	3.5	3.9	2.8	2.3	3.4	2.1	2.3	2.2
Potential Total Factor Productivity ^c	1.8	0.8	1.1	1.5	1.5	0.9	1.4	1.1	1.1	1.1
Contributions to the Growth of Real Potential Output (Percentage points)										
Potential hours worked	1.0	1.5	1.2	0.8	0.2	0.4	0.8	0.3	0.3	0.3
Capital input	1.2	1.2	1.1	1.3	0.9	0.8	1.1	0.7	0.7	0.7
Potential total factor productivity ^c	1.8	0.8	1.1	1.5	1.5	0.9	1.4	1.1	1.1	1.1
Total Contributions	4.0	3.5	3.4	3.6	2.6	2.1	3.3	2.1	2.1	2.1
Potential Labor Productivity ^d	2.6	1.2	1.7	2.4	2.3	1.5	2.1	1.7	1.7	1.7

Data source: Congressional Budget Office. See www.cbo.gov/publication/58848#data.

Real values are nominal values that have been adjusted to remove the effects of inflation or, in the case of components of GDP, 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.

In CBO's projections, real potential GDP grows at an average annual rate of 1.8 percent over both the 2023–2027 and the 2028–2033 periods—a rate roughly equal to the average since the business cycle peak in late 2007 (see Table 2-3). Annual growth of the potential labor force is about 0.4 percent in both the first and the second periods, and growth of potential labor force productivity averages 1.3 percent in the first period and 1.4 percent in the second period (see Figure 2-5).

The growth of real output accelerates after 2023 and then gradually converges toward that of potential output. The output gap narrows to –0.5 percent by the end of

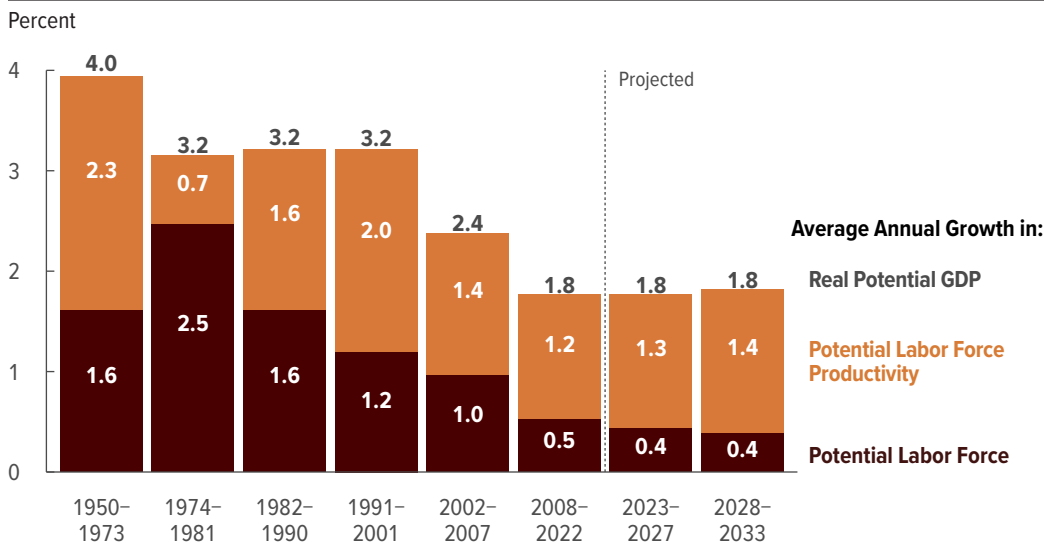
2027; it remains at that level thereafter, consistent with the long-term relationship between actual and potential output.¹³ Growth of real GDP averages 1.8 percent per year over the 2028–2033 period, the same as growth of real potential GDP.

Over the 2028–2033 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

13. The output gap is the difference between actual and potential gross domestic product, expressed as a percentage of potential GDP.

Figure 2-5.

Composition of the Growth of Real Potential GDP



In CBO's projections, real potential GDP grows during the next five years at a rate similar to its growth rate since the 2007–2009 recession. Because of the aging of the population, the potential labor force grows more slowly than it has in previous periods. But that slower growth is offset by faster growth in potential labor force productivity.

Data source: Congressional Budget Office. See www.cbo.gov/publication/58848#data.

Real values are nominal values that have been adjusted to remove the effects of inflation.

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.

year. About 1.1 percentage points of that growth are attributable to growth of potential total factor productivity (that is, the average real output per unit of combined labor and capital services, excluding the effects of business cycles) in the 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 2028–2033 period primarily reflect the agency's assessment of the overall performance of the economy and the effects of demographic trends over the long term. Demographic trends are expected to strongly influence the size and composition of the workforce in the coming decades.

Over the 2028–2033 period, the growth of employment is projected to moderate, and the growth of nominal labor compensation is expected to decrease, as compared with the first five years of the projection period.

Nonfarm payroll employment increases by an average of 67,000 jobs per month during those years, in CBO's projections. The projected increase in employment is smaller than the average increase over the previous two decades because of the aging of the population, which CBO expects to result in slower growth of the labor force over the 2028–2033 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 2028–2033 period—close to the projected average growth in labor productivity in that sector.

In CBO's projections, the unemployment rate rises over the 2027–2030 period as output returns to its historical relationship with potential output. After peaking at nearly 4.5 percent at the end of 2030, the unemployment rate declines slowly through 2033—in line with the decline in the noncyclical rate of unemployment over that period. That decline reflects the continuing shift 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 ones.

CBO expects the labor force participation rate to fall during the second part of the 11-year projection period—from 61.8 percent at the end of 2027 to 61.2 percent by the end of 2033. That decline is mostly driven by the aging of the population and, in particular, the continued retirement of baby boomers. That rate in 2033 is slightly below the agency’s estimate of the potential labor force participation rate, which falls from 62.8 percent in 2022 to 61.9 percent in 2027 and to 61.4 percent in 2033.

Inflation and Interest Rates

Over the 2028–2033 period, CBO expects inflation to have reached the long-run average rate that the agency projects. CBO expects interest rates on Treasury securities to be lower, on average, than they were over the first five years of the projection period.

Inflation. In CBO’s forecast, the Federal Reserve maintains its long-run goal of 2 percent for inflation. The agency expects the growth rate of the PCE price index to average 2.0 percent over the 2028–2033 period. Similarly, inflation in the CPI-U is projected to grow at an average rate of 2.3 percent, that index’s long-run average, over that period.

Interest Rates and Federal Reserve Policy. CBO expects interest rates on short- and long-term Treasury securities to be slightly lower over the 2028–2033 period than over the 2023–2027 period and well below their historical average. As inflation returns to its long-run average rate, the Federal Reserve normalizes the stance of monetary policy, resulting in the lower level of short- and long-term interest rates. In CBO’s projections, interest rates are below their average over the past four decades for several reasons, including higher rates of domestic and foreign saving, slower growth of the labor force, and slower growth of productivity.¹⁴

Projections of Income for 2023 to 2033

Nominal income is expected to grow at a moderate rate over the projection period. In CBO’s projections, nominal gross domestic income (GDI) grows by 3.1 percent in 2023. Although CBO expects the growth rate of real GDI (that is, nominal GDI adjusted to remove the effects of inflation) to continue to stagnate in 2023, it anticipates that nominal GDI will grow at a stronger rate because of inflation (see Figure 2-6). Nominal GDI grows by 4.9 percent in 2024, by 4.8 percent in 2025, and at an average annual rate of 4.0 percent from 2026 to 2033, in CBO’s projections.

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 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

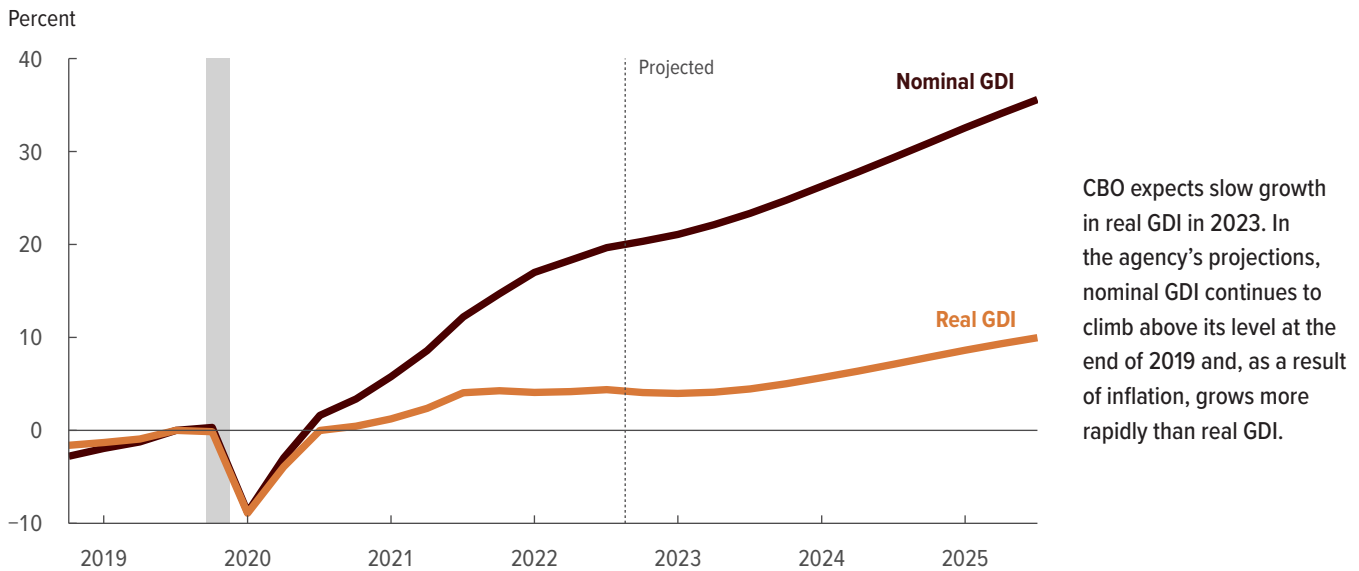
Compensation of employees is expected to rise more rapidly than GDP through the first half of 2024; as a result, labor income as a share of GDP is expected to rise from the end of 2022 through the first half of 2024. CBO’s projection is consistent with the historical cyclical pattern of compensation as a share of income. When the economy slows, as it does in CBO’s near-term projection, growth in compensation, which is less sensitive to cyclical fluctuations in the economy, tends to slow less than growth in profits, which is more sensitive to cyclical fluctuations in the economy. As a result, labor income as a share of GDP tends to rise and profits as a share of GDP tend to fall during periods when GDP growth declines. In CBO’s projections, labor income as a share of GDP increases from 57.4 percent at the end of 2022 to 58.5 percent by mid-2024. It then falls from mid-2024 through the end of 2027 as GDP growth outpaces the growth in compensation.

After 2027, CBO expects labor income as a share of GDP to remain roughly unchanged, averaging 58.1 percent from 2028 through 2033. CBO’s forecast of labor

14. 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.

Figure 2-6.

Gross Domestic Income



Data sources: Congressional Budget Office; Bureau of Economic Analysis. See www.cbo.gov/publication/58848#data.

The figure shows the percentage difference in nominal and real GDI from their levels in the fourth quarter of 2019.

GDI is the sum of all income earned in the production of GDP. Real GDI is equal to nominal GDI that has been adjusted to remove the effects of inflation, as measured by the GDP price index.

GDI = gross domestic income; GDP = gross domestic product.

income as a share of GDP remains below 60 percent, its long-run average from 1947 to 2000, because some factors that have depressed that share since 2000 are expected to persist during the coming decade. One such factor is globalization, which has tended to move the production of labor-intensive goods and services to countries with lower labor costs. Another factor is technological change, which appears to have increased returns on capital more than returns on labor.

In CBO's projections, wages and salaries as a share of GDP follow roughly the same cyclical pattern as labor income as a share of GDP, rising from 43.6 percent at the end of 2022 to 44.5 percent in the first half of 2024. Wages and salaries as a share of GDP are projected to decline steadily through 2027 as GDP growth outpaces growth in wages and salaries. After 2027, wages and salaries as a share of GDP are expected to remain roughly constant.

Corporate Profits

Domestic corporate profits as a share of GDP are expected to decrease from 9.7 percent in 2022 to

7.5 percent in 2024 as the shares of GDP going to compensation of employees and business interest payments increase. Between 2024 and 2027, the profit share reverts to its historical average of about 8.0 percent and then stays relatively flat over the remainder of the projection period.

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. In the short term, the effect of higher interest rates on overall demand, the easing of supply-chain disruptions, and participation in the labor market could be larger or smaller than expected; in the longer term, the pace of 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 or downward pressure on wages and prices from conditions in product and labor markets 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 effects of higher deficits and debt on the economy.

CBO's baseline projections reflect the assumption that current laws governing federal taxes and spending generally remain in place. (The Balanced Budget and Emergency Deficit Control Act of 1985, P.L. 99-177, requires CBO to project spending, revenues, and deficits independently of the debt limit.) Although new laws could be enacted that significantly alter federal taxes and spending, the following discussion is restricted to uncertainty stemming from other sources.

Economic Growth in 2023

CBO's forecast for roughly zero growth of real GDP in 2023 is highly uncertain. A key risk stems from uncertainty about the future paths of inflation and interest rates. If inflation is higher than CBO expects, that will probably cause the Federal Reserve to raise interest rates higher and keep them elevated for longer than CBO anticipates. Those higher interest rates would put further downward pressure on the interest-sensitive sectors of the economy, such as residential investment, net exports, and business investment. Alternatively, if inflation declines more rapidly than CBO projects, interest rates will probably fall faster than CBO anticipates. That would help the interest-sensitive sectors of the economy.

Another important source of uncertainty in the forecast for growth is the magnitude of the effects of higher interest rates on the interest-sensitive sectors of the economy. The downturns in the construction of new homes and sales of existing homes could be more or less severe than in CBO's forecast. The purchase of a home often leads to the purchase of related consumer goods, so the severity of the downturn in home sales would have downstream effects on consumer spending. The rise in the exchange value of the dollar stemming from higher interest rates could have a greater or lesser effect on net exports than in CBO's forecast. Finally, the response of business investment to higher costs of debt and equity could be greater or less than forecast.

The outlook for consumer spending is more uncertain than usual. Consumer spending depends on the strength of the labor market, both directly through income and

indirectly through consumer confidence. If unemployment rises less than expected, consumers will have more income to spend on discretionary goods and services. Furthermore, consumer confidence may be higher than expected because of less uncertainty about future employment. If unemployment rises more than expected, consumers may pull back on spending. Consumer spending also depends on the pace at which consumers spend down excess savings. The stock of accumulated savings in the economy is unprecedented, and the distribution of savings is uncertain, so it is difficult to predict the pace at which excess savings will be spent down.

Developments outside the United States are another major source of uncertainty. Faster growth among U.S. trading partners would boost U.S. exports and thus GDP, whereas slower growth would put further downward pressure on the economy. The war in Ukraine could put further upward pressure on food and energy prices, reducing the real income of consumers and thus their spending. Disruptions elsewhere could have similar effects.

CBO's estimates of the economic effects of legislation enacted in 2022 represent the middle of the range of likely outcomes. Still, those estimates are subject to considerable uncertainty. Some important sources of that uncertainty are the responses of consumers, businesses, and state and local governments to various policy changes included in the legislation; the effects of the timing, scale, and breadth of the legislation on prices in labor and product markets; and the speed with which disruptions to the supply of labor are resolved.

The Labor Market

The uncertainty of the labor market in the near term is large. If labor demand remains strong despite the projected slowdown in economic growth in early 2023, the unemployment rate will rise by less and employment will fall by less than CBO currently expects in the near term. However, if the projected economic slowdown causes the demand for labor to fall by more than CBO expects, the unemployment rate will rise by more and employment will fall by more than CBO currently anticipates. A rise in COVID-19 infections could roil labor markets.

CBO's projection of the labor force participation rate is also subject to considerable uncertainty. If workers who dropped out of the labor force during the pandemic—because of health concerns, child care and other in-home

care responsibilities, or early retirements—reenter the workforce in greater numbers than CBO expects, the growth rate of wages and salaries could decline faster than CBO anticipates. If fewer of those workers reenter the workforce than CBO expects, the elevated growth rate of wages and salaries could persist for longer than CBO currently forecasts.

Productivity Growth

In the longer term, the effects of the pandemic on the growth rate of potential total factor productivity in nonfarm businesses 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. Increased remote work could create opportunities for new businesses and new jobs and could spur sectoral and geographic reallocations that help improve productivity and social and economic welfare. Innovations associated with remote work could lead to substantial reductions in costs and improvements in productivity. 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.

Disruptions to the educational system could have lasting effects on the future productivity of workers. In addition, long-term health risks—including potential long-term effects of COVID-19 infections, exacerbation of the opioid crisis by the pandemic, and the toll of the pandemic 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 rates at which wages and consumer prices will grow. Uncertainty about wage growth is related to uncertainty about economic growth, as well as to how the demand for labor responds to economic growth, how changes in labor demand affect wage growth, and how past inflation feeds into wages in the future. If wage growth is faster than CBO projects, businesses could pass along the cost of those higher wages by raising consumer prices, which might result in higher inflation than the agency expects. But slower-than-expected wage growth might result in lower inflation than CBO expects.

Supply-side disruptions were a key determinant of inflation in 2022. Those disruptions remain a large source of uncertainty in 2023, as businesses continue to recover from supply-side issues, workers continue returning to the labor force, and consumers spend down excess savings accumulated during the pandemic. If supply-side pressures do not continue to recede, inflation could be higher than CBO projects, particularly in key categories such as durable goods, energy goods, and food. But if businesses quickly restock inventory, and workers return to the labor force faster than expected, inflation could be lower than CBO projects.

The price of shelter services, which is affected indirectly by house prices, is also a source of uncertainty. CBO projects that PCE inflation in shelter services will decline in the second half of 2023 as new rental agreements respond to the decline in house prices that began in the second half of 2022, when interest rates rose and demand for homes softened. It is difficult to predict the magnitude and timing of the effect of house prices on inflation in shelter services; that inflation could begin declining sooner or later than CBO projects and could decline by more or less than the agency projects. In turn, aggregate PCE inflation and CPI-U inflation could be lower or higher than CBO projects.

Overall measures of inflation are affected by volatility in energy and food markets. Some potential sources of uncertainty in CBO's forecast for energy and food prices are the duration and severity of the war in Ukraine and the sanctions levied on Russia. If additional countries impose or enforce sanctions on Russia, a major exporter of petroleum and natural gas, that could further drive up energy prices in the United States. Increases in energy prices cause transportation costs to increase and therefore cause the price of goods to increase as retailers recoup production and shipping costs. Therefore, large increases in energy prices could drive inflation in the price of goods even higher. Sanctions on Russian oil could end sooner than expected, lowering energy prices and driving overall inflation lower.

Food prices are a source of much uncertainty in the inflation forecast. The invasion of Ukraine created three potential channels for upward pressure on food prices. First, higher energy prices could further strain supply chains for food by increasing transportation costs, a major input in food prices. Second, because Russia is a major exporter of nitrogen-rich fertilizers used in farming many agricultural

products, continued sanctions on Russian exports could drive food prices higher. Third, Ukraine accounts for a large portion of the world's wheat exports, and it is currently exporting wheat under a United Nations agreement. If Russia withdrew from the grain deal, as it has done once before and warned it could do again, that would put upward pressure on global food prices.

Finally, CBO's projections of inflation depend on inflation expectations. If high inflation lasts longer than the agency expects, inflation expectations could rise more materially, and inflation could be higher than CBO projects. Alternatively, if actual inflation turns out to be below expected inflation, consumers could revise their inflation expectations downward.

The Financial Sector and Asset Prices

The prices of major classes of financial assets—stocks, bonds, and corporate debt—fell during 2022. Credit markets have tightened as a result of actions taken by the Federal Reserve. The market for Treasury securities has become less liquid in recent months, as indicated by a greater-than-usual effect of trades on prices. That lack of liquidity increases uncertainty in the market for Treasury securities. Corporate bond markets face similar risks that could cause general financial conditions to deteriorate. Problems in markets for cryptocurrencies could affect other markets. In addition, geopolitical risks in Russia, Ukraine, and China could disrupt global financial markets.

Demand and prices for housing declined during the final months of 2022 in response to high mortgage interest rates and tighter lending standards. A further tightening of lending standards could worsen those declines and cause households to cut back on their purchases. A sudden drop in consumer spending, coupled with high interest rates, could cause business investment to fall further. Alternatively, the Federal Reserve's path of tightening monetary policy could shift if inflation falls faster than CBO expects. The Federal Reserve could ease monetary policy sooner than currently anticipated, which would ease financial conditions and support asset prices.

Interest Rates and Monetary Policy

The path of monetary policy is uncertain as well. In CBO's projections, the terminal level of the federal funds rate and the duration of the period of tight monetary conditions 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 raise the policy rate higher or leave it high for longer, and interest rates on Treasury securities will probably be higher than CBO projects. But if economic conditions weaken significantly at some point during the next few years, the Federal Reserve may reverse policy rate hikes faster, 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. CBO expects that several factors that pushed term premiums to historically low levels in the decade before the pandemic will dissipate, thus increasing term premiums. If a stronger-than-expected negative correlation between stock and bond returns persists over the coming decade, interest rates on longer-term Treasury securities will be lower than projected. But if inflation is more persistent over the next year or two than the agency expects, increasing the risk of unexpectedly high inflation in the future, then interest rates on longer-term Treasury securities will be higher 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, as well as uncertainty about the effect that such a reduction will have on interest rates.

The path of monetary policy is also uncertain in the longer term. If the Federal Reserve seeks to achieve inflation that is below 2 percent for a time—following the current episode of inflation well above that target—then interest rates could be higher than the agency projects. Alternatively, if the Federal Reserve determines that a rate of inflation higher than 2 percent is more consistent with its statutory mandate from the Congress to promote maximum employment and stable prices, then interest rates could be lower than CBO expects.

Another source of long-term uncertainty is the global economy's longer-term response to the substantial increases in public 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. In addition, changes in foreign demand for U.S. assets or the international role of the dollar could affect interest rates. If, for example, foreign demand for Treasury securities is weaker than CBO projects, 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 economic costs of higher public deficits and debt. 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 are highly uncertain.

Quantifying the Uncertainty in CBO's Projections

CBO's forecast of the economy, especially its projections of nominal GDP, is a primary input in the agency's baseline budget projections. As a result, much of the uncertainty of the baseline budget projections reflects the uncertainty of the economic forecast.

To quantify the uncertainty of its economic projections for the next five years, CBO conducted 1,000 simulations of several key macroeconomic variables to produce probability distributions for the future path of those variables.¹⁵ On the basis of that analysis, the agency estimates that there is an approximately two-thirds chance that the annual rate of real GDP growth (on a calendar year basis) will be between -1.5 percent and 1.7 percent in 2023 and between 0.7 percent and 3.6 percent in 2027. In 2023, there is a roughly two-thirds chance that the unemployment rate will be between 3.8 percent and 5.7 percent, that the rate of PCE inflation will be between 2.1 percent and 4.7 percent, and that the interest rate on 10-year Treasury notes will be between 3.2 percent and 4.6 percent, CBO estimates (see Figure 2-7).

Comparison With CBO's May 2022 Economic Projections

CBO has compared its current projections with those published in May 2022 (see Table 2-4). The comparison

illuminates aspects of the current projections and highlights the kinds of uncertainty that affect all such projections.

Inflation

The agency's current projections of inflation for 2023 are substantially higher than last spring's projections. In May, CBO projected that inflation in the PCE price index would be 2.3 percent in 2023, whereas the current projection of the increase in that index in 2023 is 3.3 percent. Similarly, the agency previously forecast that inflation in the CPI-U would be 2.7 percent in 2023, whereas the current projection of inflation for that index in 2023 is 4.0 percent.

Those large upward revisions are the result of momentum in recent historical inflation data that suggests more persistence in inflation across many sectors of the economy than CBO anticipated last May. Additionally, supply-side disruptions have remained greater than CBO previously forecast. In CBO's current projections, price increases for most goods and services, especially shelter services, are larger than the agency expected them to be last May.

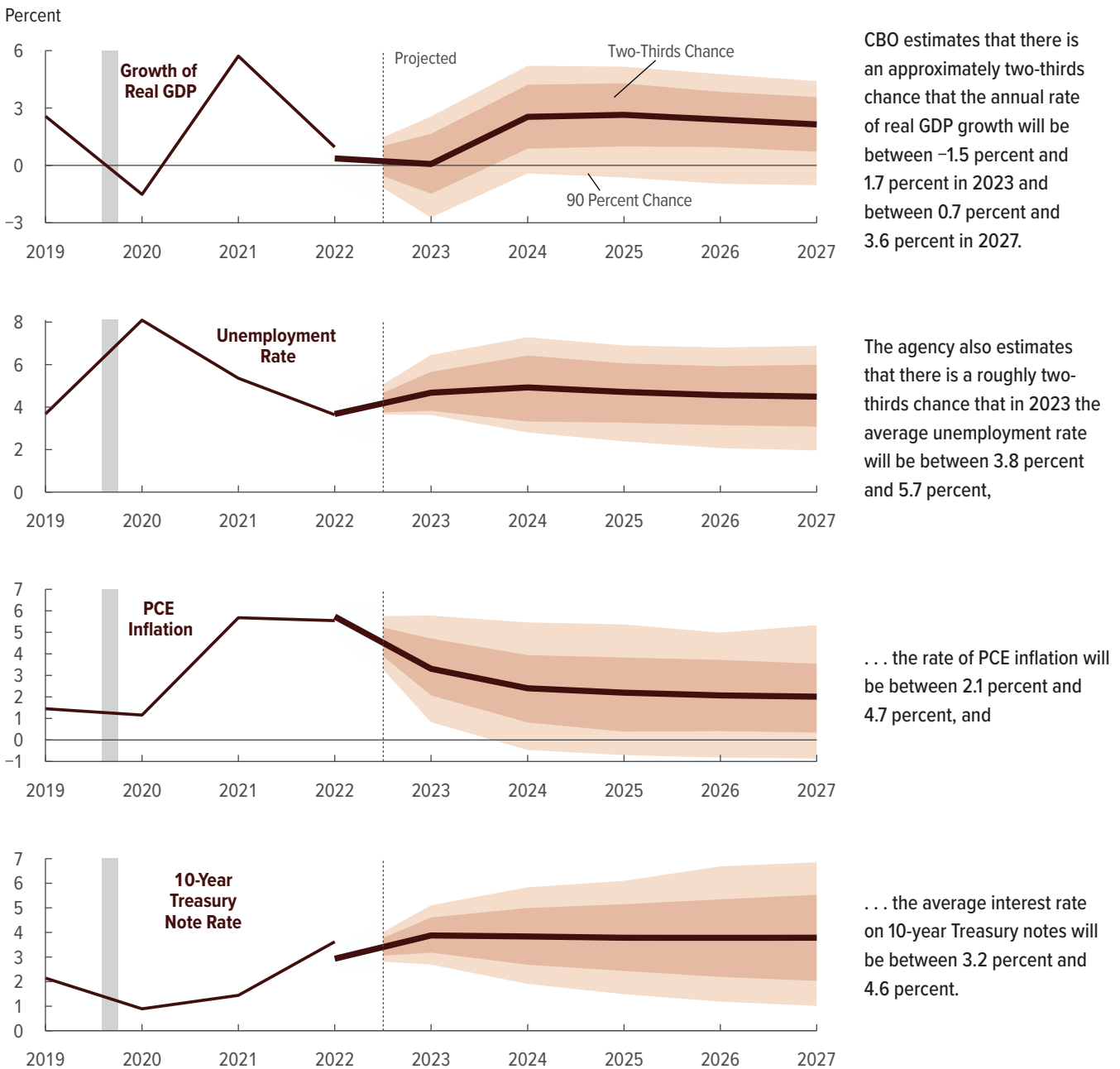
CBO's projections of PCE and CPI-U inflation in 2024 are also higher than they were last May. A large driver of the agency's revisions is inflation in the price of services; last May, CBO projected that the PCE price index for services would grow by 2.9 percent in 2024, whereas the current projection of the increase in that index in 2024 is 3.4 percent. The services category of the PCE price index includes several wage-sensitive components of inflation, such as medical services, restaurant meals, and other hospitality services. CBO's upward revision to inflation in the services category reflects the currently tight conditions in the labor market as well as the agency's projections of persistently high wage growth. The services category of the PCE price index also includes the price of shelter services; in CBO's projections, inflation in that category remains above its long-run trend into 2025. The agency's projections of CPI-U inflation have similarly been revised upward across categories.

CBO's projections of PCE inflation in 2025 and 2026 are slightly higher than they were in the agency's May projections. CBO's projections of CPI-U inflation in 2025 and 2026 are slightly lower than they were in the agency's May projections. PCE inflation and CPI-U inflation were revised in opposing directions because the CPI-U places greater weight on prices of shelter services.

15. For a discussion of the methods used to quantify uncertainty, see Congressional Budget Office, *CBO's Current View of the Economy in 2023 and 2024 and the Budgetary Implications* (November 2022), Box 1, www.cbo.gov/publication/58757.

Figure 2-7.

Uncertainty of CBO’s Projections of Output, Unemployment, Inflation, and Interest Rates



Data sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve. See www.cbo.gov/publication/58848#data.

To quantify the uncertainty of its projections for the next five years, CBO conducted 1,000 simulations of several key macroeconomic variables to produce probability distributions for the future path of those variables. For discussion of the methods used to quantify uncertainty, see Congressional Budget Office, “Estimating the Uncertainty of the Economic Forecast Using CBO’s Expanded Markov-Switching Model” (January 2023), www.cbo.gov/publication/58884; and “Estimating the Uncertainty of the Economic Forecast Using CBO’s Bayesian Vector Autoregression Model” (January 2023), www.cbo.gov/publication/58883.

Real values are nominal values that have been adjusted to remove the effects of inflation. Growth of real GDP is measured from the fourth quarter of one calendar year to the fourth quarter of 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 inflation rate is based on the price index for personal consumption expenditures. Inflation is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Values for 2019 to 2022 (the thin lines) reflect data available from the Bureau of Economic Analysis and the Bureau of Labor Statistics in early February 2023. The data contain values for the fourth quarter of 2022, which were not available when CBO developed its current projections for the next five years (the thick lines) and analyzed their uncertainty.

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



Table 2-4.

CBO's Current and Previous Economic Projections for Calendar Years 2022 to 2032

	Annual Average					
	2022	2023	2024	2022–2026	2027–2032	Overall, 2022–2032
Percent						
Change From Fourth Quarter to Fourth Quarter						
Real GDP ^a						
February 2023	0.4	0.1	2.5	1.6	1.9	1.8
May 2022	3.1	2.2	1.5	1.9	1.7	1.8
Nominal GDP						
February 2023	6.7	3.1	4.9	4.8	3.9	4.3
May 2022	7.4	4.5	3.6	4.5	3.9	4.1
PCE Price Index						
February 2023	5.7	3.3	2.4	3.1	2.0	2.5
May 2022	4.0	2.3	2.1	2.5	2.0	2.2
Core PCE Price Index ^b						
February 2023	4.8	3.4	2.7	3.1	2.0	2.5
May 2022	3.8	2.5	2.2	2.5	2.1	2.3
Consumer Price Index ^c						
February 2023	7.5	4.0	2.4	3.6	2.2	2.9
May 2022	4.7	2.7	2.3	2.9	2.4	2.6
Core Consumer Price Index ^b						
February 2023	6.2	4.2	2.8	3.5	2.3	2.8
May 2022	4.4	2.9	2.5	2.9	2.4	2.6
GDP Price Index						
February 2023	6.3	3.0	2.3	3.1	2.0	2.5
May 2022	4.0	2.3	2.1	2.5	2.1	2.3
Employment Cost Index ^d						
February 2023	5.4	4.5	3.8	4.1	3.2	3.6
May 2022	5.4	4.1	3.7	4.0	3.1	3.5
Real Potential GDP ^a						
February 2023	1.8	1.7	1.7	1.8	1.8	1.8
May 2022	1.9	1.9	1.9	1.9	1.8	1.8

Continued

Prices of those services make up 30 percent of the core CPI-U but only 17 percent of the core PCE price index. In 2025 and 2026, inflation in the shelter services category is projected to be well below its long-run trend because of a lagged response to the expected decline in house prices; that lower inflation places downward pressure on overall inflation, but it affects the CPI-U more than the PCE price index.

CBO's current projections of inflation after 2026 are similar to the agency's projections from last spring. 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. In CBO's projections, a combination of the Federal Reserve's policy actions, the easing of supply-side issues, and the continuation of fairly well-anchored inflation expectations keeps inflation near that 2 percent goal after 2026.

Interest Rates

CBO now expects both short- and long-term interest rates over the first half of the coming decade to be higher, on average, than it forecast last May. The upward revision in rates over the 2022–2026 period mostly reflects the upward revision to inflation. The agency now anticipates that, in response to recent inflation that was higher and more broad-based than expected, the Federal Reserve will raise the target range for the federal funds rate higher than previously projected. The more aggressive tightening of monetary conditions means that short-term rates are projected to be higher, on average, over the 2022–2026 period than CBO expected in May. It also means that long-term rates, which partly reflect the expected path of short-term rates, will be higher, on average.

The agency's forecasts of both short- and long-term interest rates, on average, over the later years of the projection

Table 2-4.

Continued

CBO's Current and Previous Economic Projections for Calendar Years 2022 to 2032

Percent

	2022	2023	2024	Annual Average		Overall, 2022–2032
				2022–2026	2027–2032	
				Annual Average		
Unemployment Rate						
February 2023	3.7	4.7	4.9	4.5	4.5	4.5
May 2022	3.8	3.5	3.7	3.8	4.5	4.2
Interest Rates						
3-month Treasury bills						
February 2023	2.0	4.5	3.2	2.9	2.3	2.6
May 2022	0.9	2.0	2.5	2.1	2.3	2.2
10-year Treasury notes						
February 2023	2.9	3.9	3.8	3.6	3.8	3.7
May 2022	2.4	2.9	3.1	3.0	3.8	3.4
Tax Bases (Percentage of GDP)						
Wages and salaries						
February 2023	43.9	44.3	44.5	44.3	44.0	44.2
May 2022	44.7	44.2	44.1	44.2	44.0	44.1
Domestic corporate profits ^e						
February 2023	9.7	7.9	7.5	8.2	8.1	8.1
May 2022	9.7	9.3	8.8	8.9	7.8	8.3

Data sources: Congressional Budget Office; Bureau of Labor Statistics; Federal Reserve. See www.cbo.gov/publication/58848#data.

For the February 2023 projections, the values shown are based on the economic forecast that CBO completed on December 6, 2022.

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

- a. Real values are nominal values that have been adjusted to remove the effects of inflation.
- 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 the effect of tax rules on depreciation allowances and to exclude the effects of changes in prices on the value of inventories.

period are roughly the same as they were last May. The effects of faster growth of total factor productivity and higher capital income as a fraction of total income, which the agency estimates put upward pressure on interest rates, are largely offset by higher domestic and foreign rates of saving and higher risk premiums, which the agency estimates put downward pressure on interest rates.

Actual Output, Potential Output, and Income

The agency's projection of real GDP growth for 2023, 0.1 percent, is considerably weaker than last spring's forecast of 2.2 percent growth. The downward revision to growth is broad-based, stemming from slower growth in consumer spending, business fixed investment, residential investment, and exports. Those revisions to real GDP growth for 2023 largely result from two sources. First, larger increases in interest rates and a bigger fall in equity prices during 2022 and early 2023 than CBO

anticipated in May put downward pressure on consumer spending and the interest-sensitive sectors of the economy, such as private investment and exports. Second, CBO now projects slower growth in real exports as a result of a downward revision to the rate of projected economic growth among major U.S. trading partners and an upward revision to the foreign exchange value of the dollar. Some of the weakness in domestic demand spills over into imports, lessening the net decline in GDP.

Real GDP is now projected to grow more rapidly during the 2024–2026 period than in CBO's May forecast as the economy rebounds from slow growth in 2023 and as the Federal Reserve unwinds a higher level of interest rates in 2023 than previously projected. Annual growth projected over that period now averages 2.5 percent rather than the 1.5 percent expected last spring. The additional growth is concentrated in business fixed

investment, residential investment, and exports. Growth during the entire 2022–2026 period averages 1.6 percent in the current projection, compared with the 1.9 percent expected last May.¹⁶

In the second part of the projection period, growth of real GDP is forecast to be slightly faster than the agency expected last May. Annual growth over the 2027–2032 period now averages 1.9 percent rather than the 1.7 percent projected last spring. That upward revision stems from faster expected growth of potential GDP. Updated data show significantly lower business investment in 2022 than CBO projected last May, and the agency now projects significantly lower investment over the next year than it had projected previously. That lower business investment slows growth in potential labor force productivity over the first part of the projection period but raises it slightly in the second part as investment recovers from a lower base. CBO now estimates that average growth in potential labor force productivity will be 0.2 percentage points lower over the 2022–2026 period and 0.1 percentage point higher over the 2027–2032 period than the agency projected last May.

CBO also raised its estimate of growth of the potential labor force because net immigration is now projected to be higher than previously forecast. Increased population growth leads to increased growth of the labor force. As a result, the agency now estimates that potential output growth over the 2027–2032 period will be about 0.1 percentage point higher than it projected last May. The combined effect of the changes in investment and population data on potential output is an average annual growth rate of roughly 1.8 percent over the 2022–2032 period, which is practically unchanged from last May's forecast.

The Labor Market

CBO's current projection of the average unemployment rate over the 2022–2026 period is higher than it was in the earlier forecast—now 4.5 percent, up from 3.8 percent. That upward revision stems from slower projected economic growth. The current projection of the labor force participation rate over the period is 62.1 percent, the same as last May. CBO's projection of the average unemployment rate over the 2027–2032 period, 4.5 percent, is the same as last May.

CBO also made an upward revision to its projection of the labor force participation rate over the 2027–2032 period; it now averages 61.6 percent over that period, up from 61.5 percent in May's projections. That revision is mainly attributable to an upward revision to CBO's projection of net immigration that increases the share of the population ages 25 to 54 relative to CBO's projection last year. 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.

Comparison With Other Economic Projections

Part of the variation 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. In addition, 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. This section compares CBO's forecast with those of the *Blue Chip* participants, the *Survey of Professional Forecasters*, and the Federal Reserve.

The *Blue Chip* Forecasts

CBO's economic projections for 2023 and 2024, other than those for consumer price inflation, are similar to the forecasts of the more than 40 private-sector economists published in the January 2023 *Blue Chip Economic Indicators* (see Figure 2-8).¹⁷ In particular, the agency's projections of real GDP growth and the unemployment rate for those years are within the middle two-thirds of the range of *Blue Chip* forecasts. CBO's projections of inflation, as measured by the GDP price index, are within the middle two-thirds of the ranges of *Blue Chip* forecasts for 2023 and 2024. However, the agency's projections of inflation in consumer prices (as measured by the CPI-U) are above the middle two-thirds of the ranges of *Blue Chip* forecasts for 2023 and 2024. CBO's projections of interest rates on 3-month Treasury bills and on 10-year Treasury notes for 2023 and 2024 fall within the middle two-thirds of the ranges of *Blue Chip* forecasts.

The *Survey of Professional Forecasters*

CBO's economic projections can also be compared—over more years—with the projections of the roughly 40 forecasters participating in the Federal Reserve Bank

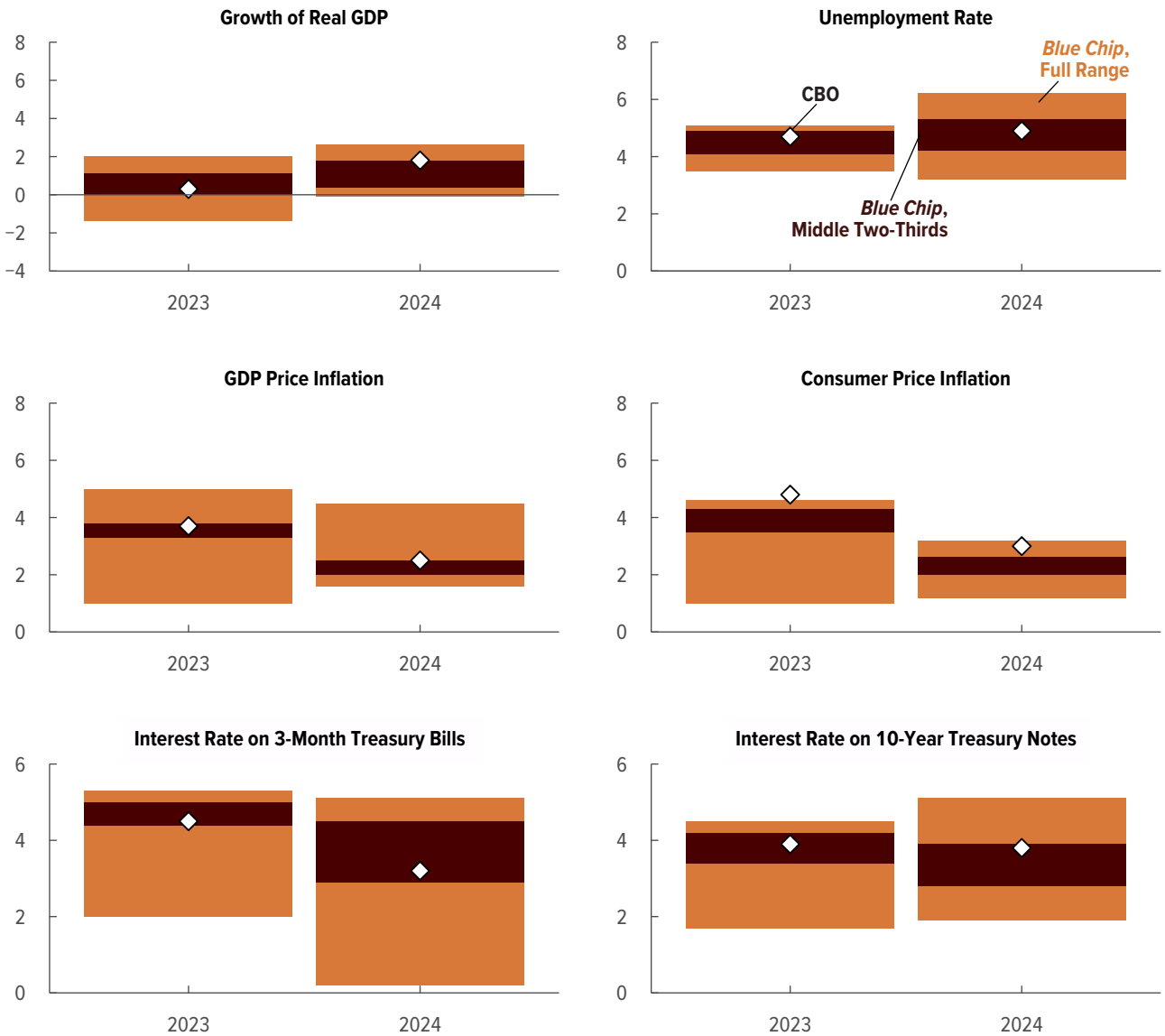
16. In this section, GDP growth in 2022 is from the forecast that CBO completed on December 6, 2022.

17. See Wolters Kluwer, *Blue Chip Economic Indicators*, vol. 48, no. 1 (January 10, 2023).

Figure 2-8.

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. 48, no. 1 (January 10, 2023). See www.cbo.gov/publication/58848#data.

The full range of forecasts from the *Blue Chip* survey is based on the highest and lowest of the more than 40 forecasts in the survey. 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 inflation. 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.

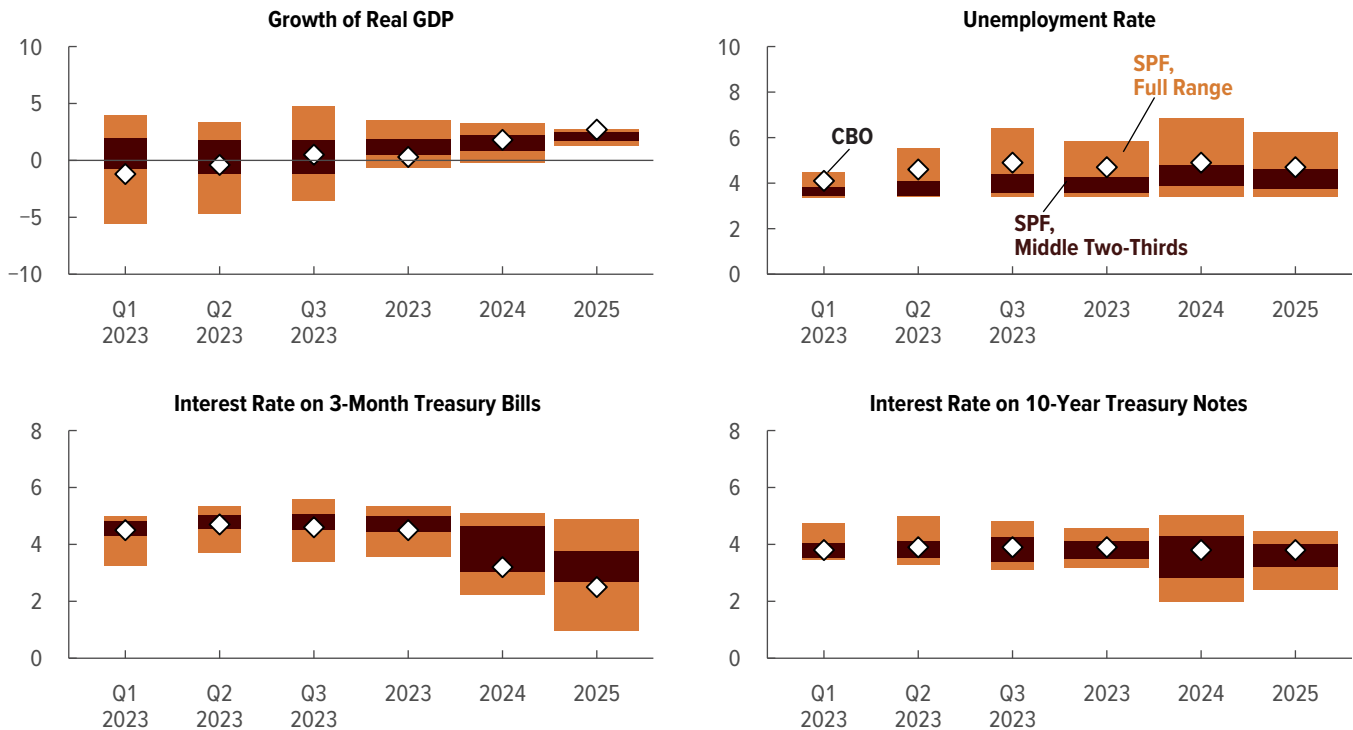
The unemployment rate is the number of people not working who are available for work and are either seeking work or expecting to be recalled from a temporary layoff, expressed as a percentage of the labor force. The unemployment rate and interest rates are calendar year averages.

GDP = gross domestic product.

Figure 2-9.

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: First Quarter 2023* (February 10, 2023), <https://tinyurl.com/y2xctkwk>. See www.cbo.gov/publication/58848#data.

The full range of forecasts from the *Survey of Professional Forecasters* is based on the highest and lowest of the roughly 40 forecasts in the survey. 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 inflation. 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*.

of Philadelphia's *Survey of Professional Forecasters* (SPF).¹⁸ CBO's projection of real GDP growth for calendar year 2023 is slightly below the middle two-thirds of the range of the SPF forecast (see Figure 2-9). The agency's projection of real GDP growth for 2024 is within that range, but the agency's projection of real GDP growth for 2025 is slightly above the middle two-thirds of the range in the SPF. In CBO's projections, the probabilities that the unemployment rates will be 6.0 percent or more are greater than the average probabilities for those ranges in the SPF (see Table 2-5). CBO's projections of interest

rates on 3-month Treasury bills and 10-year Treasury notes are within the middle two-thirds of the ranges of SPF forecasts except for 2025, when CBO expects lower short-term rates.

The agency's projections of inflation in consumer prices (as measured by the PCE price index) are within the middle two-thirds of the ranges of the SPF forecasts for 2023, 2024, and the 2025–2027 and 2028–2032 periods (see Figure 2-10). CBO's projections of inflation in the CPI-U price index are also within the middle two-thirds of the ranges of the SPF forecasts for 2024 and the 2028–2032 period but are above that range in 2023 and below that range in the 2025–2027 period.

18. See Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters: First Quarter 2023* (February 10, 2023), <https://tinyurl.com/y2xctkwk>.

Table 2-5.

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

Percent

	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
Unemployment Rate (Range)						
Less than 3.0 percent	0	3	9	3	12	3
3.0 percent to 3.9 percent	28	38	22	27	18	28
4.0 percent to 4.9 percent	41	42	22	46	28	43
5.0 percent to 5.9 percent	20	13	22	18	25	20
6.0 percent or more	11	4	25	6	17	5

Data sources: Congressional Budget Office; Federal Reserve Bank of Philadelphia, “Probability Variables: Survey of Professional Forecasters” (February 10, 2023), <https://tinyurl.com/4s2wmz8m>. See www.cbo.gov/publication/58848#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; and Congressional Budget Office, “Estimating the Uncertainty of the Economic Forecast Using CBO’s Expanded Markov-Switching Model” (January 2023), www.cbo.gov/publication/58884.

SPF = *Survey of Professional Forecasters*.

The Federal Reserve

CBO’s forecast can also be compared with forecasts made by the Federal Open Market Committee of the Federal Reserve. The agency’s projection of real GDP growth for 2023 is below the central tendency in the Federal Reserve’s most recent *Summary of Economic Projections*, but its projections of real GDP growth for 2024 and 2025 are above the central tendency (see Figure 2-11).¹⁹

19. See Board of Governors of the Federal Reserve System, *Summary of Economic Projections*, “Table 1. Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents, Under Their Individual Assumptions of Projected Appropriate Monetary Policy, December 2022” (December 14, 2022), p. 2, <https://tinyurl.com/bdfk8j7> (PDF). 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.

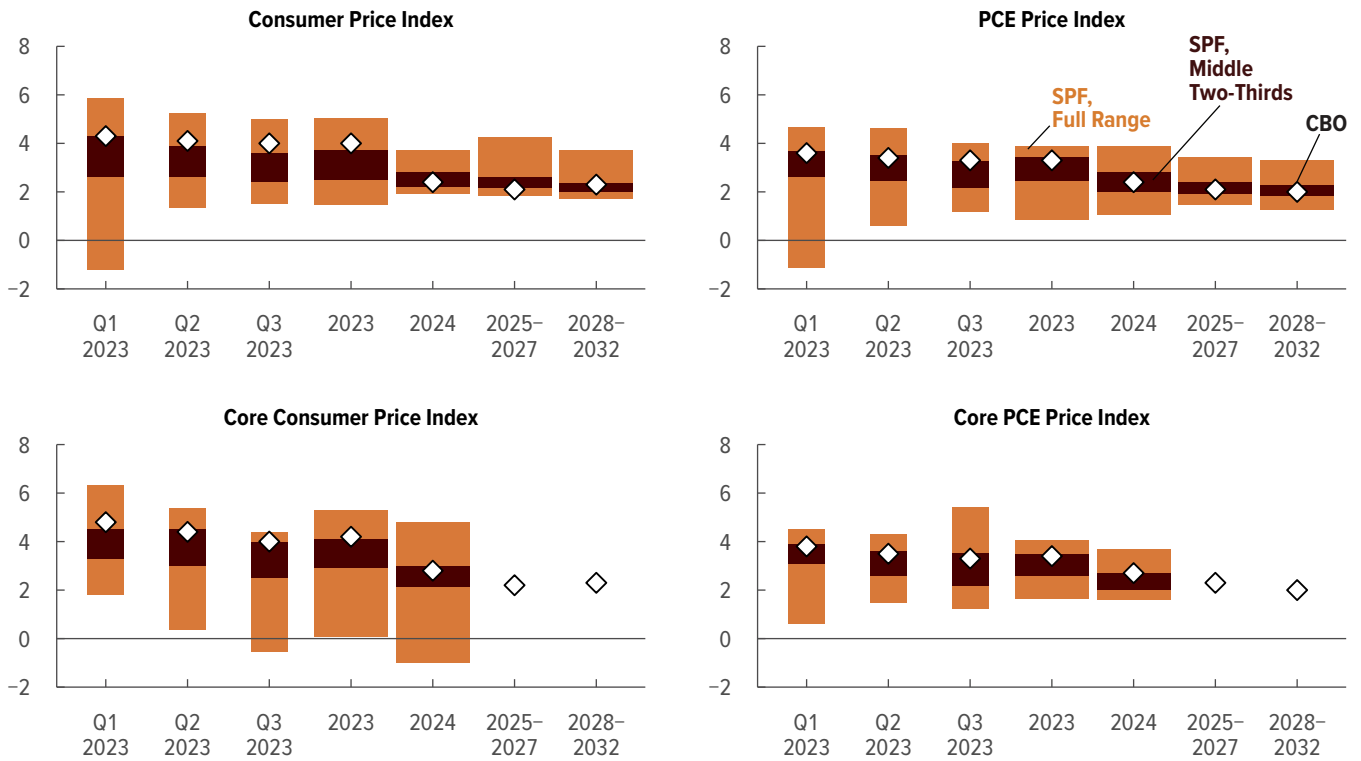
CBO’s projection of real GDP growth in the longer term is within the central tendency in the Federal Reserve’s forecasts. CBO’s forecasts of the unemployment rate are above the central tendency in 2023 and in the longer term but are within the central tendency in 2024 and 2025. The agency’s projections of PCE inflation are within the central tendency in the Federal Reserve’s forecasts. CBO’s projections of the federal funds rate are near or below the low end of the range of the Federal Reserve’s forecasts in 2023, 2024, and 2025.

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 likely range of 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 that person’s assessment of appropriate monetary policy, and the Federal Reserve reports ranges of those modal values.

Figure 2-10.

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: First Quarter 2023* (February 10, 2023), <https://tinyurl.com/y2xctkwk>. See www.cbo.gov/publication/58848#data.

The full range of forecasts from the *Survey of Professional Forecasters* is based on the highest and lowest of the roughly 40 forecasts in the survey. 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.

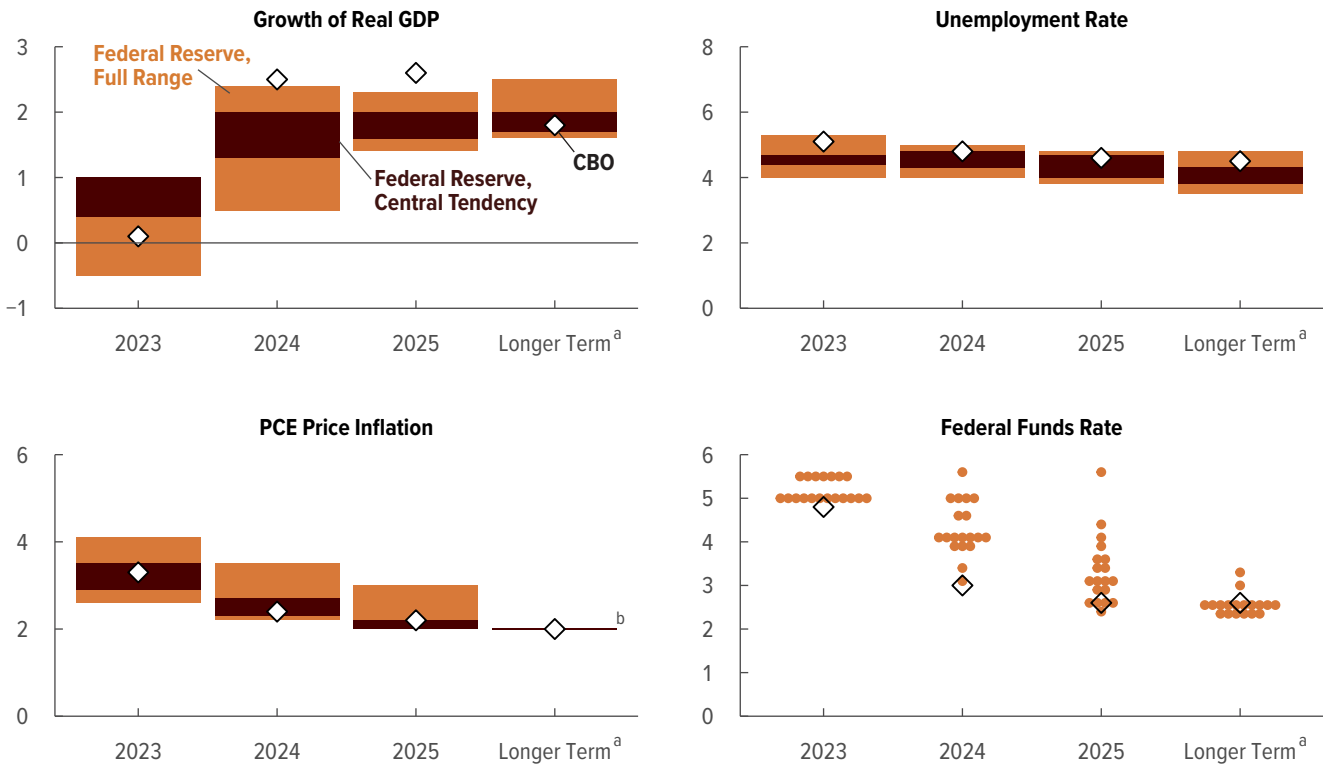
Multiyear averages are calculated using the 5-year and 10-year averages reported in the SPF. The SPF did not provide forecasts of inflation in the core consumer price index or the core PCE price index beyond 2024.

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

Figure 2-11.

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, *Summary of Economic Projections*, “Table 1. Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents, Under Their Individual Assumptions of Projected Appropriate Monetary Policy, December 2022” (December 14, 2022), p. 2, <https://tinyurl.com/bdfk8j7> (PDF). See www.cbo.gov/publication/58848#data.

The full range of forecasts from the Federal Reserve is based on the highest and lowest of the 19 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 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 December 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.

Real values are nominal values that have been adjusted to remove the effects of inflation.

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. For CBO, longer-term projections are values for the last quarter of 2033. 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.
- b. All Federal Reserve officials forecast a 2 percent rate of inflation in the longer term.