



Chapter 2

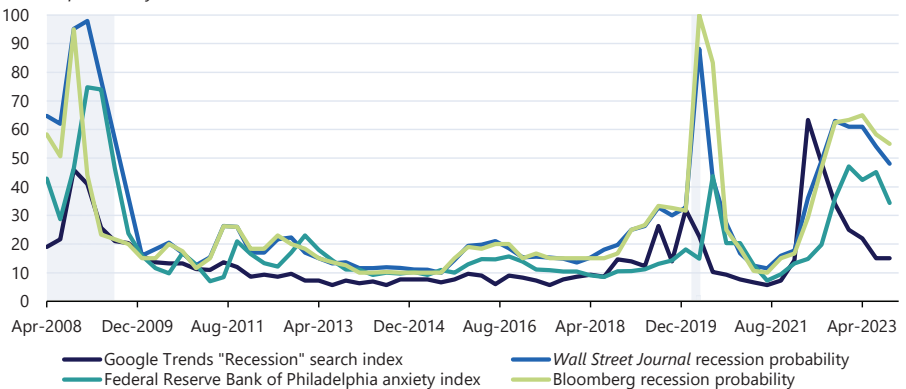
The Year in Review and the Years Ahead

At the start of 2023, many macroeconomic forecasters expected the United States' economy to dip into a recession later that year (figure 2-1). They also predicted that 2023 would be characterized by an anemic growth rate. The economy was instead surprisingly resilient, as measured by indicators including real gross domestic product (GDP), the unemployment rate, real personal consumption expenditures, real disposable personal income, and real private nonresidential investment (figure 2-2). This resilience was especially notable for coinciding with slowing inflation.

Trends—including fiscal drag, rising interest rates, and mounting geopolitical risks—had been perceived as major economic headwinds, informing these pessimistic forecasts. Additional fundamentals—such as a low saving rate and lackluster consumer sentiment—risked exacerbating reduced

Figure 2-1. Recession Probability Indicators, 2008–23

Percent probability or index: June 2022 = 100



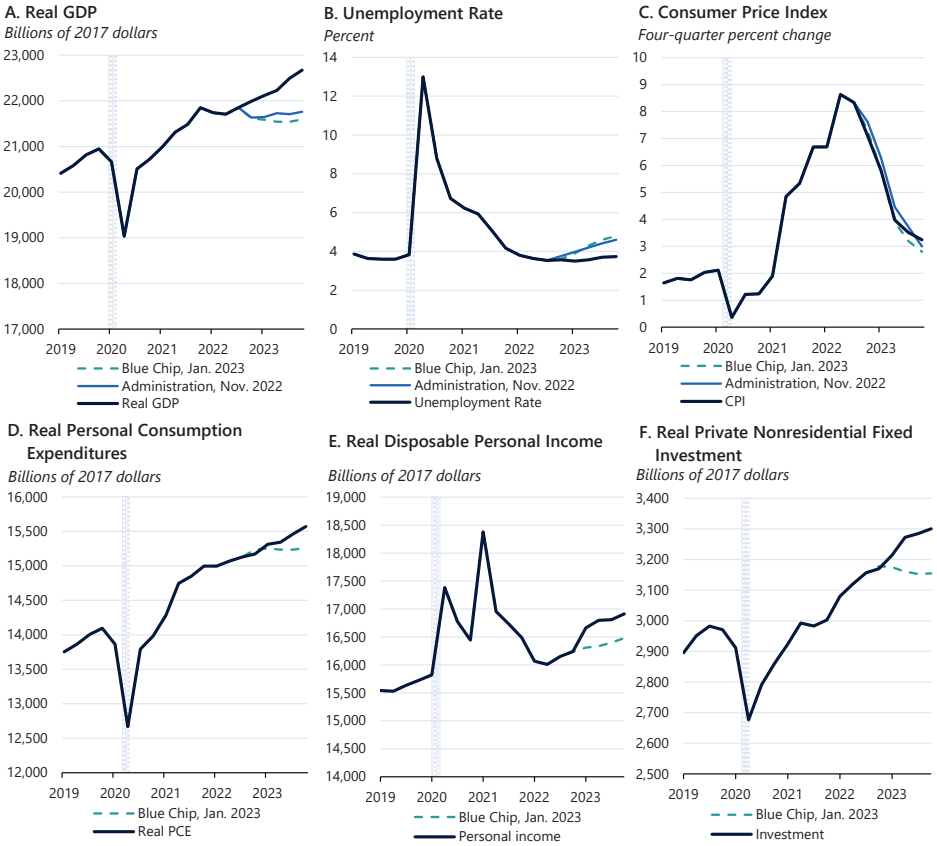
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Sources: Federal Reserve Bank of Philadelphia; *Wall Street Journal*; Google; Bloomberg; CEA calculations.

Note: Gray bars indicate recessions. Google Trends data are indexed relative to their peak month, June 2022, and are data from January 1, 2004, to December 31, 2023, downloaded on January 11, 2024. Data from the Federal Reserve Bank of Philadelphia indicate Q2 of the given year. Anxiety index represents the probability of a decline in real GDP for the subsequent quarter.

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Figure 2-2. Selected U.S. Economic Measures, 2019–23



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Sources: Blue Chip Economic Indicators; Bureau of Economic Analysis; Bureau of Labor Statistics; CEA calculations.
 Note: CPI = Consumer Price Index. All values are seasonally adjusted. Years indicate Q1 of the corresponding year. Administration forecast was finalized in November 2022 but published in the 2023 *Economic Report of the President* and the Fiscal Year 2024 Budget. Gray bars indicate recessions.
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aggregate demand, rising unemployment, and cutbacks in consumer spending.¹ Meanwhile, the spring 2023 banking crisis raised concerns about diminished credit availability and, in tandem with rising interest rates and fading fiscal support, reinforced worries of a coming recession—the so-called hard-landing scenario. A yield curve inversion in late 2022 and early

¹ A saving rate below the desired long-run rate may force consumers to curb spending if incomes do not rise. The effects of net worth—otherwise neglected in this argument—are reviewed in box 2-1 later in this chapter.

2023 was consistent with these forecasts, signaling that financial markets may have also been anticipating a recession.²

The U.S. economy not only defied these 2023 forecasts but it even progressed at a significant pace.³ In retrospect, the economy's marked slowdown in 2022 appears to have reflected temporary supply constraints after the strong rebound in 2021, rather than an impending recession. The level of real GDP in 2023 even exceeded some forecasts from before the COVID-19 pandemic—including those of the Congressional Budget Office (CBO)—and was boosted in part by strong continued consumer spending and a revival in manufacturing structures investment (CBO n.d.). State and local purchases also grew at a robust pace of 4.5 percent in 2023.⁴ Meanwhile, sound household balance sheets in recent years and a strong labor market have allowed U.S. consumers to increase their spending at a pace closely resembling the average pace in prior expansions.⁵ In 2023, the unemployment rate edged up slightly from near-record lows, but remained below 4 percent for the entire year. Labor force participation rates also increased from 2022 to 2023, both in the aggregate and for men, women, and across most age and racial groups. Meanwhile, progress in lowering inflation was substantial. From 2022 to 2023, headline Consumer Price Index (CPI) inflation decreased by 2 percentage points and core CPI inflation, which excludes the more volatile categories of energy and food, decreased by 3 percentage points. Declining inflation during a period of accelerating real activity reinforces the hypothesis that the resolution of supply issues—both supply chains and labor supply—has played an important role in reshaping the economy away from the perceived trends that influenced 2023 forecasts. These developments in

² The yield curve is said to be “inverted” when shorter-term interest rates (e.g., the federal funds rate) exceed longer-term rates (e.g., the 10-year Treasury rate). While these inversions are infrequent, they often precede recessions.

³ See table 2-1 later in this chapter.

⁴ Unless otherwise stated, the yearly growth rate is calculated on a Q4/Q4 basis.

⁵ See box 2-1 later in this chapter.

2023—a resilient labor market and strong activity coupled with declining inflation—are consistent with a “soft landing” scenario.

But challenges remain. Elevated real interest rates compared with earlier during the pandemic—against the backdrop of a labor market that appears to have rebalanced—could reduce investment in rate-sensitive sectors. In addition, the impact of geopolitical conflicts on markets and supply chains remains uncertain. To the extent that consumer attitudes respond to price levels rather than, or in addition to, inflation, consumer sentiment could remain weaker than economic data would predict, since prices are unlikely to broadly decline outright. However, recent real wage gains could potentially help support both confidence and consumer spending.

This chapter begins with a review of the economy in 2023. It first examines the acceleration in real GDP and its sources, and then surveys major labor market developments, highlighting their consistency with the “soft landing” scenario. Next, the chapter describes recent progress in disinflation. It then describes developments in financial markets, exploring both potential upside and downside risks. Finally, the chapter reviews the forecast underpinning the President’s Fiscal Year 2025 Budget and summarizes the near-term and long-term outlooks.

The Year in Review: The Continuing Recovery

This section describes the continued postpandemic recovery in 2023 and the easing of supply chain bottlenecks, explores the state of demand and supply rebalancing in the labor market, and provides updates on the progress of disinflation over the past year.

Output in 2023: A Return to Normal Growth

Real GDP accelerated to a pace of 3.1 percent over the four quarters of 2023, somewhat above the average growth of about 2.4 percent in the expansion period before the COVID-19 pandemic, and higher than the anemic 0.7 percent pace in 2022:Q4. Table 2-1 disaggregates real GDP growth into its major components.

Table 2-1. Real GDP Growth and Its Components, 2023:Q4

Component	Q4/Q4 Growth (percent)	Contribution to Q4/Q4 GDP Growth (percentage points)	Contribution to Q4/Q4 GDP Growth, Average from 2010 to 2019 (percentage points)
	(1)	(2)	(3)
Total	3.1	3.1	2.4
Consumer spending	2.6	1.8	1.6
Goods	3.5	0.8	0.8
Durables	6.1	0.5	0.4
Motor vehicles and parts	4.1	0.1	0.1
Nondurables	2.2	0.3	0.3
Services	2.2	1.0	0.8
Investment	1.8	0.3	0.9
Business fixed investment	3.1	0.5	0.9
Nonresidential investment	4.1	0.6	0.7
Structures	14.8	0.4	0.1
Equipment	-0.1	0.0	0.4
Intellectual property	2.6	0.1	0.3
Residential investment	-0.1	0.0	0.1
Change in private inventories	-	-0.2	0.1
Net exports	-	0.3	-0.1
Exports	2.1	0.2	0.4
Imports	-0.2	0.0	-0.6
Government	4.3	0.7	0.0
Federal	4.0	0.3	0.0
Defense	3.3	0.1	0.0
Nondefense	4.7	0.1	0.0
State and local	4.5	0.5	0.0

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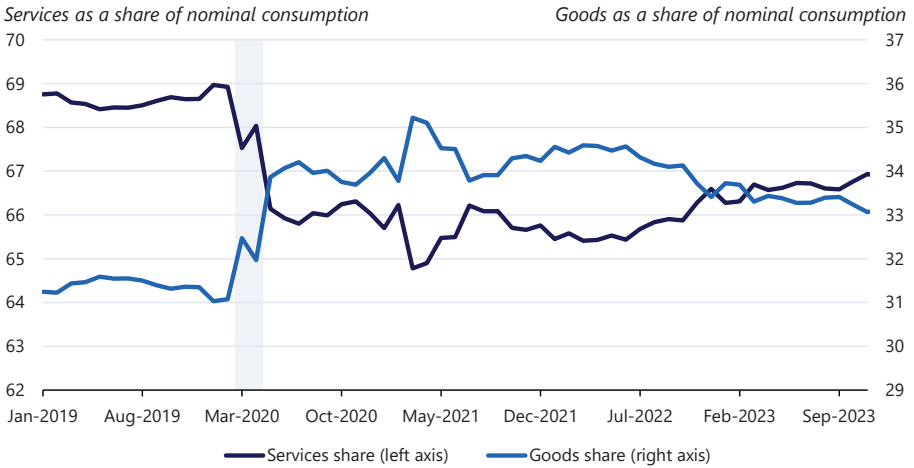
Sources: Bureau of Economic Analysis; CEA calculations.

Note: GDP = gross domestic product. Column 2 lists the contribution of each component to the annual rate of growth of real GDP. These may not precisely sum to totals because of approximations to the formulas used in the National Income and Product Accounts. Column 3 lists the average GDP growth and contribution for the time period listed.

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Consumer spending. Resilience in consumer spending (personal consumption expenditures, or PCE) largely accounts for the increase in real GDP growth over the past year. Spending growth increased across all major subcategories of consumption. Goods PCE, which has run ahead of its pre-pandemic trend since the third quarter of 2020, grew 3.5 percent in 2023 after declining in 2022. And while both durable and nondurable consumption grew, the former (including notable growth in motor vehicles) is responsible for the lion’s share of the growth in goods consumption. Real services PCE also grew in 2023, at a rate similar to its growth in 2022. Figure 2-3 illustrates how the shares of services and goods consumption as a portion

Figure 2-3. Goods' and Services' Shares of Personal Consumption



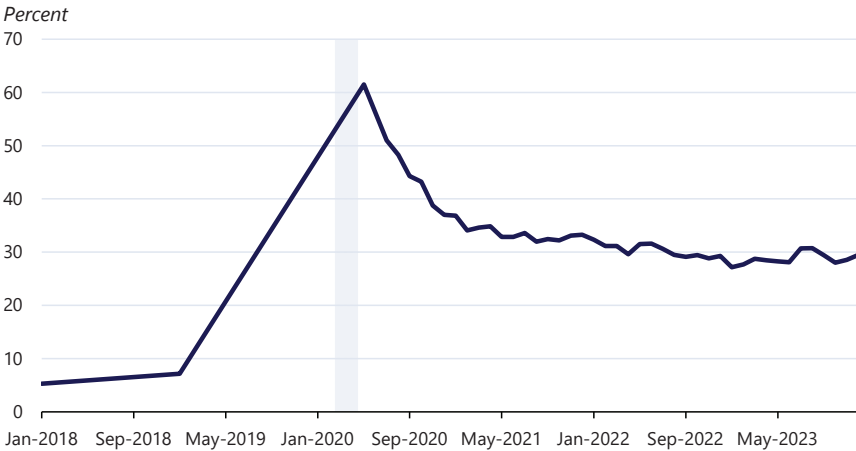
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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Gray bars indicate recessions.

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Figure 2-4. Share of U.S. Employees Working from Home



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Source: Barrero, Bloom, and Davis (2023).

Note: Gray bars indicate recessions.

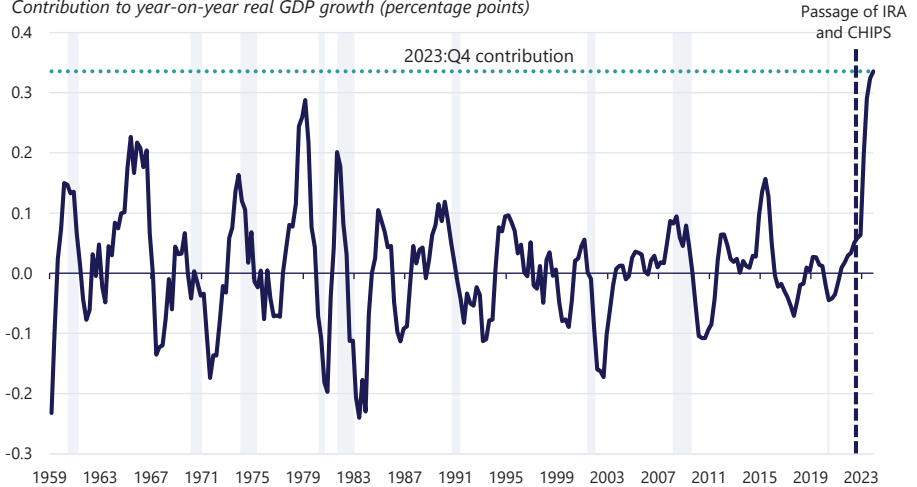
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of total consumption have been sluggishly reverting to their prepandemic trends. Future years' data will indicate whether a structural, long-lasting shift in consumer preferences is under way.

One factor that may help explain such a pattern is the sustained increase in remote work since 2020 (figure 2-4). People working from home

Figure 2-5. Real Private Fixed Investment in Manufacturing Structures, 1959–2023

Contribution to year-on-year real GDP growth (percentage points)



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: IRA = Inflation Reduction Act; CHIPS = Creating Helpful Incentives to Produce Semiconductors—or the CHIPS and Science Act.

Gray bars indicate recessions.

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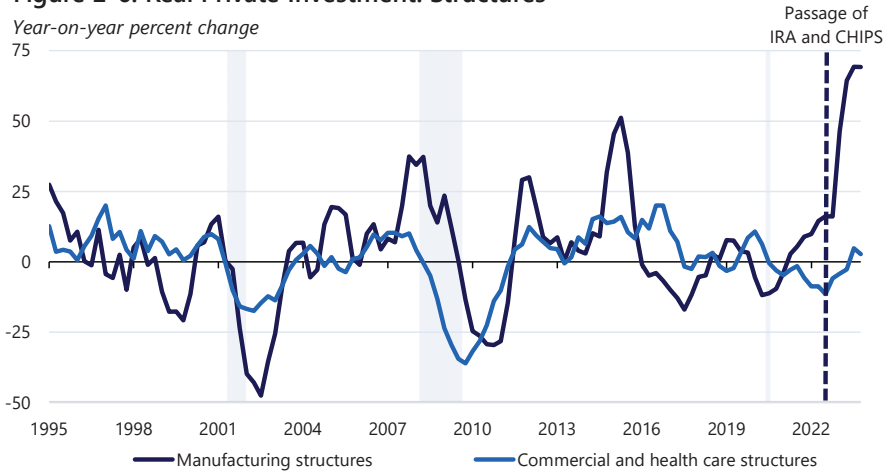
may tend to spend more on goods (e.g., groceries and home improvement) than on services (including restaurants and transportation).

Investment. Real private fixed investment increased 3.1 percent during the four quarters of 2023, a growth rate slower than the norm for the period before the COVID-19 pandemic. Residential investment continued to be a drag on GDP, as high mortgage rates and the short supply of single-family homes weighed on the housing market (see chapter 4 of this *Report*).

In contrast, investment in nonresidential structures boomed last year, increasing 14.8 percent, the fastest clip seen since 2014. A combination of factors likely drove this outcome. First, the shift to goods consumption during the pandemic caused businesses to both rethink their supply chains and consider expanding domestic production capacity. Meanwhile, the Inflation Reduction Act (IRA) and the CHIPS and Science Act have strongly incentivized domestic investment in clean energy manufacturing (White House 2022, n.d.). Figure 2-5 demonstrates that the surge in nonresidential investment is concentrated in manufacturing structures; manufacturing structures' contribution to GDP growth last year neared the highest level on record. Investment in other nonresidential structures, especially in offices and commercial structures (figure 2-6), has yet to recover to norms from before the pandemic, and changes to working arrangements may yet prove long-lasting, rebalancing the market more permanently (see figure 2-4). And while investment in equipment and intellectual property decelerated in

Figure 2-6. Real Private Investment: Structures

Year-on-year percent change



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Source: Bureau of Economic Analysis.

Note: IRA = Inflation Reduction Act; CHIPS = Creating Helpful Incentives to Produce Semiconductors—or the CHIPS and Science Act. All values are chained. Gray bars indicate recessions.

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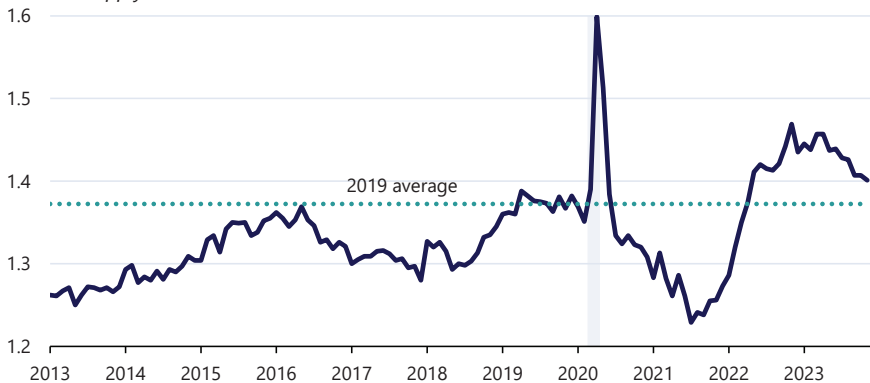
2023, this slowdown may be attributable to firms redirecting their resources toward manufacturing structures. Investment in equipment and intangibles is likely to pick up over subsequent years, as newly built manufacturing facilities require the installation of new equipment.

Finally, inventory investment continued to suppress GDP growth in 2023. In the pandemic's immediate aftermath, inventory investment's contribution to GDP growth climbed to highs not seen since the Korean War, as firms scrambled to adapt to the shift of consumption from services to goods. However, some sectors suffered from a bullwhip effect as consumption patterns rebalanced toward services in 2022. With inventory-sales ratios above desired levels, pressures mounted to bring business inventories back in line with demand. This phenomenon has been particularly acute in the merchant wholesale trade sector, in which the inventory-sales ratio currently sits at 1.43 months' supply, a historically high figure that is well above the 2019 average of 1.37 (figure 2-7). The rebalancing of inventories with sales still appeared to be in progress last year.

Imports and exports. As the world economy abruptly closed in 2020, the pandemic-induced recession injected turbulence into the contribution of net exports to real GDP growth. However, large swings in this category appear to be behind us, similar to the normalization of inventory investment. In 2023, net exports contributed 0.3 percentage point to GDP growth on a four-quarter basis; the large positive contributions in the first and last quarters were only partially offset by contributions moving closer to the normal prepandemic rate of expansion in the middle of the year (see chapter 5).

Figure 2-7. Ratio of Real Inventories to Sales: Merchant Wholesale Trade, 2013–23

Months' supply



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Sources: Bureau of Economic Analysis; CEA calculations.

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

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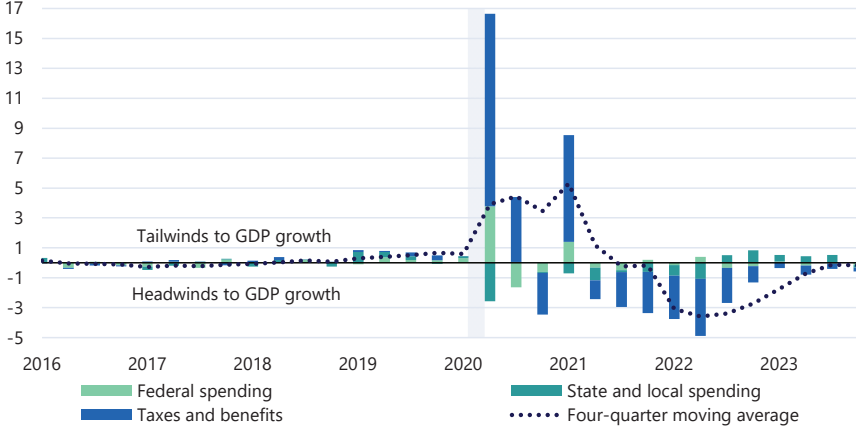
Government spending. The Federal Government's real purchases in 2023 (expenditures and gross investment) contributed a quarter percentage point more to GDP growth than they had in 2022. Defense and nondefense expenditures each contributed about equally to GDP growth. Real State and local government purchases accelerated in 2023, as these governments took advantage of strong budget positions to increase employment (figure 2-8). The Fiscal Impact Measure (FIM) index—which captures the overall effects of Federal, State, and local fiscal policy on GDP growth—suggests that the large fiscal drag, which had suppressed growth in recent years due primarily to the roll-off of pandemic emergency aid, was no longer a drag on GDP growth by the end of 2023 (figure 2-8).⁶

Private domestic final purchases. Private domestic final purchases (PDFP) are a measure of GDP that includes only consumption and fixed investment, removing more volatile components like inventory investment, government purchases, and net exports. PDFP accelerated from a pace of about 0.8 percent during the four quarters of 2022 to 2.7 percent in 2023. Most of this boost in PDFP is due to consumer expenditures and nonresidential investment, whereas residential investment—among the sectors that is most sensitive to higher interest rates—was a slight drag on growth. PDFP growth can better summarize economic momentum and better predict future GDP growth than GDP itself (CEA 2015), and this relationship may be even more salient in today's economic climate. The contributions to GDP from

⁶ The FIM measures the contributions of overall fiscal legislation to GDP growth. It considers Federal, State, and local purchases, including taxes and transfers (Asdourian et al. 2024).

Figure 2-8. Fiscal Impulse by Source

Percentage-point contributions to quarterly SAAR of real GDP growth



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Source: Brookings Institution.

Note: GDP = gross domestic product; SAAR = seasonally adjusted annual rate. Fiscal policy includes Federal, State, and local programs. Gray bars indicate recessions.

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those measures excluded from PDFP, such as inventory investment and net exports, have proven especially volatile due to pandemic-induced shocks and supply chain disruptions (figure 2-9). As a result, those components of GDP growth have become noisier and provide a less meaningful signal about the economy’s underlying momentum.

The Gradual Rebalancing of Demand and Supply in the Labor Market

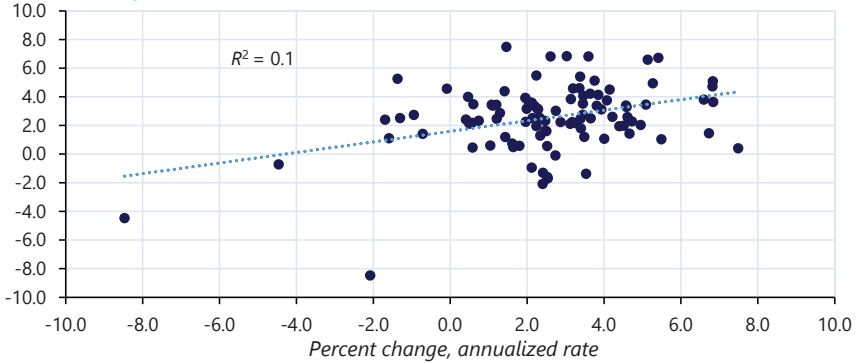
The labor market gradually eased over the course of 2023. The unemployment rate averaged 3.6 percent for the year, close to the annual lows observed just before the pandemic, and payroll employment grew 255,000 per month on average, well above the break-even pace needed to absorb labor force growth while also maintaining the unemployment rate.⁷ The average quarterly job growth pace slowed down a bit more at the end of the year to a three-month pace of about 227,000 jobs per month, still a robust pace but significantly lower than the average monthly pace of 377,000 jobs created in 2022 (figure 2-10). This slowdown was expected; employment in most sectors is now higher than it was in February 2020—the date of the last prepandemic labor report—and in some sectors was even above the level implied by extrapolating from prepandemic trends. In fact, employment

⁷ The CEA estimates the break-even pace to be between 80,000 and 100,000 jobs a month, depending on immigration and the rate of the trend in labor force participation, among other factors. Consistent with the robust and persistent pace of job growth, the unemployment rate in 2023 was the lowest on record since 1969.

Figure 2-9. Real GDP Compared with Lagged Real GDP and PDFF

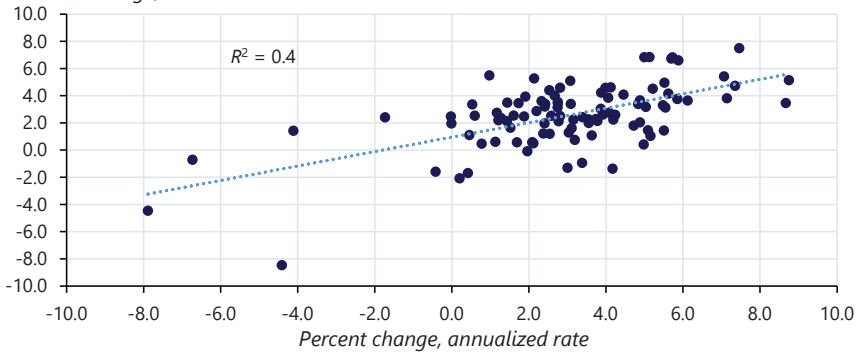
A. Real GDP and Lagged Real GDP, 1995 to 2019

Percent change, annualized rate



B. Real GDP and Lagged Real PDFF, 1995 to 2019

Percent change, annualized rate



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Sources: Bureau of Economic Analysis; CEA calculations.

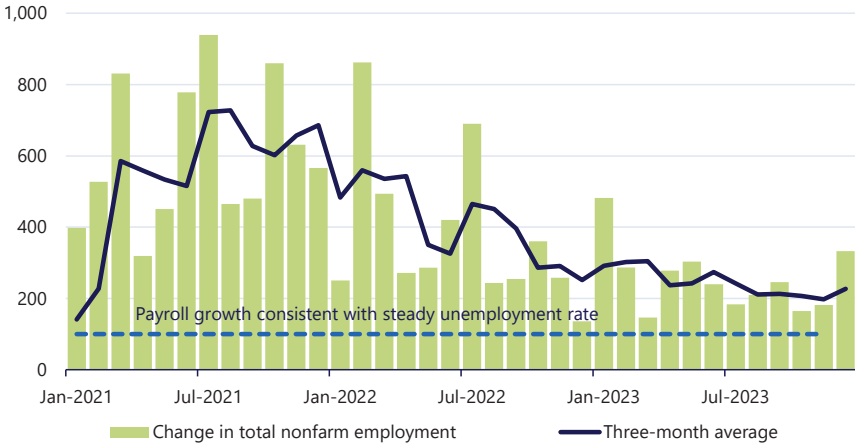
Note: GDP = gross domestic product; PDFF = private domestic final purchases. Data are quarterly. Real GDP is on the y axis. In panel A, one-quarter lagged real GDP is on the x axis. In panel B, one-quarter lagged real PDFF is on the x axis.

growth in 2023 can be mostly attributed to a handful of sectors in which the rebalancing of the labor market is still in progress. As of December 2023, the level of employment in the leisure and hospitality, education and health services, and government sectors remain below February 2020 levels; however, payroll gains in these sectors in 2023 were above their respective 2019 averages.

Several additional indicators suggest that the labor market has slowed and that the gradual rebalancing between labor supply and labor demand may be nearly complete. After peaking in 2022, both the hires rate and the

Figure 2-10. Monthly Change in Nonfarm Employment

Thousands



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Sources: Bureau of Labor Statistics; CEA calculations.

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quits rate have declined to 2019 levels (figure 2-11).⁸ The quits rate is an especially meaningful gauge of wage pressures and the scarcity of workers; its decline suggests that workers are less confident than they were during the pandemic recovery that higher-paying jobs await them elsewhere (Moscarini and Postel-Vinay 2017).

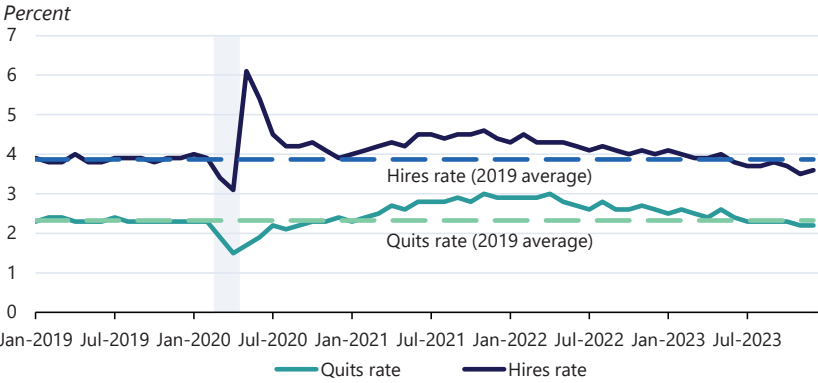
The salary gap between those staying in one job and otherwise comparable workers who switch jobs decreased in 2023 after having increased significantly during the pandemic-induced recession and its associated recovery (Federal Reserve Bank of Atlanta 2024). This metric is consistent with the narrative suggested by the quits rate, that the labor market has slowed, though the job openings rate remains well above 2019 levels (figure 2-11, panel B).

There are nevertheless reasons to doubt the job openings rate’s ability to measure tightness, and the same can be said for measures that incorporate job openings, such as the gap between available jobs and available workers or the number of job openings per unemployed worker. As a comparison of the two panels of figure 2-11 demonstrate, the job openings rate may be

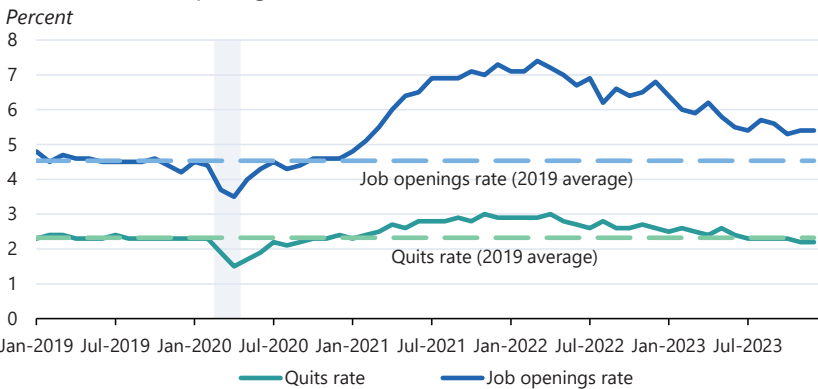
⁸ While the Job Openings and Labor Turnover Survey’s (JOLTS; BLS 2024) quits rate reached an all-time high of 3 percent in the spring of 2022, the survey dates only to the early 2000s. To offer some comparison with earlier job markets, particularly the robust labor markets of the 1970s, the closest historical analog is the discontinued Manufacturing Labor Turnover Survey (MLTS), which was conducted through the early 1980s, though it covered only the manufacturing sector. The comparison suggests that the labor market in the manufacturing sector was as tight in 2022 as it had been in the 1970s: Per JOLTS, the quits rate in the manufacturing sector reached 2.7 percent in March 2022, similar to its peak of 2.8 percent in 1973 per the MLTS.

Figure 2-11. Quits, Hires, and Job Openings Rates

A. Quits and Hires Rates



B. Quits and Job Openings Rates



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Sources: Bureau of Labor Statistics (Job Openings and Labor Turnover Survey); CEA calculations.

Note: The quits rate is defined as the number of quits as a percentage of employment. The hires rate is defined as hires as a percentage of employment. The job openings rate is defined as job openings as a percentage of employment and job openings. Data are seasonally adjusted. Gray bars indicate recessions.

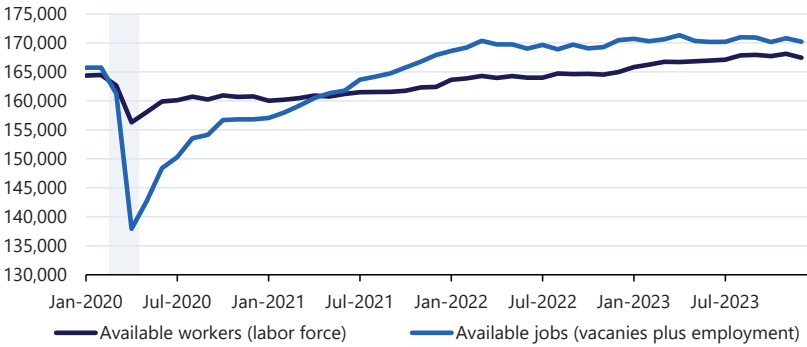
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generally more sensitive to business cycles than either the hires or the quits rate—and that relationship has been especially strong since the pandemic. For example, job openings may be nonlinear with regard to tightness; firms may be more likely to post external vacancies for different jobs when they are starved for labor than when labor markets are more normal. As a consequence, elevated levels of job openings may (as shown in figure 2-12) exaggerate the true state of market tightness. If job openings soon catch up with quits and hires, they may fall quite rapidly in the near future. As shown in figure 2-13, panel B, the adjustment of job openings with the implied common cyclical component from quits and hires or by alternative methods (Mongey and Horwich 2023; Elsby et al. 2015; Cheremukhin and Restrepo-Echavarria 2024) suggests that market tightness is back to normal

Figure 2-12. Measures of Labor Market Tightness

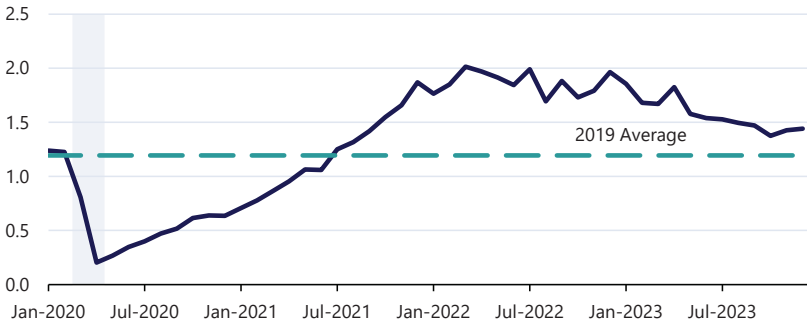
A. Jobs versus Available Workers

Thousands



B. Job Openings per Unemployed Person

Ratio



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Sources: Bureau of Labor Statistics (Job Openings and Labor Turnover Survey); CEA calculations.

Note: Unemployed persons are over age 16 years. Gray bars indicate recessions.

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prepandemic levels and that the current position of the labor market is back on the prepandemic Beveridge curve (the relationship between job openings and the unemployment rate). These adjustments imply that standard Beveridge curve calculations shown in figure 2-13, panel A, may overstate the further progress to come in the labor market’s rebalancing (as implied, e.g., by [Figura and Waller 2022](#)).

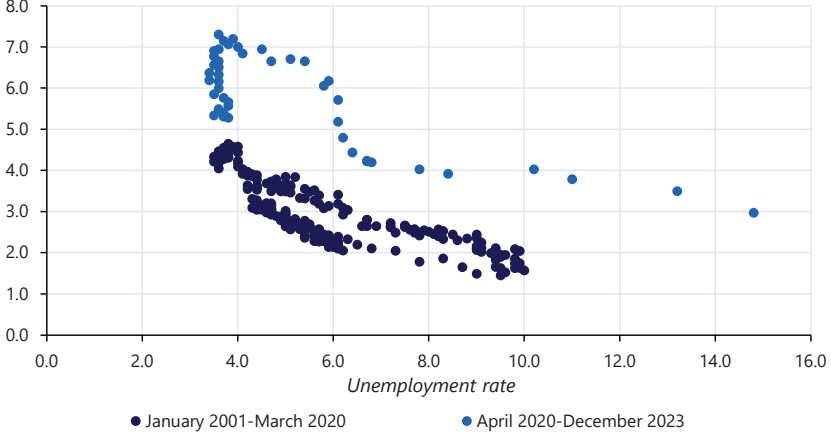
Meanwhile, both layoffs and the number of job losers who were laid off have been essentially flat in 2023 (figure 2-14). These indicators tend to rise rapidly at the onset of recessions, and their relative quiet supports the view that the U.S. economy is returning to more normal, sustainable conditions while avoiding a recession. Initial claims for unemployment insurance, another often-cited leading indicator of recessions, remained flat in 2023.

Finally, the labor supply appears to have firmed up: the labor force participation rate of prime-age civilians—those between the age of 25 and

Figure 2-13. Beveridge Curves

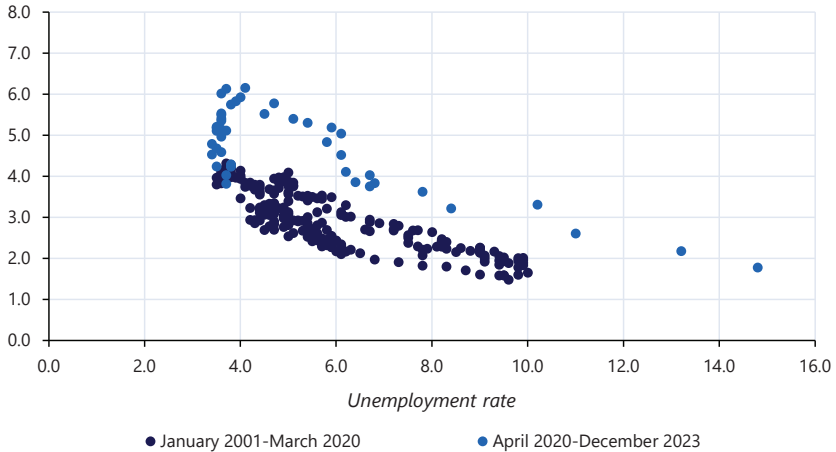
A. Standard Beveridge Curve

Job openings rate



B. Beveridge Curve with Adjusted Vacancies

Job openings rate



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Sources: Bureau of Labor Statistics (Job Openings and Labor Turnover Survey); CEA calculations.

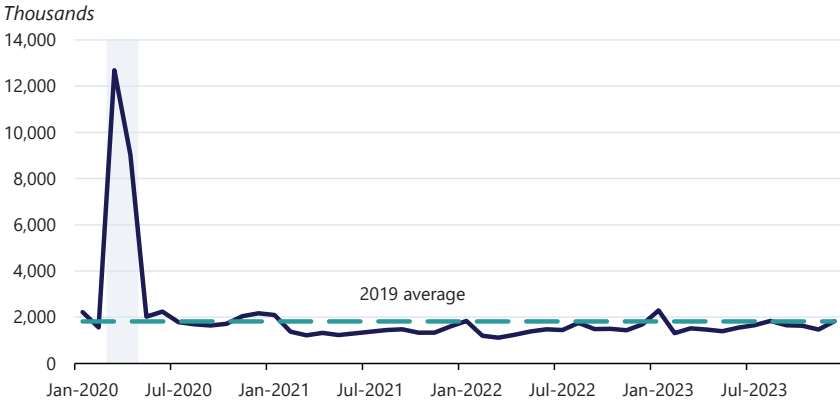
Note: The job openings rate is defined as job openings as a percentage of employment and job openings. In panel B, the modified Beveridge curve using vacancy rates is adjusted to reflect long-term labor market relationships. Data are monthly and seasonally adjusted.

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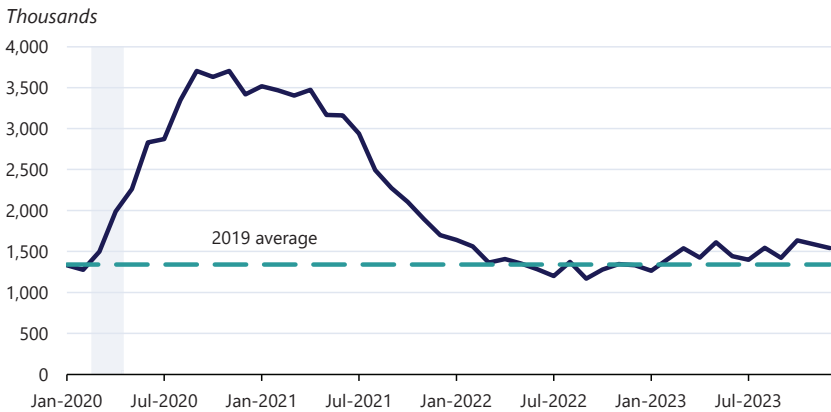
54 years—is close to a 20-year high, and the participation rate for prime-age women exceeded its all-time high this year (figure 2-15). Employers’ allowances of more flexible work schedules during and since the COVID-19 pandemic—including the rise in work-from-home arrangements—may also have contributed to record labor force participation among prime-age

Figure 2-14. Measures of Employment Separation

A. Layoffs and Discharges



B. Job Losers on Permanent Layoffs



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Sources: Bureau of Labor Statistics (Job Openings and Labor Turnover Survey); Current Population Survey; CEA calculations.

Note: Gray bars indicate recessions.

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women.⁹ It is likely that increasing access to affordable childcare, a key policy goal of the Biden-Harris Administration, would be associated with further improvements in the labor supply (CEA 2023a).¹⁰

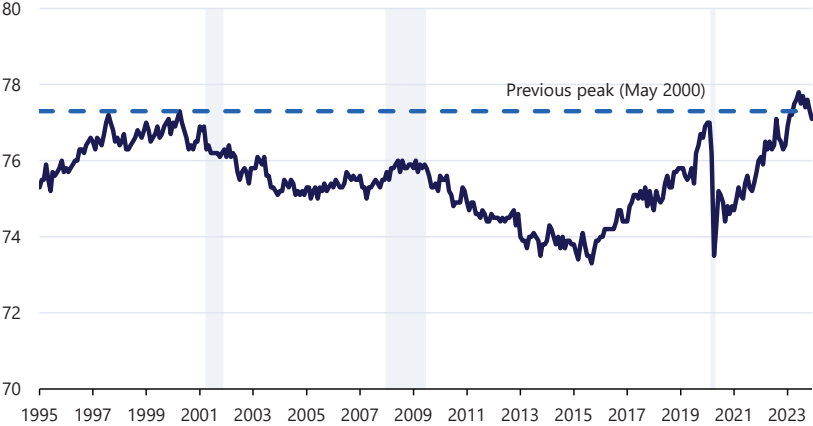
These positive developments in labor force participation rates are especially remarkable given the backdrop of a downward, long-run trend in the labor force as a result of the aging U.S. population. Labor force

⁹ Survey evidence suggests that, on average, women place a higher value on flexible work arrangements relative to men. See Aksoy et al. (2022) and Mas and Pallais (2017).

¹⁰ Research by Francine Blau and her colleagues suggests that a meaningful portion of the growing gap in the labor force participation rate of prime-age women between the United States and other advanced nations can be explained by weak U.S. family policies (Blau and Kahn 2013).

Figure 2-15. Women’s Prime Age (25–54) Labor Force Participation

Percentage of population



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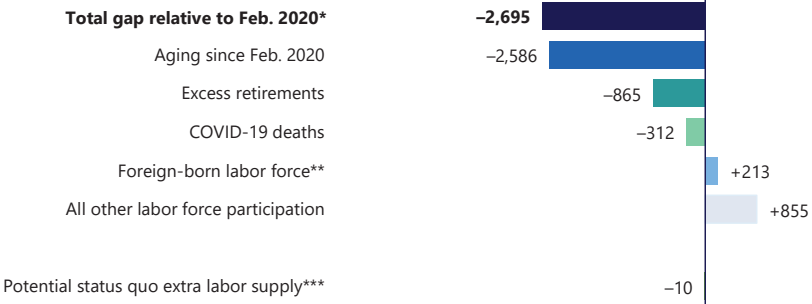
Source: Bureau of Labor Statistics.

Note: All values are seasonally adjusted. Data are monthly. Gray bars indicate recessions.

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Figure 2-16. Factors Affecting the Size of the Labor Force, February 2020–October 2023

Thousands of workers



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Sources: Current Population Survey; CEA calculations.

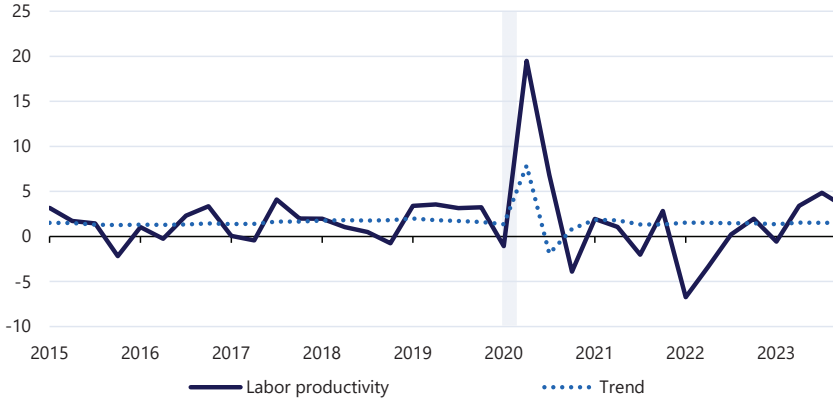
Note: * = Adjusted for annual population controls. ** = Relative to 2012–18 trend. *** = Sum of factors less aging, immigration, and COVID-19 deaths.

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participation for civilians age 65 years and above has steeply declined in the postpandemic economy. While increased retirements have been expected due to population aging, they have substantially exceeded expectations since the onset of the pandemic. According to the CEA’s calculations, excess retirements subtracted almost 900,000 workers from the labor market in 2023 (figure 2-16).

Figure 2-17. Business Sector Productivity and Trend

Percent, annual rate



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Sources: Bureau of Labor Statistics; Federal Reserve Board; CEA calculations.

Note: The trend is estimated with a modified version of the FRB/US supply-side component, which adds demographic controls. Gray bars indicate recessions.

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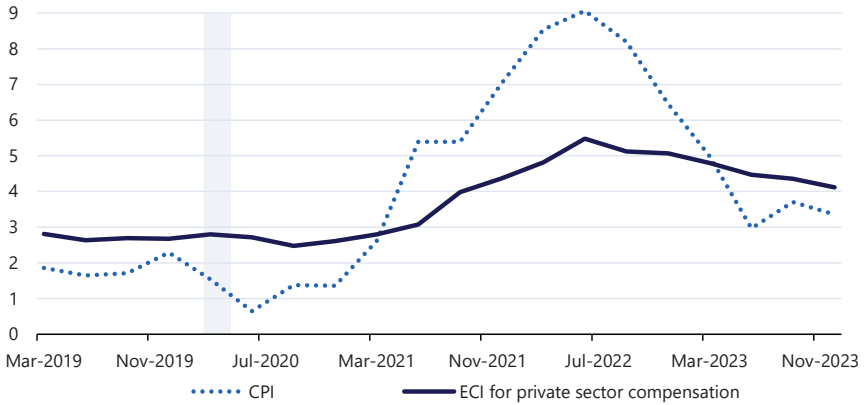
The slowdown in labor markets and the acceleration of real GDP imply that labor productivity (figure 2-17) rebounded in 2023 after a decline in 2022.¹¹ Productivity has displayed its typical cyclicity in recent years, and now closely approximates its prepandemic trend, a result of businesses catching up to desired hiring levels. Despite this, the future path of productivity is uncertain. One potential upside risk to productivity growth is artificial intelligence; whether developments in artificial intelligence will ignite a similar acceleration in productivity as the information technology revolution induced in the late 1990s remains to be seen (see chapter 7).

All the available metrics of nominal wage inflation—such as the Employment Cost Index, average hourly earnings, unit labor costs, and the Atlanta Fed’s wage tracker—show that nominal wage growth has moderated over the last year (Federal Reserve Bank of Atlanta 2024). A strong labor market has nevertheless fostered progress on real labor compensation. Compensation growth, as measured by the Employment Cost Index—which includes both benefits and salaries and which controls for compositional effects—has been outpacing inflation since 2022:Q4 (figure 2-18), implying that workers’ purchasing power has improved over the last year. Moreover, real average hourly earnings—an alternative, more timely measure of wages and salaries, albeit one more susceptible to compositional effects—have more than caught up with inflation and are now above prepandemic levels, especially for the 80 percent of the workforce in production and nonsupervisory occupations. Moderate wage growth above the inflation rate is an

¹¹ Labor productivity is measured as output per hour in the business sector.

Figure 2-18. Private Sector Compensation Growth and Inflation

Year-on-year percent change



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Sources: Bureau of Labor Statistics; CEA calculations.

Note: CPI = Consumer Price Index; ECI = Employment Cost Index. Gray bars indicate recessions.

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important factor in providing continued support for aggregate consumer spending as excess savings are gradually depleted. Of particular importance for overall purchasing power, the pace of wage growth among the lowest quartile of the wage distribution exceeded inflation in 2023.¹²

Inflation in 2023

After peaking in the summer of 2022, inflation trended downward through the end of 2023. Disinflation in the food, energy, and goods sectors is largely responsible for this reversal (figure 2-19). Inflation in the services sector—which is largely influenced by wages, the most important cost in services production—has been retreating more slowly, in step with the gradual moderation of wage inflation.

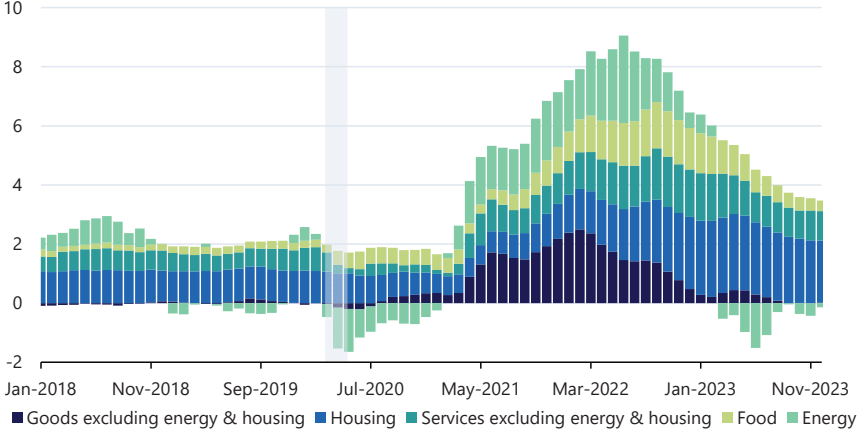
Housing inflation appears to have played an outsized role in keeping inflation above target in 2023. Rental contracts are renewed only infrequently, and are therefore slower to adjust to rental price pressures (which include building maintenance and labor costs, utilities, and general costs of living). However, data on newly signed contracts, such as the Zillow rent index and the Bureau of Labor Statistics' New Tenant Rent Index, all showed a decline in the last two quarters of 2023, suggesting that housing inflation should lessen over the coming quarters (figure 2-20).

Outside forecasters expected that core inflation would recede more quickly in 2023, an expectation consistent with their forecasts of weak real

¹² Consumers in the lowest quartile of the wage distribution tend to have a higher marginal propensity to consume.

Figure 2-19. Contributions to Headline CPI Inflation

Percentage-point contribution to 12-month change



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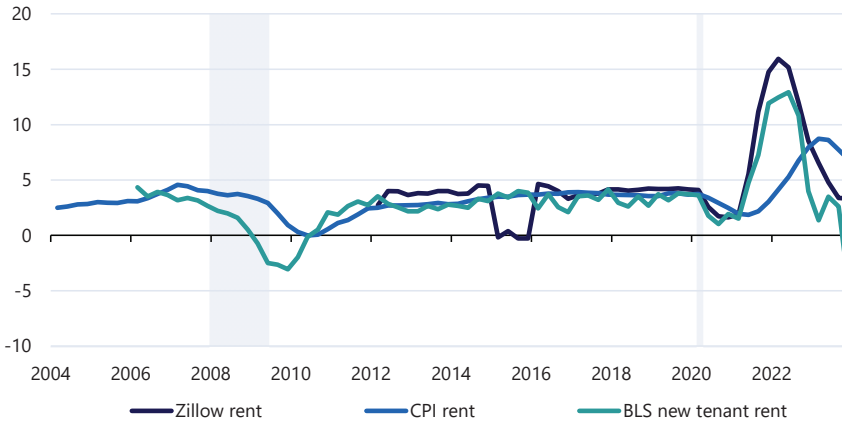
Sources: Bureau of Labor Statistics; CEA calculations.

Note: CPI = Consumer Price Index. Gray bars indicate recessions.

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Figure 2-20. Selected Measures of Rent Growth

Four-quarter percentage change



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Sources: Bureau of Labor Statistics; Federal Reserve Bank of Cleveland; Zillow.

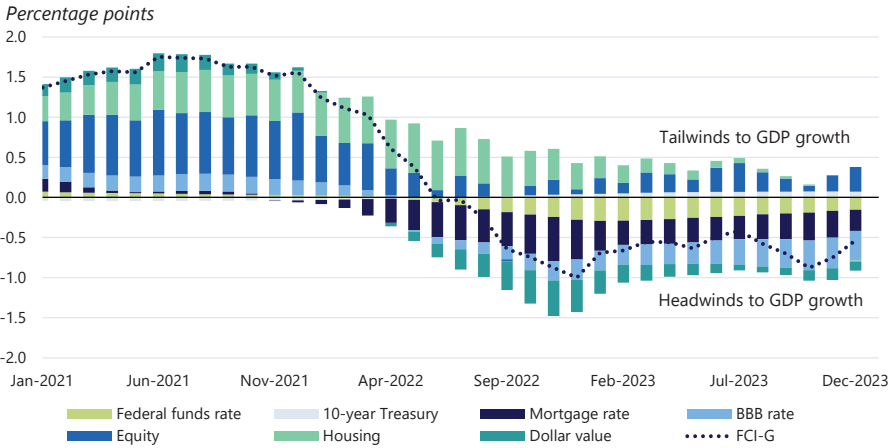
Note: CPI = Consumer Price Index. BLS = Bureau of Labor Statistics. Data are quarterly. Gray bars indicate recessions.

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economic activity and a high unemployment rate (see figure 2-2, panel B).¹³ But in contrast to these expectations—and to the economies of the 1970s and 1980s—progress on reestablishing price stability for the U.S. consumer has

¹³ Some commentators were skeptical that any progress in the fight against inflation would happen without sharp increases in the unemployment rate. On this point, also see chapter 1 of this Report.

Figure 2-21. Contributions to GDP Growth, per the Federal Reserve’s Financial Conditions Impulse on Growth (FCI-G)



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Sources: Federal Reserve Board; CEA calculations.

Note: BBB = Better Business Bureau. Data are from FCI-G (baseline), and inverted such that the figure is read as a fiscal impact measure.

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thus far been achieved without substantial increases to unemployment rates or a slowdown in growth. Several causes can be ascribed to the decline in inflation, the most prominent of which are tighter monetary policy, progress in the resolution of supply bottlenecks, and lower import prices.

The tightening of monetary policy restrains aggregate demand by inducing higher interest rates, which typically cool the housing market and demand for durable goods, both of which are sensitive to interest rates. Higher interest rates may also cause a decline in the stock market, further reducing consumption through a wealth effect. According to the Federal Reserve Board’s Financial Conditions Index Impulse on Growth (FCI-G)—a measure that captures the overall effects of financial markets on real GDP growth—monetary policy and its effects on financial markets created a headwind to economic growth in the middle months of 2022.¹⁴ However, according to the FCI-G, neither housing prices nor the stock market curbed GDP growth in 2023 (see figure 2-21 and box 2-1).

A second factor contributing to disinflation—one that accords more closely with the acceleration in real GDP—is progress in the resolution of supply bottlenecks. While supply bottlenecks are difficult to measure precisely—a likely reason why some forecasters had downplayed the role of their resolution in reducing inflation and instead forecasted weak real

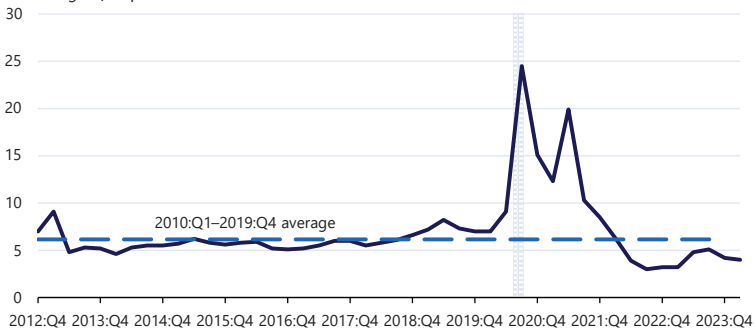
¹⁴ The FCI-G measures how financial conditions, including asset prices, house prices, and interest rates—all of which are also affected by monetary policy—have the potential to affect the real economy (Ajello et al. 2023).

Box 2-1. Strong Balance Sheets Supported Household Consumption in 2023

At the outset of 2023, forecasters anticipated that high mortgage rates, a historically low saving rate, and lackluster consumer sentiment would exert a notable deceleration in consumer spending. Moreover, lower-income households' excess savings—presumed to have fueled consumption early in the recovery from the COVID-19 pandemic—were thought to be depleted by the end of 2022. Many observers have therefore been surprised by consumer resilience in the face of such strong headwinds (figure 2-i).

Figure 2-i. The Saving Rate

Percentage of disposable income



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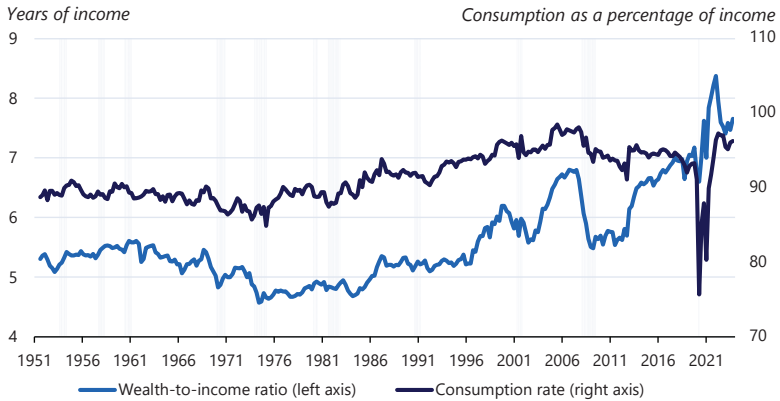
Source: Bureau of Economic Analysis.

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

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Several factors likely contributed to last year's acceleration in consumption, including low unemployment, strong job growth, and rising real wages. But an especially important factor was the resilience of household balance sheets. Household liquid assets, defined as the real value held in currency and deposits—including money market funds shares—stayed above its prepandemic trend in 2023. Net worth relative to income—which includes all liquid, financial, and housing household assets—also ended the year higher than its level before the pandemic (figure 2-ii). In particular, housing wealth held up well in 2023. Despite high mortgage rates, undersupply in the housing market has so far supported house prices. Traditionally, housing wealth supports middle-class homeowners' consumption. These consumers are able either to extract resources from their homes in the form of home equity lines—a channel likely dampened by the recent rise in interest rates—or to lower their saving rate, capitalizing on the perceived high present discounted value of their homes. Finally, high interest rates did not substantially dent the

Figure 2-ii. Wealth-to-Income Ratio versus Consumption Rate



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

Note: The 2023:Q4 value is estimated by the CEA. Gray bars indicate recessions.

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stock market's performance in 2023, which appears to be relevant in gauging the support of consumption from wealthy consumers.

economic activity—the few available measures suggest substantial progress. For instance, the share of manufacturing plants reporting insufficient labor has decreased significantly from its peak in 2022, a pattern that likely reflects the improvement in the labor supply, especially among prime-age workers, as documented above.¹⁵ Meanwhile, the Institute for Supply Management's supplier delivery index and the New York Federal Reserve Bank's Global Supply Chain Pressure Index (GSCPI) each indicate a decline in supply chain pressures over the past year (figure 2-22).¹⁶

Core import prices—another cost driver, and a third potential explanation for the recent decline in inflation—have also receded. Import prices are themselves driven by many different factors, including foreign demand, foreign inflation, global supply chain pressures, and the relative strength of the dollar. Over the course of 2023, nonpetroleum import prices fell 1.6 percent, which put downward pressure on the cost of many inputs for domestic production.

¹⁵ These data are from the Quarterly Survey of Plant Capacity (U.S. Census Bureau n.d.).

¹⁶ The Institute for Supply Management's index gauges changes in supplier delivery times. A measure below 50 implies that deliveries are moving faster, and that supply chain pressures are easing. The GSCPI summarizes several supply chain indicators, including an index of supplier deliveries.

Figure 2-22. Indicators of Supply Chain Pressure



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Sources: Federal Reserve Bank of New York (NYFRB); Institute for Supply Management (ISM).
 Note: A value above 50 for the Supplier Deliveries Index indicates slower deliveries. The NYFRB Global Supply Chain Pressure Index is normalized such that zero indicates the series average value with positive/negative showing how many standard deviations above/below the average the point is. The data are not seasonally adjusted. Gray bars indicate recessions.
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The factors that contributed in 2023 to the diminishing effects of inflation can also be evaluated within the framework of the Phillips curve. Augmented with proxies for supply shocks and the interaction of demand and supply bottlenecks, the Phillips curve succinctly captures inflation’s rise in the COVID-19 pandemic years leading into 2023, as well as its subsequent decline, during which there was no labor market or aggregate demand deterioration (CEA 2023b). Consider a Phillips curve that includes (1) relative import prices as a cost-push factor, (2) the New York Federal Reserve Bank’s GSCPI as a measure of supply chain pressures, and (3) an interaction term between the GSCPI with slack (proxied by the CBO’s unemployment gap measure)—all of which are meant to capture the demand-induced bottlenecks at a time of supply chain disruptions.¹⁷ Inflation expectations are proxied by the Survey of Professional Forecasters’ long-run PCE inflation expectations. Figure 2-23 shows that the model ascribes the majority of the increase in inflation from 2018 to 2022 to supply chain disruptions and most of the subsequent decline to the unsnarling of supply chains and the resolution of demand bottlenecks. Notably, the role of slack, in isolation, is minimal in explaining the recent evolution of inflation.

Long-term inflation expectations had been steady for decades when inflation began to rise in 2021, and these expectations remained low even as inflation started its climb. Figure 2-24 plots two of the most commonly tracked measures of inflation expectations: the median expected annual price percent change over the next 12 months, and the median expected

¹⁷ The Phillips curve used in these calculations builds from Yellen (2015).

Figure 2-23. Change in Core PCE Inflation

Percentage points, annual averages of quarterly annualized rate

	2018–22	2022–23*
Expectations	+0.4	-0.1
Import prices	-0.1	-0.4
Slack	-0.0	+0.0
Slack–supply chain interaction	+0.9	-0.6
Supply chains	+1.6	-0.5
Residual	+0.3	+0.2
Total	+3.0	-1.4

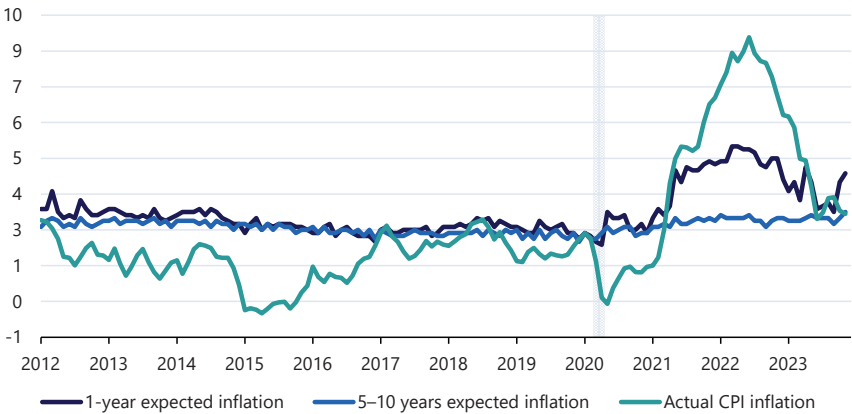
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Sources: Yellen (2015); Bureau of Economic Analysis; Congressional Budget Office; Bureau of Labor Statistics; CEA calculations.

Note: * = First three quarters of 2023 only. PCE = Personal Consumer Expenditures price index. *2024 Economic Report of the President*

Figure 2-24. Actual and Expected Inflation, 2012–23

12-month percent change



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Sources: University of Michigan; Bureau of Economic Analysis; CEA calculations.

Note: CPI = Consumer Price Index. Data are monthly. Gray bars indicate recessions.

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average annual price percent change over the next 5 to 10 years, from the University of Michigan’s monthly survey of households. Both measures peaked during 2022 and declined through the end of 2023. Long-term inflation expectations in particular were reassuringly stable, indicating that although households expected elevated inflation in the short run, they did not expect inflationary conditions to last (box 2-2).

Box 2-2. Consumer Attitudes and Economic Data

Consumer perceptions about the economy, as measured by surveys, can be useful indicators of how the general public experiences macroeconomic developments. Two of the most prominent monthly indices measuring consumer attitudes are “Consumer Confidence,” published by the Conference Board, and “Consumer Sentiment,” published by the University of Michigan. As figure 2-iii illustrates, these two measures broadly co-move over time. Both plunged when the pandemic hit, and both remain below their respective prepandemic levels.

Figure 2-iii. Indicators of Consumer Attitudes

Index: 2019 = 100



Council of Economic Advisers

Sources: University of Michigan; Conference Board; CEA calculations.

Note: Gray bars indicate recessions.

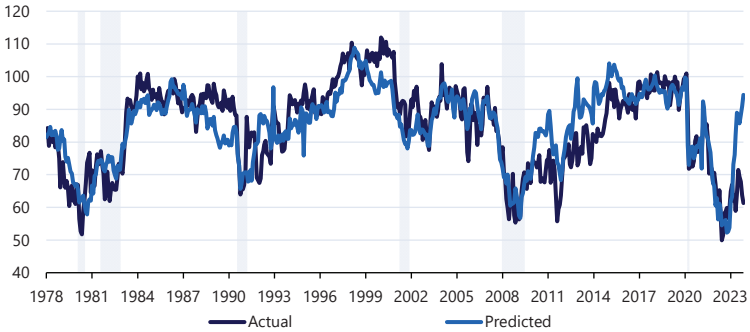
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Historically, consumer attitudes have closely tracked a handful of key economic aggregates, especially the unemployment rate, income growth, inflation, the stock market’s performance, and housing prices. An ordinary-least-squares regression, estimated from 1978 through mid-2022 and controlling for both population demographics and the spread of COVID-19, suggests that changes in these five measures explained most of the variation in consumer sentiment, even during the extraordinary depths of the pandemic (figure 2-iv). However, since mid-2022—around the time headline inflation peaked on a 12-month basis—a large gap has opened between actual and predicted sentiment.

This gap—already a historic anomaly—is particularly notable since sentiment has often been a leading indicator of economic health; it may either be signaling future weakness unanticipated by other measures, or that the pandemic shifted the relationship between the economy and consumer sentiment. (For example, the Conference Board includes both consumer confidence and consumer sentiment in its composite

Figure 2-iv. University of Michigan Sentiment, Actual and Predicted

Index: 1966:Q1 = 100



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

Note: Predicted ordinary least squares of University of Michigan microdata are estimates from January 1978 to June 2022 using year-over-year percent change in the Standard & Poor's 500; real disposable personal income per household (split into wage and nonwage); housing prices; Personal Consumption Expenditures price indexes for food, energy, core goods, and core services; and the year-over-year differences in the unemployment rate and log total COVID-19 cases. Estimates also include fixed effects by sex, age, education, birth cohort, Census region, month in survey sample, and calendar month. Data are as of November 2023. Gray bars indicate recessions.

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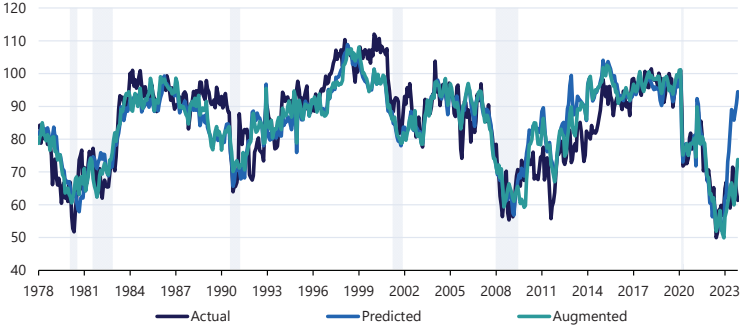
index of leading indicators for the United States; see [Conference Board 2024](#).) This chapter already discusses the possible near-term upside and downside risks to the economy. On the possibility that sui generis factors have altered the link between sentiment and the economy, several hypotheses require further attention.

Price changes (inflation) versus price levels. Consumer attitudes may be sensitive to both high price changes (inflation) and high price levels—products whose prices remain higher than consumers expect, even after prices stop rising. This hypothesis implies that simple models that only include inflation could mechanically overstate the improvement in sentiment attributable to disinflation. That is, after a period of high inflation, consumers may have a lingering distaste for the resulting high level of prices that an inflation-only model would struggle to capture.

A straightforward, though hardly dispositive, test of the price level hypothesis is to allow explicit terms for changes in inflation to enter the regression model asymmetrically, such that declines in inflation affect sentiment differently than rises in inflation. (Simply adding price levels to a regression presents a statistical challenge, because price levels are almost always nonstationary and thus can lead to spurious regression results. The change in the price level, inflation, is already included in the base model.) If this hypothesis were true, one would expect disinflation to affect sentiment positively to a lesser extent than rising inflation affects sentiment negatively, since falling but still-positive inflation implies that the price level remains high. Augmenting the simple regression model with these terms, the CEA finds exactly that: for energy, food, and core

Figure 2-v. University of Michigan Sentiment: Actual, Predicted, and Augmented

Index: 1966:Q1 = 100



Council of Economic Advisers

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

Note: Predicted ordinary least squares of University of Michigan microdata are estimates from January 1978 to June 2022 using year-over-year percent change in the Standard & Poor's 500; real disposable personal income per household (split into wage and nonwage); housing prices; Personal Consumption Expenditures price indexes for food, energy, core goods, and core services; and the year-over-year differences in the unemployment rate and log total COVID-19 cases. Estimates also include fixed effects by sex, age, education, birth cohort, Census region, month in survey sample, and calendar month. Augmented model includes change in inflation and an asymmetry term. Data are as of November 2023. Gray bars indicate recessions.

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goods, a decline in inflation has less of an initial effect on sentiment than does a rise in inflation of the same magnitude. As figure 2-v shows, the augmented model's in-sample predictions are not substantially different from those of the baseline model, but its out-of-sample predictions for the period since June 2022 are far superior, suggesting that price levels matter for sentiment.

Broader, COVID-19-related shifts. An analysis by the Federal Reserve Bank of Chicago (Herbstman and Brave 2023) finds that relationships between economic variables and sentiment broadly pivoted during the pandemic. This shift was especially true of labor market variables; growth in earnings and employment affected sentiment less positively during the pandemic than before. (Note that one key difference between the Consumer Sentiment and Consumer Confidence estimates is their sensitivity to labor market conditions; see Hirsch 2012. The Conference Board's Consumer Confidence index explicitly incorporates labor market experiences and expectations into its composite, whereas the University of Michigan's Consumer Sentiment index does not use specific labor market questions in its measure.)

One plausible hypothesis is that the pandemic experience, including the government's fiscal responses to the virus's impact on American life, affected sentiment in ways not fully captured by conventional economic metrics. The government provided unusually strong fiscal support to families in 2020 and 2021, when the pandemic's effects were felt the most, and the rise and fall in unemployment during the pandemic was overwhelmingly and unprecedentedly driven by temporarily furloughed workers, many of whom reclaimed their positions when lockdowns

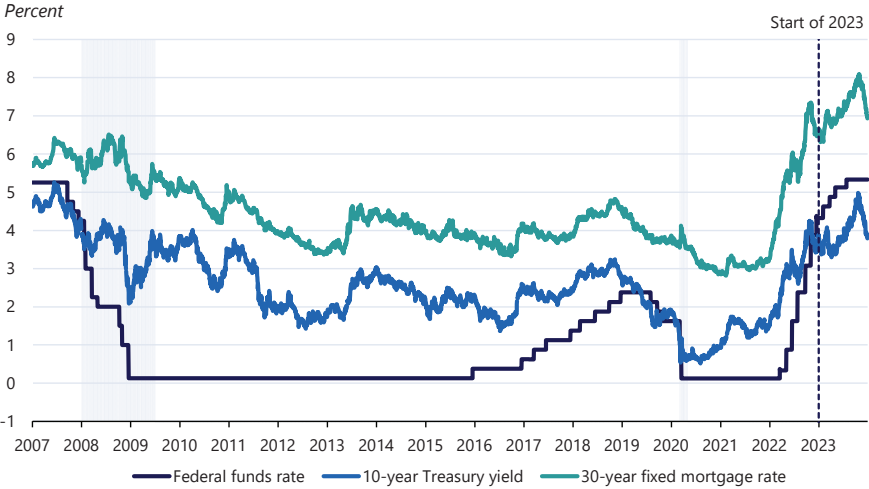
ended. Either mechanism might explain why pandemic-era rises in the unemployment rate had less of a negative effect on sentiment than would be expected from prior cycles.

Other factors. Observers have suggested various other candidates to explain the gap between economic indicators and consumer sentiment. For instance, heightened political partisanship, and the evolving tendency for consumers to base their survey responses on political rather than economic factors, may be being factored into the indices at a rate not previously seen (Hartman 2022). Meanwhile, social media has become a far more common source of news, for younger Americans especially, and has been shown to disproportionately elevate negative and often false information—making a gap between reliable indicators and sentiment more plausible (e.g., O’Kane 2023). The shortage of affordable housing, the subject of chapter 4 of this Report, is another potential factor generating negative sentiment, particularly among younger families for which homeownership is often out of reach. And as certain pandemic-era supports have expired, real disposable income has fallen for families who had been beneficiaries of those transfers—a final potential factor behind the large residual.

Financial Markets in 2023

Markets had an eventful 2023, highlighted by at least three consequential developments. First, risk-free interest rates—especially those with long horizons, such as the benchmark 10-year Treasury note—climbed to levels not seen since leading up to the global financial crisis, before reversing most of the increase toward the end of the year. Even with little net change over the year, long-maturity, risk-free rates remained high relative to the past 10 years, a trend that has resulted in higher borrowing costs for businesses, consumers, and the government. Second, and relatedly, the high-profile failure of a few banks affected lenders’ willingness to extend credit and exerted upward pressure on the cost of borrowing relative to the risk-free rate of interest, further tightening credit conditions. However, most of these effects were short-lived, due in part to a rapid and effective policy response. Third, the component in interest rates that nets out inflation effects—the real rate of interest—rose markedly in 2023. The real policy rate remained high, though much of the increase in long-maturity real rates reversed toward the end of the year, and rates across maturities remained high relative to the post-financial crisis period. Understanding the drivers of real rate movements is important for assessing the durability of recent economic trends.

Figure 2-25. Selected Nominal U.S. Interest Rates



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Sources: Federal Reserve Board; Bloomberg.

Note: The 30-year fixed mortgage rate is the average U.S. 30-year fixed mortgage products rate from Bankrate.com via Bloomberg. Federal funds rate corresponds to the midpoint of the federal funds target rate range. Gray bars indicate recessions.

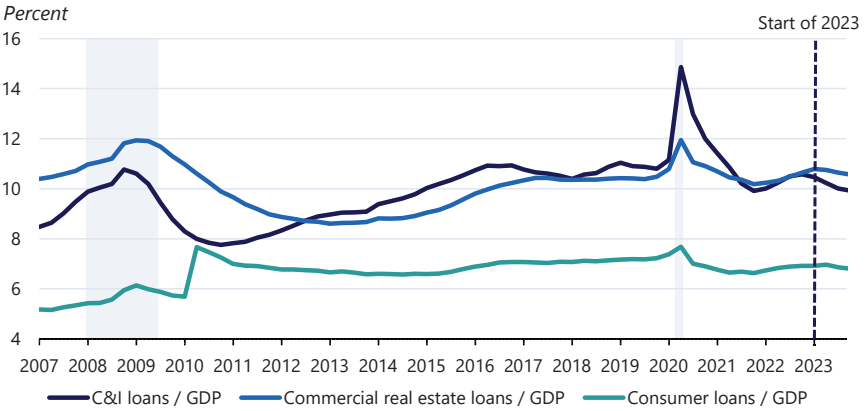
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The Rise in Long-Term Rates

Key interest rates—including the federal funds rate, the 10-year Treasury rate, and the 30-year fixed mortgage rate—all rose during most of 2023. After peaking in October, long-maturity rates declined, reversing much of the earlier rise; but the policy rate remained at its highest level since 2001 (figure 2-25). Long-maturity yields were atypically low in the sustained period of zero-rate monetary policy from the end of 2008 through the end of 2015, and then again from 2020 to 2022. The 10-year yield was below 2.2 percent when policy tightening began in March 2022; since then, the overnight policy rate has risen over 5 percentage points, and long-maturity Treasury yields have risen as high as 5 percent on an intraday basis—the largest policy rate increase and the largest 10-year Treasury yield increase per tightening cycle since the 1980s. By the end of the year, the 10-year Treasury yield had fallen below 4 percent, while the overnight federal funds target rate remained above 5 percent, with a cumulative 1-percentage-point increase during 2023.

As a benchmark for riskier rates, long-maturity Treasury yields are the basis for rates that are important for businesses and consumers, such as corporate bond yields and the 30-year fixed mortgage rate. The national average 30-year fixed rate for conforming mortgage loans rose more than the 10-year

Figure 2-26. Outstanding Loan Amounts Relative to GDP



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Source: Federal Reserve Board; Bureau of Economic Analysis; CEA calculations.

Note: C&I = commercial and industrial; GDP = gross domestic product. Loan amounts are for all commercial banks from the Federal Reserve's H.8 release. Gray bars indicate recessions.

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Treasury yield,¹⁸ as illustrated by the teal line in figure 2-25, peaking above 8 percent, before falling to about 7 percent at the end of 2023. Meanwhile, the quantity of outstanding commercial loans declined relative to the rate of GDP growth (figure 2-26). While banks tightened standards for loans to businesses and households early in 2023, the decline in borrowing was also partly driven by lower demand in a higher-rate environment (figure 2-27).

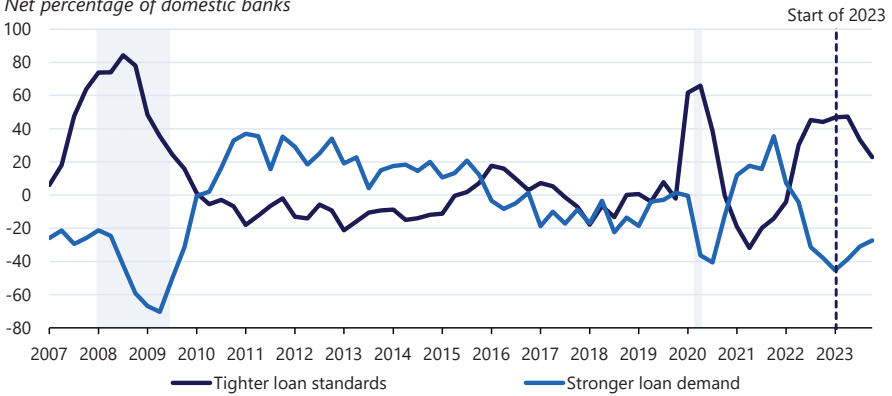
The effect of a higher-rate environment on asset prices can have large implications for the broader economy. A sharp rise in rates produces steep unrealized (or “mark-to-market”) losses for fixed-rate security holders. From March 16, 2022—when the Federal Reserve began to hike its policy rate—until March 8, 2023, the 10-year Treasury yield rose nearly 2 percentage points. As higher rates on newly issued securities drove down the price of extant securities with lower fixed rates, the holders of securities with lower fixed rates, including banks, experienced large mark-to-market losses, as illustrated in figure 2-28. For example, consider a bank with 10-year Treasury holdings originally worth \$50 billion, purchased in March 2022, when the 10-year rate was 2 percent. By March 2023, the value of the bank’s Treasury securities would have fallen by about \$8 billion. These dynamics tipped various banks, including Silicon Valley Bank and Signature Bank, into insolvency.

One of the main channels through which banking stress reaches the real economy is constrained credit. Credit conditions initially tightened and

¹⁸ Conforming mortgage loans are insurable by the Federal housing agencies. In order to “conform,” a loan must meet the quality terms and conditions (e.g., a minimum credit score for a borrower and a maximum amount borrowed) set forth by the U.S. Federal Housing Finance Authority.

Figure 2-27. Credit Conditions for Business Loans

Net percentage of domestic banks



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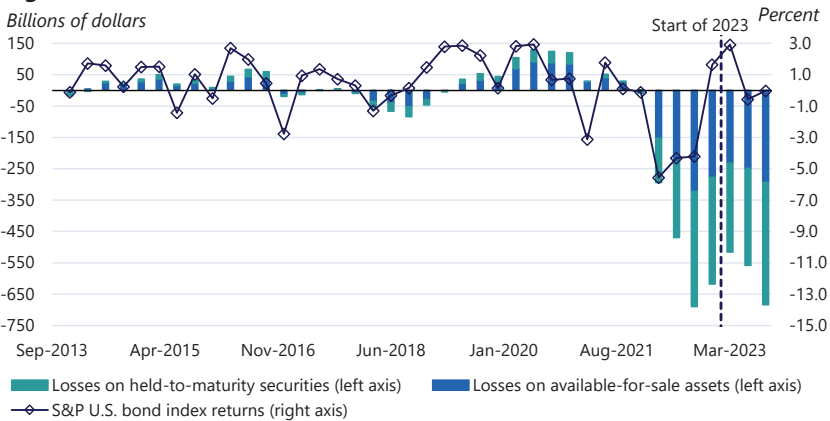
Source: Federal Reserve Board.

Note: This figure shows the net percentage of domestic banks that are tightening standards for or are increasing demand for business loans, weighted by banks' outstanding loan balances from the Federal Reserve's Senior Loan Officer Opinion Survey on Bank Lending Practices. Gray bars indicate recessions.

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Figure 2-28. Bond Returns and Unrealized Gains/Losses

Billions of dollars



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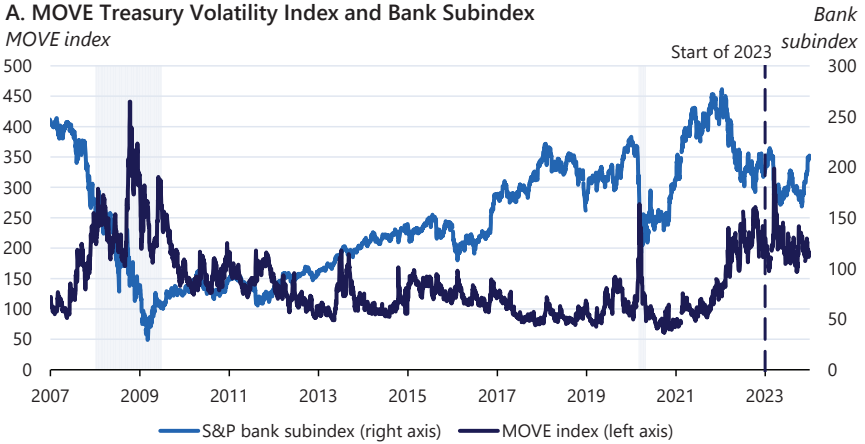
Sources: Federal Deposit Insurance Corporation (FDIC); Standard & Poor's (S&P).

Note: Unrealized losses are from the FDIC 2023:Q3 quarterly banking profile, table 7. Data are quarterly.

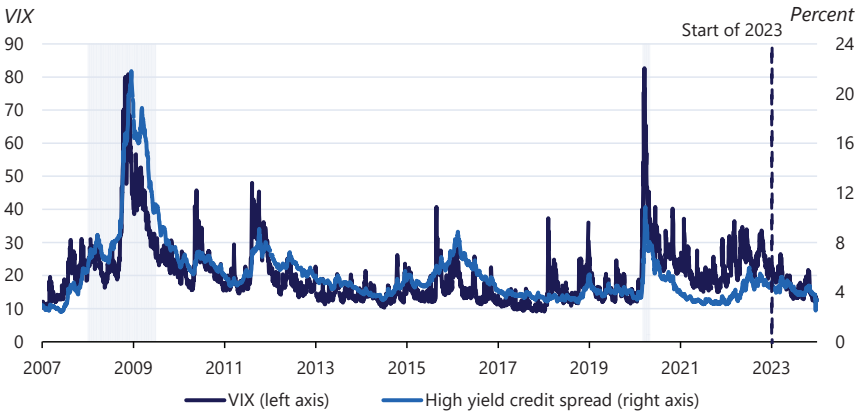
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asset volatility rose as bank shares—shown in blue in figure 2-29, panel A—sharply underperformed the broader market. Amid the bank failures, the 10-year Treasury yield fell by more than half a percentage point as investors fled to safety, and the MOVE index (the Merrill Lynch Option Volatility Estimate index), a popular measure of expected future Treasury market volatility, spiked to its highest point since the pandemic-induced financial market turmoil in March 2020. The navy line in figure 2-29, panel A,

Figure 2-29. Treasury Volatility and Market Conditions



B. Market Credit Conditions



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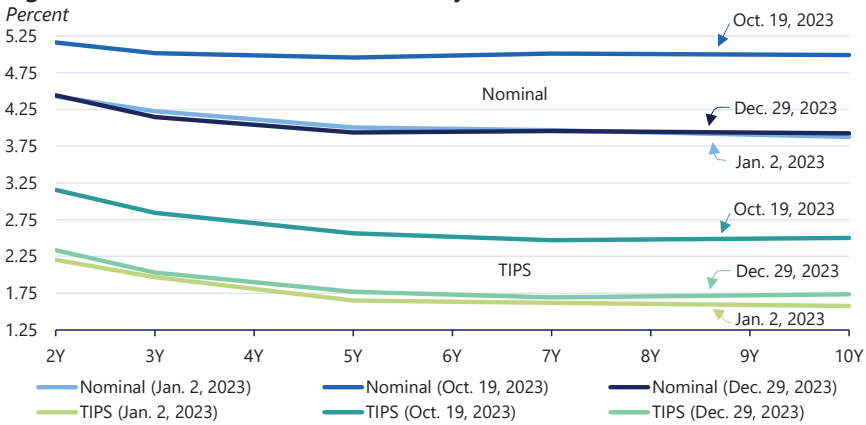
Sources: Bank of America; Bloomberg.

Note: The MOVE index is published by the Intercontinental Exchange. The index measures the implied yield volatility of a basket of one-month options on 2-year, 5-year, 10-year, and 30-year Treasury securities. The bank share price subindex is for the level 2 banks industry group of the Standard and Poor's (S&P) 500 index. The VIX is published by the Chicago Board of Options Exchange. The index measures the implied volatility of a basket of one-month options on the S&P 500 equity market price index. Gray bars indicate recessions.

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illustrates the strong negative relationship between the measure of Treasury yield volatility and bank share prices, underscoring the importance of interest rate movements for the health of banks' balance sheets. The Federal Reserve rapidly introduced a new lending facility in 2023—the Bank Term Funding Program—which is aimed at alleviating pressure for banks to sell high-quality, fixed-income securities at a loss, and the Federal Deposit Insurance Corporation, the Federal Reserve, and Treasury—in consultation with the President—stepped in with a comprehensive guarantee for customers' deposits in Silicon Valley Bank and Signature Bank, an action that

Figure 2-30. Nominal and TIPS Treasury Yield Curves



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Source: Bloomberg.

Note: TIPS = Treasury Inflation-Protected Securities. The figure shows real and nominal yield curves and their changes over the year.

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stemmed financial contagion. By the year’s end, the tightening started to reverse course. Credit spreads narrowed, and, as shown by the VIX, implied volatility on equities declined (figure 2-29, panel B), which was also consistent with persistently robust data on economic activity.

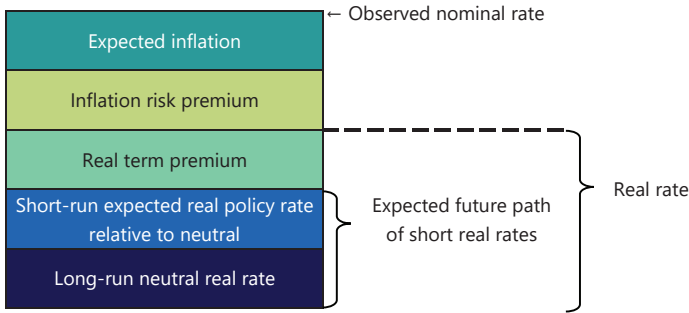
Real Rates as the Driver of Higher Long-Term Rates

Long-maturity real yields, as proxied by Treasury Inflation-Protected Securities (TIPS), rose and then declined, roughly in tandem with nominal Treasury yields during 2023 (figure 2-30), indicating that inflation expectations likely changed little and that most of the nominal yield change was attributable to the real component in rates.¹⁹

The causes behind changes in real rates are often uncertain, and 2023 proved to be no exception—with particular uncertainty about why rates rose so sharply but then declined. Figure 2-31 illustrates real term rates as a component of nominal rates. Suggested explanations for the initial, sharp increase in real rates include tighter monetary policy; a higher expected neutral real rate (the theoretical interest rate that neither stimulates nor slows the economy); and the difference in return demanded by investors to hold long-maturity securities relative to short-maturity ones, also referred

¹⁹ Strictly speaking, the nominal minus TIPS yield spread only measures the inflation compensation to investors, which is also affected by differential liquidity of TIPS relative to nominal securities and the risk premium that investors may price for inflation, and so is not a direct measure of inflation expectations. Estimates of these effects from the model of D’Amico, Kim, and Wei (2018) show that break-even rates underestimated expected inflation by about 10 basis points, on average, during 2023.

Figure 2-31. Components of Nominal Rates



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 Source: CEA analysis.
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to as the “term premium.” However, these factors fail to fully explain why long-maturity, risk-free real rate increases largely reversed in the latter part of the year, making it difficult to forecast how these rates will evolve in the future. Identifying the drivers of rate movements is difficult because concepts such as the neutral rate and term premia are not directly observable in asset prices. Surveys and term structure models can be used to estimate the various components that constitute nominal and real interest rates (Kim and Wright 2005; D’Amico, Kim, and Wei 2018).

A Higher Expected Path for the Real Policy Rate

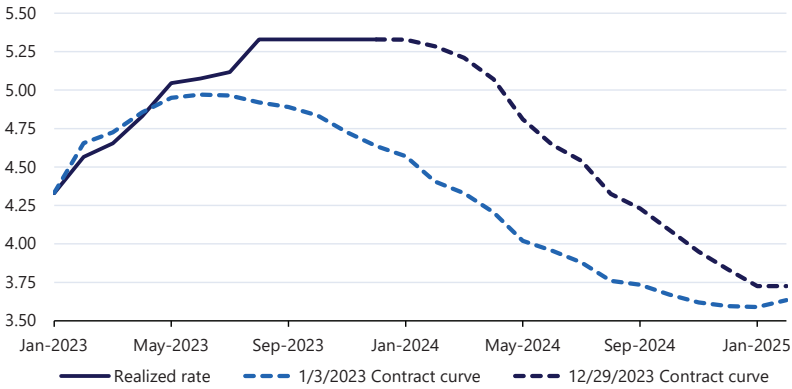
As the Federal Reserve increased its target rate in 2022 and 2023, estimates of the expected path of near-term policy unsurprisingly shifted from below neutral—stimulative—to above neutral—restrictive. As the nominal policy rate rose to its highest level since 2001, the estimated real policy rate reached its highest level since the global financial crisis and also became restrictive for the first time in the postcrisis period.

Expectations for increasingly tight monetary policy over most of 2023 (figure 2-32, panel A) resulted in part from a series of economic data releases that showed marked labor market resilience and buoyant consumption, which surprised forecasters throughout the year. Figure 2-32, panel B, shows the total and average changes in the 10-year Treasury yield, clustered around major data releases: nonfarm payrolls, unemployment insurance claims, consumer confidence, and core CPI inflation. It incorporates both positive and negative changes in the 10-year yield, and it filters out days of Federal Open Market Committee meetings or other major nondata events with a market impact. Jobless claims, which are released weekly, showed the largest cumulative contribution to rising 10-year Treasury yields in 2023—the dark green bar in the figure—while the monthly inflation data

Figure 2-32. Federal Funds Rate and Federal Funds Futures Rates

A. Realized Policy Rate and Shift in Expected Policy Rate

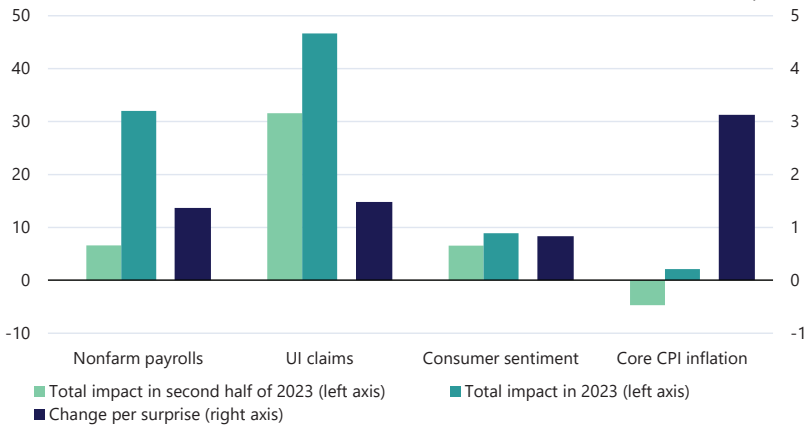
Percent



B. Change in the 10-Year Yield Around Data Release Surprises

Basis points

Basis points



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Sources: Bloomberg; CEA calculations.

Note: UI = unemployment insurance; CPI = Consumer Price Index. In panel A, expectations are derived from federal funds futures contracts as of 12/29/2023 and 1/3/2023. Realized rates are monthly averages of the daily federal funds effective rate. In panel B, data release surprises are classified as any time the data differ from expectations. Change per surprise is a predicted value, measured in standard deviations from the median of surveyed expectations.

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demonstrated the largest impact per surprise.²⁰ The difference between the light and dark green bars gives the impact over the first half of the year alone. The estimates show that the unexpected part of payroll releases had

²⁰ The estimates given here are from an event study regression of the change in 10-year Treasury yields in a 1-day window, as given in economic data releases on the surprise component of the news. The 1-day window starts with the closing price on the date before the announcement and ends with the closing price on the announcement date. The surprise component is the difference between the realized outcome and the median Bloomberg survey expectation, scaled by the standard deviation of submitted survey expectations.

a disproportionate impact on rising yields during the first half of the year, whereas jobless claims contributed relatively more in the latter half of 2023, even with the sharp drop in yields toward the end of the year.

In mid-December 2023, the Federal Open Market Committee released a statement and forecast on markets that was widely interpreted as signaling that, barring any data surprises, policy tightening had peaked and the next move would be a policy rate cut (Federal Reserve 2023a; Federal Reserve, Federal Open Market Committee 2023). Figure 2-32, panel A, provides a snapshot of the market-implied, expected short-run path of the federal funds rate, showing the upward trajectory of the target policy rate during 2023 (solid navy line in the figure) and the expected path of the target rate as captured at the end of the year (dashed navy line). Despite the end-of-year shift to expected easing, the anticipated path of the policy rate remained higher than it had been at the start of 2023 (dashed blue line).

The Term Premium

The rising Treasury term premium further drove term rates higher during 2023. Conceptually, the real term premium is the component of the long-maturity, risk-free real rate that is not explained by the expected future path of short-maturity real rates (figure 2-31). The 10-year Treasury term premium was largely negative from 2019 to 2021, according to most estimates, before rising to be occasionally positive amid the growing interest rate environment, a pattern that persisted during 2023.

Several types of risks could have supported the term premium in 2023. As interest rates rise, bond prices fall, though the relationship is not one-for-one. The pricing of duration risk recognizes that the longer the maturity of the bond (all else remaining equal), the larger the price decline per percentage-point increase in the interest rate. The risk of capital loss for an investor needing to sell a bond before maturity motivates them to demand a higher term premium. A possible contributor to a higher real term premium is greater near-term uncertainty about medium- to long-maturity real rates, which could stem from investor uncertainty about the Federal Reserve's future policy rate. Heightened expected rate volatility, as policy expectations rapidly shift, could amplify the pricing of duration risk in bond term premia. The MOVE index—as noted above, a measure of expected future Treasury rate volatility (figure 2-29, panel A)—rose along with rates across maturities and term premium estimates starting in late 2021. In March 2023, the MOVE index temporarily spiked to its highest level since the peak of the financial crisis in 2008 amid interest rate risk-related banking stresses. The index ended the year within the range it has been since 2021, which is still relatively high compared with the post-financial crisis period.

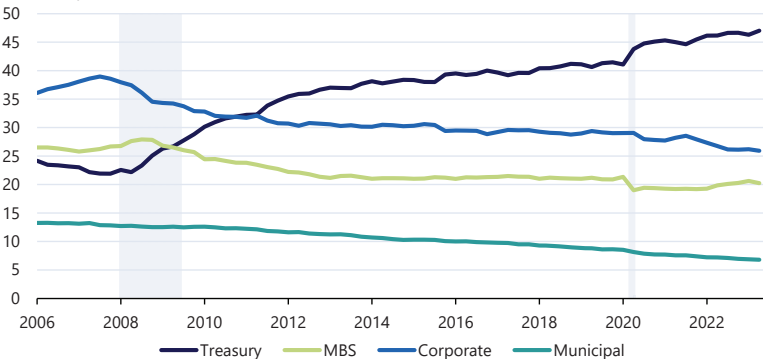
Potential Risks for the Outlook

Before long-maturity, real risk-free rates later declined—particularly compared with the negative real rates for the 2 years before the start of policy tightening—the dramatic shift to a real risk-free return above 2 percent produced some expected outcomes and posed some challenges and potential risks. Structural changes in markets and the economy may have changed the ways that firms and individuals respond to higher rates since the United States was last in a similar rate environment, about 15 years ago. Additionally, the speed at which organizations can now adjust to shocks adds an additional degree of uncertainty to the outlook.

Figure 2-33. U.S. Debt by Type and Holder

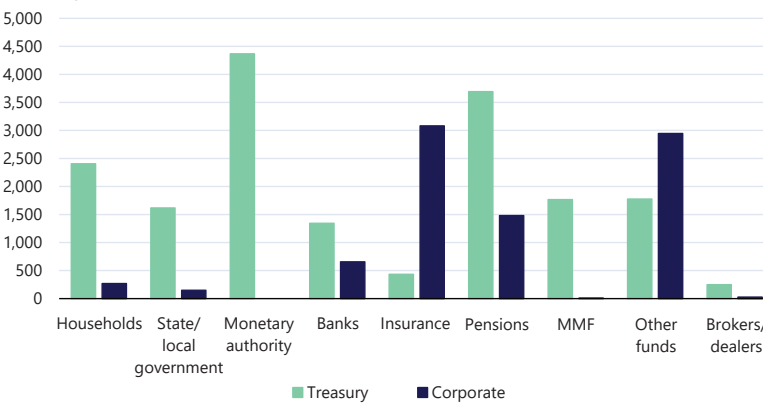
A. U.S. Debt Shares Outstanding Net of Federal Reserve Holdings

Percent of total debt



B. Domestic Holders of Treasury and Corporate Debt as of 2023:Q3

Billions of dollars



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Source: Federal Reserve Board.

Note: MBS = mortgage-backed securities. MMF = money market fund. Data are from the Federal Reserve's financial accounts. Only large categories of U.S. holders are shown. The "other funds" category includes mutual funds, closed-end funds and exchange-traded funds. Household category includes non-profit holdings. Corporate bond holdings include foreign bonds. Gray bars indicate recessions.

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Treasury debt has constituted the largest portion of U.S.-issued debt since overtaking corporate debt in 2011, as illustrated in figure 2-33, panel A. Pension funds, other investment funds, and insurers are among the top holders of the two largest debt categories: Treasury and corporate securities, as illustrated in figure 2-33, panel B. Depending on the structure of the fund, the possibility of losses or rapid investor redemptions could subject some of these entities to a quickly changing risk profile. Those with relatively short-maturity holdings, such as money market funds holding primarily Treasury bills, will be less exposed as the prices of longer-duration securities are more sensitive to changes in interest rates. Although banks are not the top holders of Treasury securities, concentrated holdings could still pose risks, especially for less-diversified financial institutions such as small and regional banks.

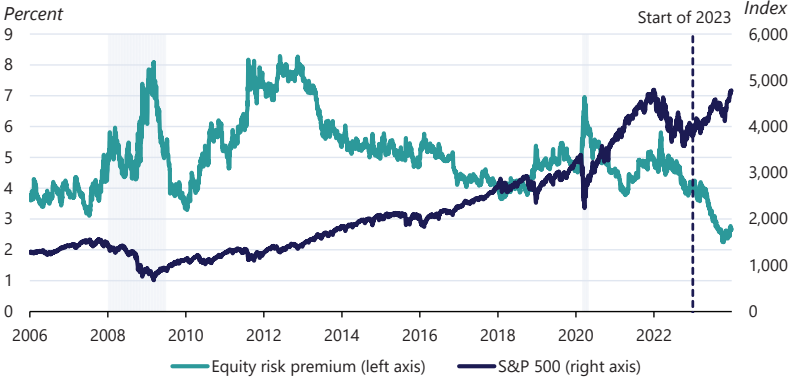
Higher real interest rates increase the risk of adverse events for leveraged entities, whether public or private. According to the most recent data filed with the Securities and Exchange Commission, hedge funds' holdings of debt securities reached a historic high, constituting more than one-third of their total assets ([Federal Reserve 2023b](#)). Mark-to-market losses are not realized losses, but market volatility or an interruption of income could force asset liquidations at a loss that spirals into a credit event. The banking stresses of this past March served as a reminder of these risks—and the importance of vigilance in periods of transition.

Higher real rates also increase the risk of adverse movements in future stock prices, as share valuations adjust to higher competing real returns. When real risk-free rates are negative, investors can earn a positive real return only by investing in riskier assets than Treasury debt, such as stocks. Over the past 10 years, the average real risk-free rate has been about 0.3 percent, providing a low hurdle rate for equities. By the end of 2023, the real risk-free rate was above 1.5 percent (figure 2-34, panel B), substantially increasing the minimum real return that investors would require from riskier assets.

The Standard & Poor's (S&P) 500 equity index rose about 25 percent in 2023 (figure 2-34, panel A), and the average price-to-earnings ratio per share for S&P 500 companies rose slightly more. Price gains were therefore attributable to higher share valuations rather than improved earnings, on average. The inverse of the price-to-earnings ratio, the earnings-to-price ratio, is a common proxy for the expected equity return. The intuition is that earnings will either be paid out to the investor in dividends or will be reinvested to boost future growth ([Campbell and Shiller 2001](#)). The return that remains after subtracting the real risk-free rate is called the equity risk premium. The average equity risk premium for the S&P 500 index, using the 10-year TIPS yield as a proxy for the real rate, ended the year at about 2.65 percent, far below its 10-year average, much of which was attributable to the

Figure 2-34. Equity Risk Premium

A. Equity Risk Premium and the S&P 500 Index



B. Equity Risk Premium and 10-Year TIPS Yield



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Source: Bloomberg.

Note: S&P = Standard & Poor's; TIPS = Treasury Inflation-Protected Securities. Equity risk premium is a measure of the average equity yield minus the real risk-free rate. Gray bars indicate recessions.

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sharp rise in the real rate, as shown in figure 2-34, panel B. The figure also illustrates how, in 2023, the estimated equity risk premium fell below its level from just before the 2008 financial crisis. A sharp correction in equity valuation, implying a higher earnings-to-price ratio, could dent consumption and potentially destabilize markets. However, a more modest and gradual decrease could bring the equity risk premium back in line with historic values relatively seamlessly.

Higher rates naturally raise the Treasury's debt-servicing costs for new issuances, regardless of the component in yields that is responsible for the increase. However, the implications of higher rates for future debt and GDP, which can make higher debt-servicing costs more or less sustainable, depends on the primary drivers of rising rates. For example, an expected rise in the neutral real rate—perhaps prompted by faster trend productivity

growth—could reflect factors that would also boost GDP, and thus potentially moderate the debt-to-GDP ratio, all else remaining equal. However, a higher term premium—which weighs on investments without any expected offsetting productivity gain—is an unambiguous net drag on economic activity.

The Forecast for the Years Ahead

The Biden-Harris Administration finalized the latest version of its official economic forecast on November 9, 2023, with data available through November 3. The forecast provides the Administration’s projections of key economic variables over the next 11 years, from 2024 to 2034, as illustrated in table 2-2. Because more 2023 data have become available during the interval between when this forecast was finalized and the publication of this *Report*, the official forecast discussed in this chapter may differ from current estimates for 2023. Indeed, since the forecast was finalized, inflation has fallen slightly more than expected and interest rates have declined, while employment and economic activity have remained robust—suggesting that, if the forecast were finalized today, it would likely show lower interest rates, with continued progress on inflation, growth, and employment. This overall forecast is a critical input to the President’s Fiscal Year 2025 Budget,

Table 2-2. Economic Projections, 2022–34

Year	Percent Change (Q4-to-Q4)			Level (percent)			
	Real GDP	Inflation Measures		Unemployment Rate		Interest Rates	
		GDP Price Index	CPI	Annual	Q4	3-Month T-Bills	10-Year T-Notes
Actual							
2022	0.7	6.4	7.1	3.6	3.6	2.0	3.0
2023	3.1	2.6	3.2	3.6	3.8	5.1	4.0
Forecast							
2023	2.6	3.0	3.4	3.6	3.8	5.1	4.1
2024	1.3	2.3	2.5	4.0	4.1	5.1	4.4
2025	2.0	2.1	2.3	4.0	4.0	4.0	4.0
2026	2.0	2.1	2.3	3.9	3.9	3.3	3.9
2027	2.0	2.1	2.3	3.9	3.8	3.1	3.8
2028	2.0	2.1	2.3	3.8	3.8	2.9	3.8
2029	2.1	2.1	2.3	3.8	3.8	2.8	3.7
2030	2.2	2.1	2.3	3.8	3.8	2.8	3.7
2031	2.2	2.1	2.3	3.8	3.8	2.7	3.7
2032	2.2	2.1	2.3	3.8	3.8	2.7	3.7
2033	2.2	2.1	2.3	3.8	3.8	2.7	3.7
2034	2.2	2.1	2.3	3.8	3.8	2.7	3.7

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

Note: The forecast is based on data available as of November 3, 2023; actual data for 2023 arrived later. The interest rate on 3-month (91-day) Treasury bills is measured on a secondary-market discount basis.
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informing many Federal agencies' budget projections and forecasted tax revenues.

All economic forecasts are subject to considerable uncertainties that affect the range of potential outcomes. As the forecast was finalized, prominent sources of uncertainty included supply chain disruptions, progress on disinflation, rising interest rates, and geopolitical issues that risked spillover effects on the global trade of essential commodities. In a change from recent years' forecasts, the COVID-19 pandemic is no longer expected to be a major impediment to economic growth. Vaccinations, increasing immunity, and new treatments have combined to stabilize fatalities, which averaged 206 per day during 2023, down from daily averages of 1,255 and 670 during 2021 and 2022, respectively (CDC n.d.).

In the first full forecast year, 2024, real GDP is expected to grow at 1.3 percent, lower than the potential rate, as interest rates remain high and inflation recedes. Starting in 2025, the President's policies on infrastructure, care, human capital, and immigration reform are expected to increase the growth rate of both potential and actual GDP. During the budget window's final five years, beginning in 2030, the forecast accounts for the decreasing downward pull on the labor force participation rate stemming from the baby boom generation's retirements. Because of the boost from the President's policies, together with the diminishing downward demographic pull, potential GDP growth is expected to be stronger relative to the period 2006–23.

The inverse relationship between the change in the unemployment rate and the growth rate is known as Okun's Law.²¹ Figure 2-35 shows the four-quarter change in the unemployment rate against the five-quarter change in real output. This relationship accounts for 83 percent of the variance in the unemployment rate from 2006 through 2022.²² The rate of real potential output growth is estimated as the rate of real GDP growth consistent with a stable unemployment rate—represented where the regression line crosses the x axis, at 1.73 percent, with a standard deviation of ± 0.2 percentage point.

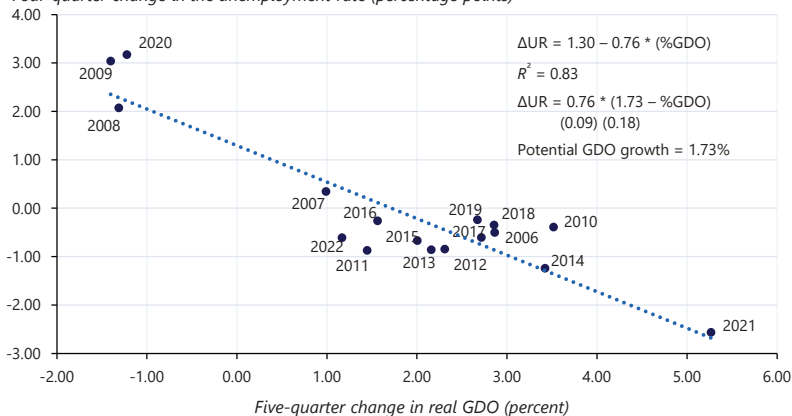
The consensus view of potential real GDP growth during the next 11 years is similar to this backward-looking, Okun's Law–based estimate (figure 2-35). Expected year over year growth averages 1.8 percent in the Blue Chip panel's latest survey of private professional forecasters' long-term expectations in October 2023. The Administration's forecasted pace for

²¹ Former CEA Chairman Arthur Okun proposed what came to be known as Okun's Law in 1962 (Okun 1962). When GDP grows faster than its potential rate, the unemployment rate falls, and when real output grows more slowly than its potential rate, the unemployment rate rises. In its simple first-difference specification, Okun's Law takes the form $\Delta UR = \beta(y^* - y)$, where ΔUR is the change in the unemployment rate, and y^* and y are the rates of potential real GDP growth and of actual real GDP growth, respectively. β and y^* are estimated coefficients, where β should be between 0 and 1, and y^* is the estimated rate of potential real GDP growth.

²² Complete data for 2023 were not available when this *Report* went to press.

Figure 2-35. Estimation of Potential Output Growth by Okun's Law, 2006–22

Four-quarter change in the unemployment rate (percentage points)



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

Note: GDP = gross domestic product; GDI = gross domestic income; GDO = gross domestic output. GDO is the average of GDP and GDI. The x axis plots five-quarter average growth of GDO through Q4 of each year, with Q4 of year t and Q4 of year $t-1$ each receiving 1/8 weights while Q1, Q2, and Q3 receive 1/4 weights.

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long-term real GDP growth exceeds the consensus pace, largely because, as is common practice in Administration forecasts, it anticipates the effects of growth-inducing policies in the budget that have not yet been enacted, and possibly because the Blue Chip forecast does not anticipate the diminishing downward pull of baby boomers' retirements.

The Near Term

The Biden-Harris Administration expects lower-than-potential output in 2024, reflecting ongoing fiscal consolidation and the legacy of tight monetary policy. Real GDP growth during the four quarters of 2024 is expected to be 1.3 percent, slightly slower than the 1.7 percent potential estimate extrapolated from Okun's Law, and the unemployment rate is expected to edge up to 4.1 percent by Q4. Compared with the October 2023 Blue Chip consensus forecast (the latest available when the Administration finalized its forecast) of 0.9 percent real GDP growth, and a 4.3 percent consensus unemployment rate by the year end, the Administration's forecast was slightly optimistic. In comparison, however, with the February 2024 Blue Chip forecast, the latest as this *Report* goes to press, in which real GDP was revised up and the unemployment rate was revised down, the Administration's forecast is closer to the latest consensus.

CPI inflation is projected to fall further, from an expected 3.4 percent during the four quarters of 2023 to 2.5 percent during 2024. CPI inflation tends to run higher than PCE inflation; thus, a 2.5 percent CPI inflation rate is roughly consistent with a 2.2 percent PCE inflation rate. Inflation, as

measured by the price index for GDP, meanwhile, is expected to fall from a forecasted 3.0 percent rate during 2023 to 2.3 percent during 2024.

As inflation descends back to the target, the unemployment rate drifts up slightly, reaching a peak of 4.1 percent in 2024:Q4. The unemployment rate is then expected to edge lower, eventually falling—by 2027:Q4—to 3.8 percent, the rate that the Administration considers to be consistent with stable inflation in the long term.

Yields on 10-year Treasury notes rose about 1 percentage point from May 2023—when the previous (Mid-Session Review) Administration forecast was finalized—to early November 2023, when the fall forecast was finalized—even though, as discussed above, long-term rates retraced much of that increase by the end of 2023. The Administration has therefore substantially increased its near-term (2024) forecast of two interest rates—those for the 91-day Treasury bill (T-bill) and for the 10-year Treasury note. These interest rates are expected to average 5.1 and 4.4 percent, respectively, in 2024, representing a decline from their October 2023 levels, a bit less of a decline than that projected by the Blue Chip consensus panel in October. The implicit forecast from the October futures market was similar to the Administration’s forecast of T-bill rates in 2024, but the futures market implicitly forecasted higher yields on 10-year Treasury notes. The Administration expects these interest rates to slowly decline over the first five forecast years, eventually plateauing at 2.7 percent for the T-bill and 3.7 percent for the 10-year Treasury note, rates that are slightly higher than the Blue Chip consensus of 2.6 percent and 3.5 percent, respectively, but are substantially lower than what was reflected in October 2023 values from market futures.

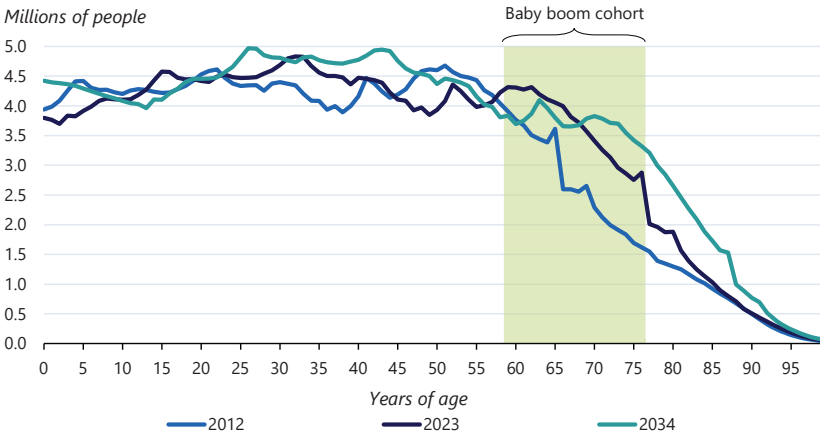
Although the Administration has substantially increased its forecast of output growth in 2023 relative to the Mid-Session Review, the effect on real GDP is partly offset by downward revisions to expected growth in 2024 and 2025. After adjusting for the September 2023 benchmark revision to the National Income and Product Accounts, the level of real GDP has been upwardly revised (relative to the Mid-Session Review) by about 1 percent from 2025 and thereafter.²³

The Long Term

In contrast to the near-term outlook, the Biden-Harris Administration’s long-term forecast for real GDP growth exceeds the Blue Chip consensus forecast by an average of 0.3 percentage point a year during the 10 years between 2025 and 2034. As is the common practice in the Administration’s forecasts, the forecast assumes that the President’s proposed economic

²³ Because the benchmark adjustment to real GDP has affected levels and growth rates since 2012, the calculations here cumulate growth rates only since 2022:Q4.

Figure 2-36. The Evolution of the U.S. Population’s Age Composition



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Source: Social Security Administration.

Note: The U.S. Social Security population differs slightly from the U.S. civilian noninstitutional population.

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policies—including a range of programs to enhance human capital formation, provide childcare, and reform immigration policy—will be enacted, modestly boosting the average annual rate of potential real GDP growth during the period 2030–34.

Demographics affect the long-term forecast in several ways (figure 2-36). The Administration recognizes that the baby boom cohort’s retirements are likely to wane during the last seven years of the budget window (2028–34), easing the downward pressure on labor force participation. This pressure began in 2008, when the oldest baby boomers (those born in 1946) first reached the Social Security early retirement age of 62, and this downward pressure for continued declines in the participation rate will have been almost halved by 2028, when the youngest members of the cohort turn 66. During the past five years, this demographic force has lowered the growth of the labor force participation rate and potential real GDP growth by about 0.4 percentage point a year; but during the period 2029–34, the downward force is expected to lessen to only about 0.2 percentage point a year—an improvement of 0.2 percentage point (chapter 3 provides an in-depth analysis of these demographic trends).

The supply-side components of long-run growth are shown in table 2-3, over both history and forecast.²⁴ The civilian, noninstitutional population age 16 years and above is expected to grow by an average annual rate

²⁴ Because many components of these growth rates are erratic in the short run, table 2-3 documents historical growth rates for long intervals from business-cycle peak to business-cycle peak. The exception is column 5, the interval between the last business-cycle peak, for 2019:Q4 through 2023:Q3 (the last available quarter when this forecast was finalized).

Table 2-3. Supply-Side Components of Actual and Potential Real Output Growth, 1953–2034

Component	Growth Rate (percentage points)					
	1953:Q2 to 2019:Q4	1990:Q3 to 2001:Q1	2001:Q1 to 2007:Q4	2007:Q4 to 2019:Q4	2019:Q4 to 2023:Q3	2023:Q3 to 2034:Q4
	(1)	(2)	(3)	(4)	(5)	(6)
1 Civilian noninstitutional population, age 16+	1.4	1.2	1.1	1.0	0.6	0.7
2 Labor force participation rate	0.1	0.1	-0.3	-0.3	-0.2	-0.1
3 Employed share of the labor force	0.0	0.1	0.1	0.1	0.0	0.0
4 Average weekly hours (nonfarm business)	-0.2	0.0	-0.2	-0.1	-0.2	0.0
5 Output per hour (productivity, nonfarm business)	2.1	2.4	2.4	1.5	1.3	1.7
6 Output per worker differential: GDO vs. nonfarm	-0.3	-0.3	-0.6	-0.4	0.4	-0.2
7 Sum: Actual real GDO	3.0	3.5	2.4	1.8	1.8	2.0

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

Note: GDP = gross domestic product. Gross domestic output (GDO) is the average of GDP and gross domestic income. Real GDO and real nonfarm business output are measured as the average of income- and product-side measures. The output-per-worker differential (row 6) is the difference between output-per-worker growth in the economy as a whole (GDO divided by household employment), and output-per-worker growth in the nonfarm business sector. All contributions are in percentage points at an annual rate. The forecast jumps off from data available on November 3, 2023. The total may not add up due to rounding. The periods 1953:Q2, 1990:Q3, 2001:Q1, 2007:Q4, and 2019:Q4 are all quarterly business-cycle peaks. Population, labor force, and household employment have been adjusted for discontinuities in the population series.

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of 0.7 percent from 2023 to 2034, which is below the average 1.0 percent annual growth rate from 2007 to 2019.²⁵ Much of this expected growth is likely to result from immigration.²⁶

The demographic factors weighing on the labor force participation rate’s continued decline will be largely offset over the projection period by the Administration’s human capital and childcare policy proposals. The workweek is, meanwhile, projected to stabilize after a long period of decline driven by the entry of women into the workforce and the declining share of manufacturing in total employment. These factors are less likely to dominate the path of the workweek than in past years.

The employed share of the labor force is projected to remain close to its current level, and therefore makes no net contribution over the forecast horizon. Productivity growth (measured as output per hour) is projected to grow at an average 1.7 percent a year over the 11-year forecast interval, somewhat more slowly than its 2.1 percent long-term average but faster than the 1.5 percent growth rate during the 2007–19 business cycle. Finally, the output per worker differential—the difference between the output per person for the economy as a whole and the output per person in the nonfarm business sector—is expected to be negative, which largely is a consequence of the national income accounting convention that productivity does not grow in the government or household sectors. Although the differential is therefore most often negative over long periods, it is projected here to be less negative in the projection period than over the other long periods given

²⁵ The civilian, noninstitutional population excludes individuals who are incarcerated or are living in mental health facilities or homes for seniors, or who are on active duty in the Armed Forces. Projected population growth rates are sourced from demographers at the Social Security Administration (2023a).

²⁶ See the forecast from the Office of the Social Security Actuary at the Social Security Administration (2023b).

in the table, because of the projected declining share of government in total output.

The real GDP forecast represents the sum of three primary layers: (1) a baseline projection, developed through an Okun's Law analysis; (2) an adjustment to this baseline to accommodate the labor force participation rate differing during the forecast interval from its behavior during the estimation interval; and (3) an increase to potential GDP growth to reflect the effects of the Administration's pro-growth policies. When the baseline projection of 1.7 percent potential growth, the 0.2-percentage-point adjustment due to the baby boom cohort's retirements slowing, and the 0.3-percentage-point increase attributable to pro-growth Administration policies are summed, this results in the Administration's projected 2.2 percent a year real GDP growth rate during the budget window's final five years.



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Chapter 2

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