



## Chapter 1

# **Four Years in Review and the Years Ahead**

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

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

During the Administration, the U.S. economy has achieved the lowest average unemployment rate of any administration in more than 50 years and reached its all-time lowest unemployment rates for Black and Latino workers. A record 20 million new business applications have been filed since the

start of the Administration, and nearly 17 million jobs have been created. Combined with historic investments from the Inflation Reduction Act (IRA), CHIPS and Science Act (CHIPS), and Bipartisan Infrastructure Law (BIL), the Administration's policies have helped to fast-track economic recovery and invest in America's future economic growth.

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

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

## **A Unique Recovery**

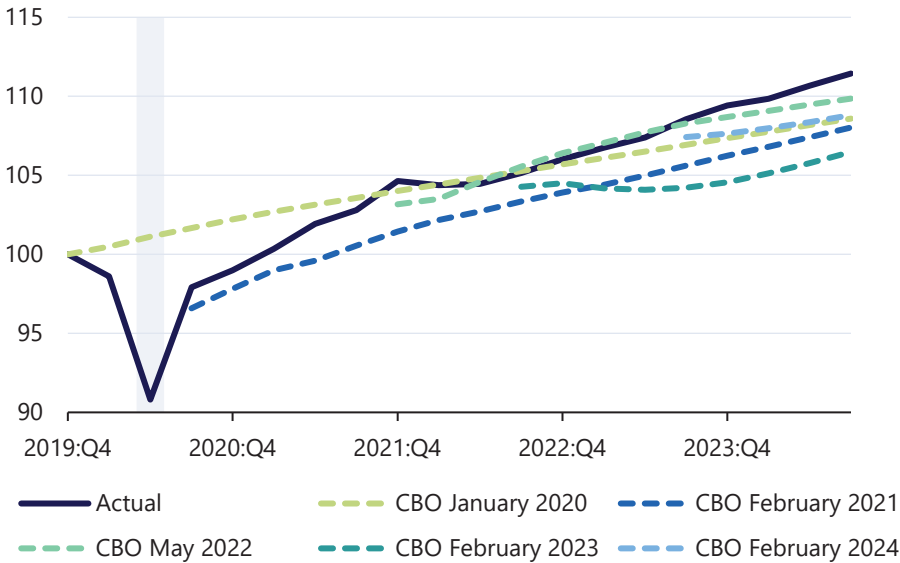
The U.S. pandemic recovery has been robust and swift compared to recoveries from prior recessions, and further, the recovery and subsequent expansion have consistently outpaced forecasts. As of the third quarter of 2024 (hereafter, 2024:Q3), actual real GDP exceeded every projection made by the Congressional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

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

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

Index (2019:Q4 = 100)



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Sources: Bureau of Economic Analysis; Congressional Budget Office; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted. CBO projections may not line up with actual data due to revisions.

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4 percentage points stronger than expected in the CBO’s February 2023 forecast, the first projection made after inflation peaked in June 2022.<sup>2</sup>

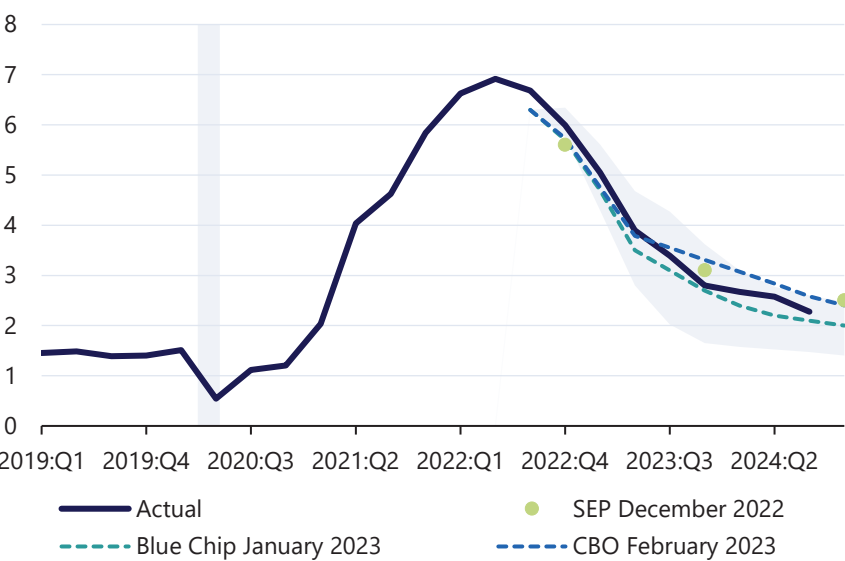
Professional forecasts made around the end of 2022, with disinflation underway, suggested that a period of substantially elevated unemployment and slow growth would be necessary to bring inflation down. Instead, the actual sacrifice ratio—a measure of the increase in unemployment required to achieve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

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

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

Figure 1-2. PCE Price Index

Percent change (year-over-year)



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

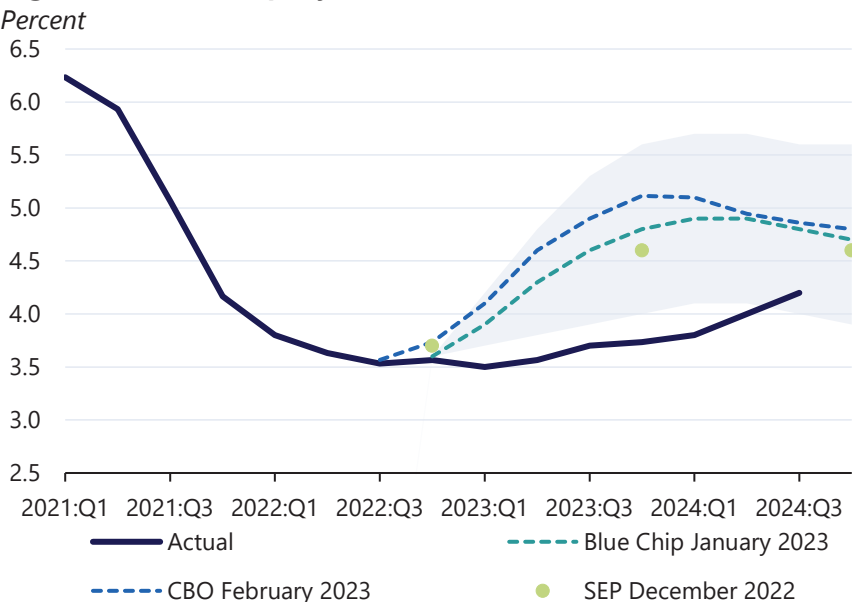
Note: Gray bar indicates recession. Data are seasonally adjusted. All forecasts were finalized before 2022:Q4 data were released. Summary of Economic Projections (SEP) data reflect median FOMC projections, Q4/Q4 percent change. Shaded area indicates the difference between Blue Chip Top 10 average and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

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

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

Figure 1-3. Unemployment Rate



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Sources: Bureau of Economic Analysis; Congressional Budget Office; Blue Chip Economic Indicators; Federal Reserve Board of Governors; CEA calculations.  
Note: Data are seasonally adjusted. All forecasts (besides Blue Chip) were finalized before 2022:Q4 data were released. Summary of Economic Projections (SEP) data reflect median FOMC projections, Q4 level. Shaded area indicates the difference between Blue Chip Top 10 average and Blue Chip Bottom 10 average estimates.  
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Keeping millions more workers employed in a strong labor market with real wage gains has allowed the economic benefits of full employment to take hold. As the CEA has documented, full employment expansions particularly benefit demographic groups with comparatively lower labor force participation rates and higher unemployment rates (CEA 2024a). The U.S. labor market has broken multiple records under the Administration, gains made possible by data-driven policymaking and an unwavering focus on supporting American families.

Macroeconomic Developments

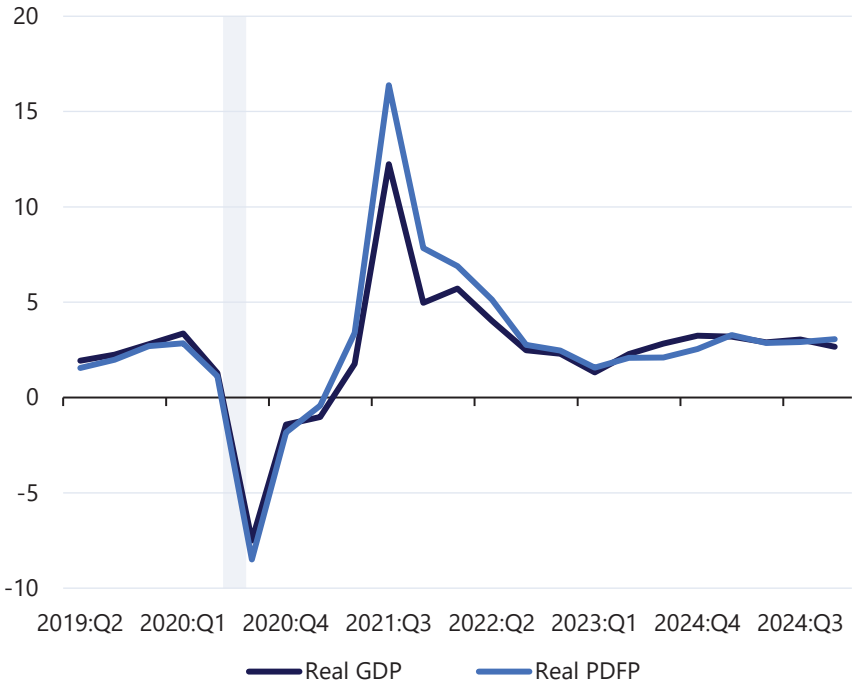
Over the past four years, the U.S. economy has outpaced recoveries following past domestic crises as well as pandemic recoveries in other advanced economies on two critical dimensions: recovery speed and subsequent expansions in GDP and consumption.

## GDP

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

**Figure 1-4. Real GDP and PDFP**

*Percent change (year-over-year)*



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Source: Bureau of Economic Analysis.

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

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Table 1-1. Historical Comparisons

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

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

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The Recovery in Context

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

supported strong demand over this period likely contributed to the historically rapid recovery from the pandemic recession ([de Soyres, Santacreu, and Young 2022](#)).

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

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

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

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

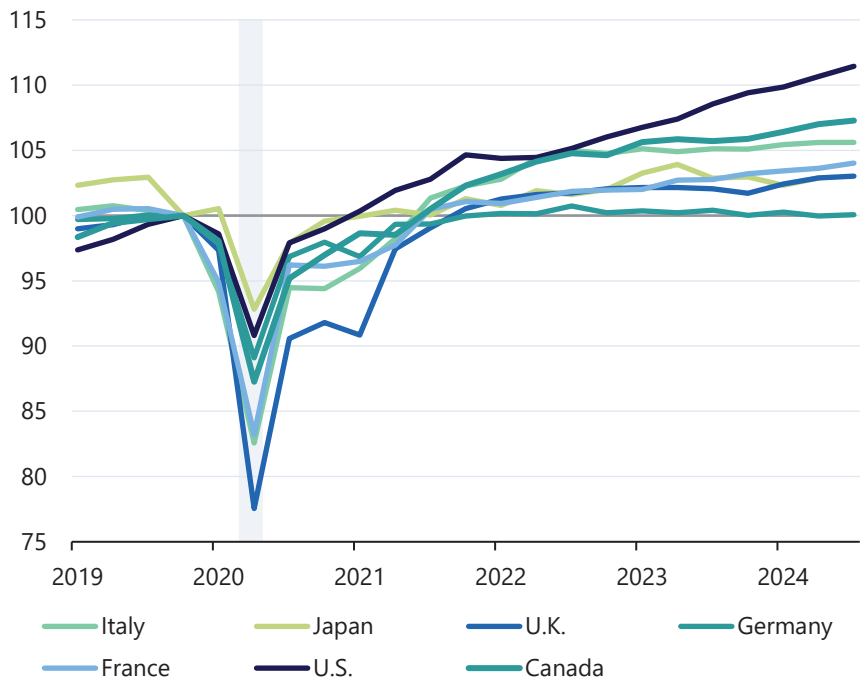
While food and energy price shocks following Russia's invasion of Ukraine hit European economies especially hard, high inflation rates in the wake of the pandemic and Russia's invasion were a near-global phenomenon. Figure 1-6 shows that despite U.S. growth far outpacing growth in other G7 economies,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

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

Figure 1-5. Real GDP Recovery in the G7

Index (2019:Q4 = 100)



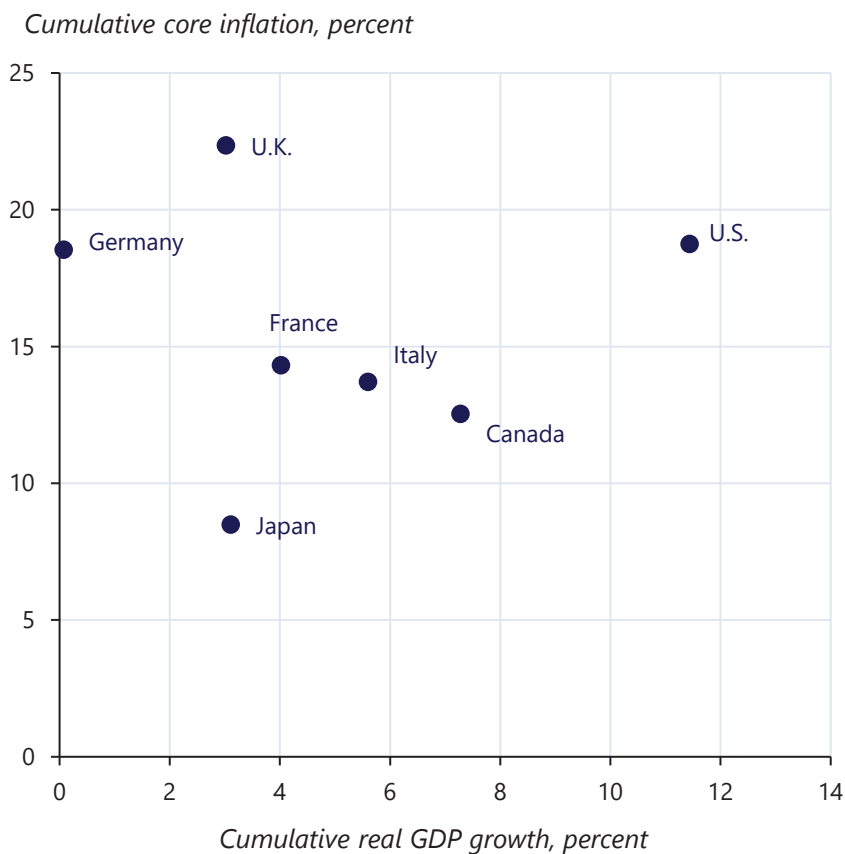
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Sources: Statistics Canada; The National Institute of Statistics and Economic Studies; Federal Statistical Office of Germany; Italian National Institute of Statistics; Cabinet Office, Government of Japan; U.K. Office for National Statistics; U.S. Bureau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

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

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



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

Note: All inflation data are harmonized except for the U.S., which uses core CPI excluding owner-equivalent rents. Japan and Canada's inflation metrics are core CPI measures harmonized for cross-country comparison, not the Harmonized Index of Consumer Prices series.

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Consumption

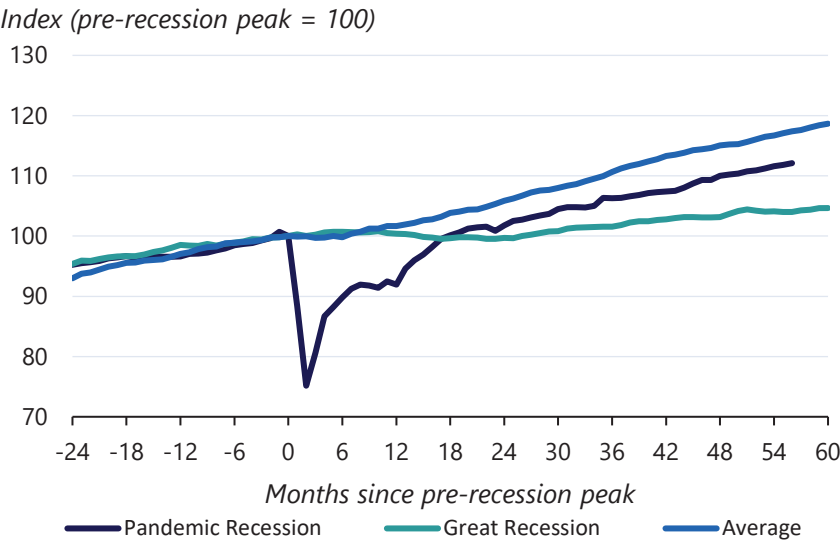
Consumer spending accounts for more than two thirds of U.S. GDP and has been a strong driver of growth during the current economic expansion. Real spending surpassed its pre-pandemic level in January 2021 and has

risen consistently over the past four years, with cumulative growth outpacing GDP growth. Robust consumer spending is due in part to policies like the ARP—which shored up household balance sheets—as well as to real wage gains and rising household net worth. The sharp reduction in services spending after the pandemic began, while an initial drag on total consumption, subsequently supported increased goods consumption. As of October 2024, real consumer spending had increased over its pre-pandemic level for durables, nondurables, and services.

*Shifts in Consumer Demand*

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

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



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Data are seasonally adjusted. Nominal series are deflated using their respective price indexes, then indexed to 100 at the peak before the recession as defined by the National Bureau of Economic Research. "Average" includes all other post-1959 recessions.

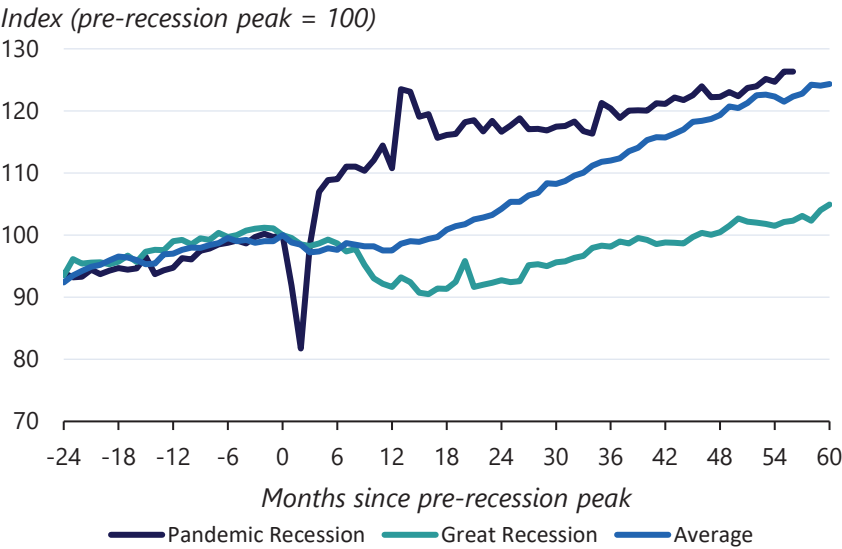
2025 Economic Report of the President

The reduction in services consumption effectively increased disposable personal income, while consumer demand simultaneously rose in categories like household furnishings and at-home entertainment. Notably, durable goods spending increased dramatically, surpassing its pre-recession peak three months after the pandemic-induced recession began. This result is surprising given the pro-cyclicality of durables consumption (Berger and Vavra 2015); for comparison, durables spending remained depressed for 47 months after the Great Recession. Because consumers rarely repurchase durables like appliances and furniture quickly, economists assumed that consumers were front-loading purchases and anticipated a subsequent decline in durables spending (Tauber and Van Zandweghe 2021). Instead, real consumer spending on durables remained above pre-pandemic levels and even increased from mid-2021 through 2024, with overall goods consumption remaining correspondingly strong.

*The Services Shortfall and Goods Consumption*

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

**Figure 1-8. Real Core Goods Spending Across Recessions**



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Data are seasonally adjusted. Nominal series are deflated using their respective price indexes, then indexed to 100 at the peak before the recession as defined by the National Bureau of Economic Research. "Average" includes all other post-1959 recessions.

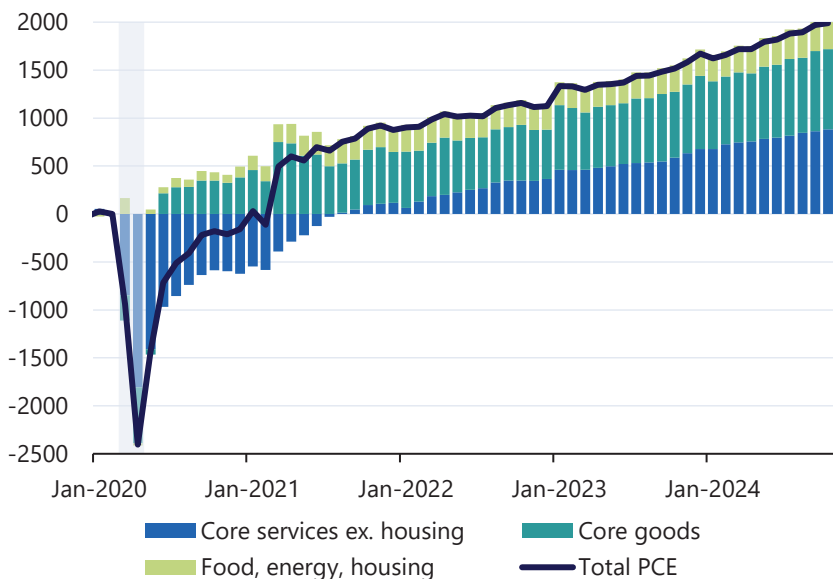
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goods consumption has been an essential driver of the current economic expansion, but it is not the full story. Because services account for around two thirds of total consumption, the unprecedented services spending shortfall dwarfs the increase in goods consumption over the period of the services shortfall: Only around half of the disposable income saved by abstaining from core services consumption was redirected contemporaneously to core goods consumption.<sup>4</sup>

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

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

*Billions of 2017 dollars*



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Sources: Bureau of Economic Analysis; CEA calculations.

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

*2025 Economic Report of the President*

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

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

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

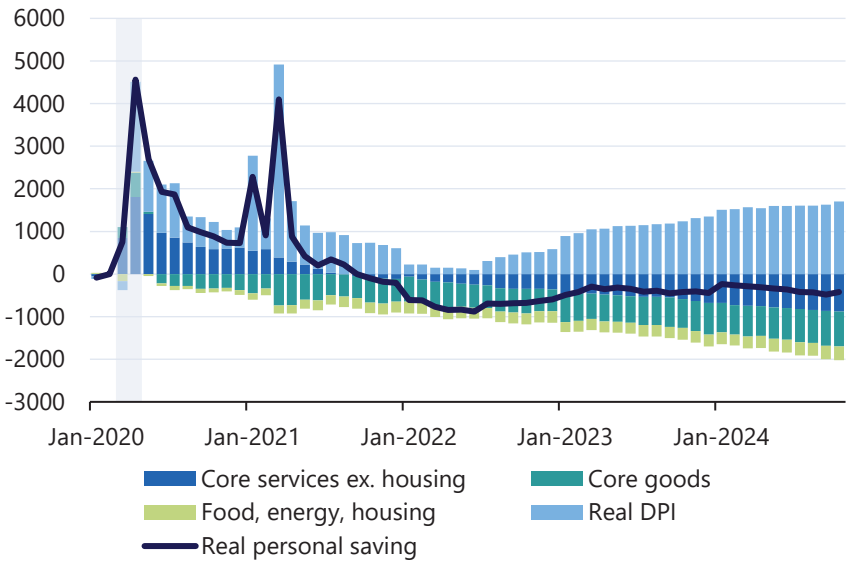
This finding has two implications for the macroeconomic dynamics of the past four years. First, fiscal support did not increase aggregate goods consumption beyond what was accounted for by aggregate forgone services consumption from March 2020 through July 2021. In fact, real consumer spending on goods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

*Excess Saving*

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

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

*Billions of 2017 dollars*



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Sources: Bureau of Economic Analysis; CEA calculations.

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

*2025 Economic Report of the President*

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

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

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

**Figure 1-11. Personal Saving Rate**



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Sources: Bureau of Economic Analysis; CEA calculations.  
Note: Gray bars indicate recessions. Data are seasonally adjusted.  
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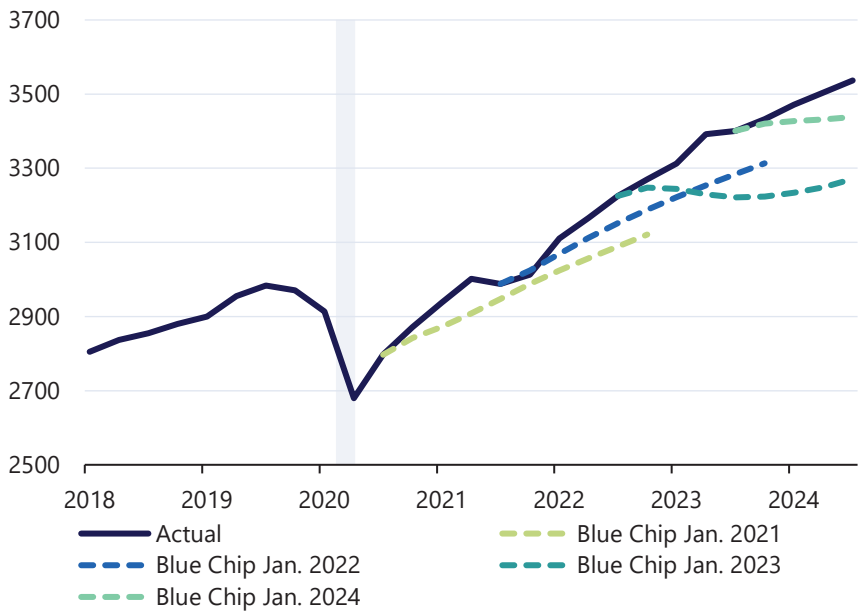
Additionally, pandemic-era excess saving acted as a buffer for households enduring health crises or job loss, though these households were still worse off than those not directly facing pandemic-related shocks ([Aladangady et al. 2023](#)). For households without immediate financial constraints, excess saving facilitated a form of consumption smoothing over the past four years.

*Investment*

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

**Figure 1-12. Real Private Nonresidential Fixed Investment**

*Billions of 2017 dollars*



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

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

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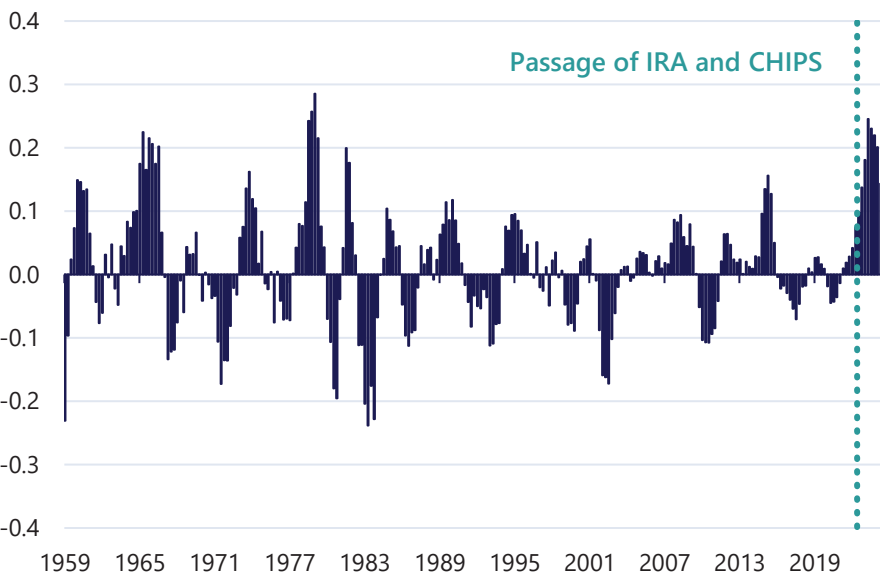
Incentivized public investment often spurs, or crowds in, private investment ([Dreger and Reimers 2016](#); [Pereira 2001](#)); total private investment commitments hit \$1 trillion as of November 2024.

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

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

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

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



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Sources: Bureau of Economic Analysis; CEA calculations.

Note: Data are seasonally adjusted.

*2025 Economic Report of the President*

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

## Policy Environment

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

### *Fiscal Policy*

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

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

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

### *Monetary Policy*

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

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

Percent



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Sources: Federal Home Loan Mortgage Corporation; Federal Reserve Bank of New York; Federal Reserve Board of Governors.

Note: Mortgage rates reflect the conventional 30-year fixed mortgage rate derived from median daily values of coupon rates and the weekly Freddie Mac U.S. Primary Mortgage Market Survey. Federal funds rate corresponds to the midpoint of the target range. Gray bars indicate recessions.

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range for the nominal federal funds rate to nearly zero on March 15, 2020, a decrease of 1.5 percentage points from two weeks prior. The move brought the effective federal funds rate back to the zero lower bound for the second time in modern history, less than five years after the first such instance concluded, and the FOMC maintained the near-zero target for two years. This rapid interest rate reduction was accompanied by a slate of emergency lending facilities targeting small and medium-sized firms, large corporations, state and local governments, financial institutions, and securities

markets, among other sectors (Federal Reserve Board of Governors 2023). Many of these programs were aimed at ensuring that credit markets were functioning, ultimately supporting the flow of credit to households and businesses. Crucially, actions by the Federal Reserve, including large-scale asset purchases, went beyond ensuring market functioning and provided the economy substantial monetary support (Milstein and Wessel 2024).

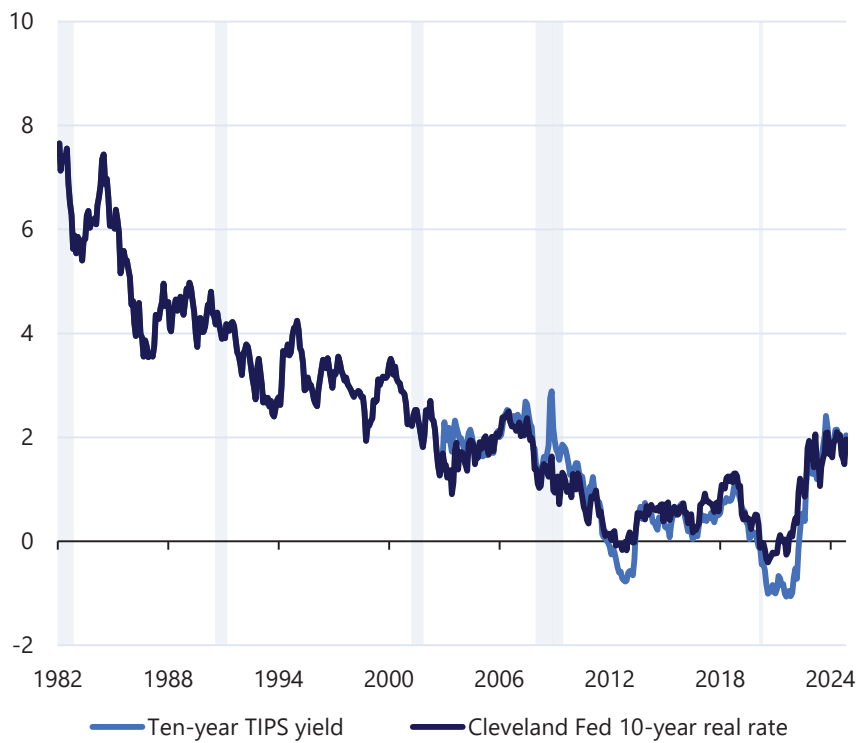
The second interest rate environment began in March 2022, when the FOMC began increasing the federal funds rate target range due to the upswing in inflation as strong demand outpaced constrained supply. From March 2022 through July 2023, the FOMC increased the federal funds rate target range by 525 basis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

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

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

Figure 1-15. Real Interest Rates

Percent



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

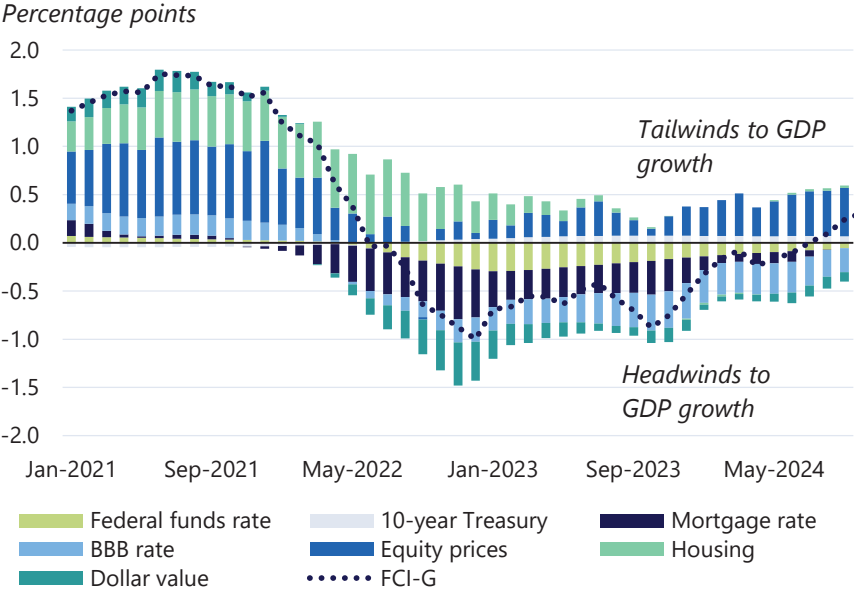
Note: Model-based estimates from the Federal Reserve Bank of Cleveland are based on fixed income markets and survey-based measures. TIPS refers to Treasury inflation-protected securities whose principal and interest payments are adjusted for inflation. Gray bars indicate recessions.

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Financial Conditions

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

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



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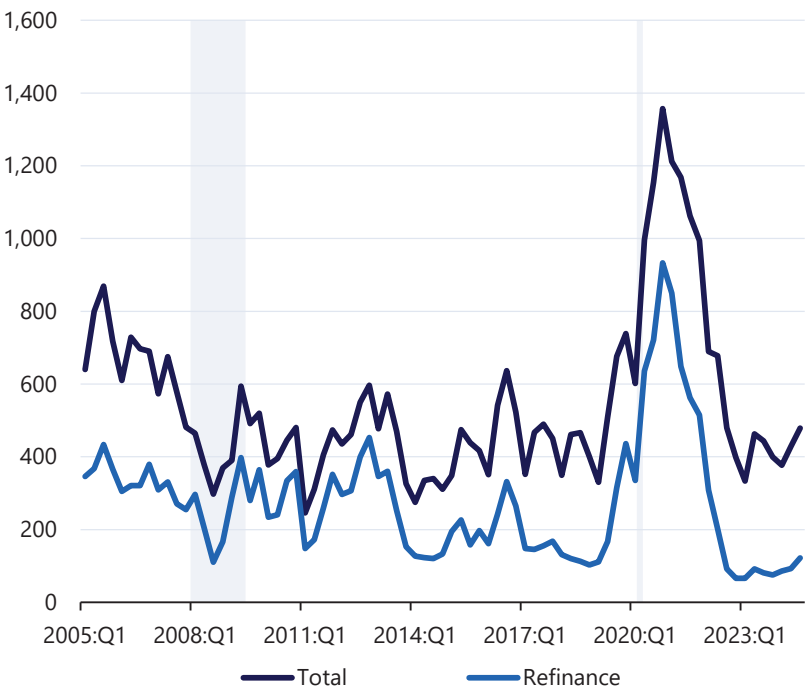
Sources: Federal Reserve Board of Governors; CEA calculations.  
Note: Data are from FCI-G (baseline), and inverted such that the figure is read as a fiscal impact measure, which shows cumulative effects on GDP growth one year ahead.  
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***Mortgage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

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

**Figure 1-17. Mortgage Originations**

*Billions of dollars*



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Source: Mortgage Bankers Association.

Note: Data are seasonally adjusted and in nominal dollars. Data represent one-to-four family properties. Gray bars indicate recessions.

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**Developments in Inflation**

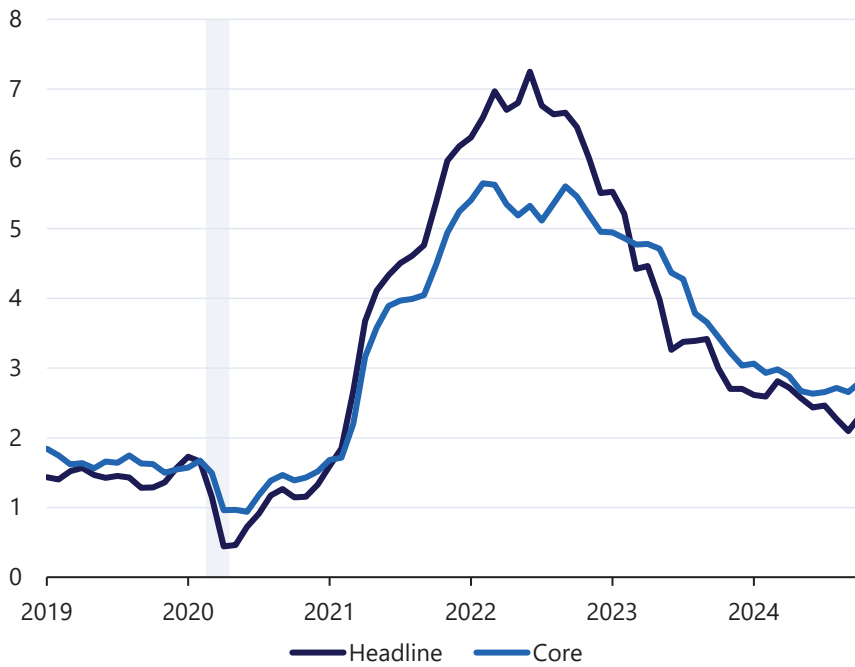
Inflation, as measured by the Personal Consumption Expenditures (PCE) Price Index, was 2.3 percent over the 12 months ending in October 2024, slightly above the Federal Reserve’s long-run target of 2 percent. As shown in figure 1-18, inflation has taken a near “round trip” over the past four years (Bernstein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

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

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

# Figure 1-18. Headline and Core PCE Inflation

PCE inflation, year-over-year percent



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Sources: Bureau of Economic Analysis; CEA calculations.

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

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

## Supply Chain Disruptions

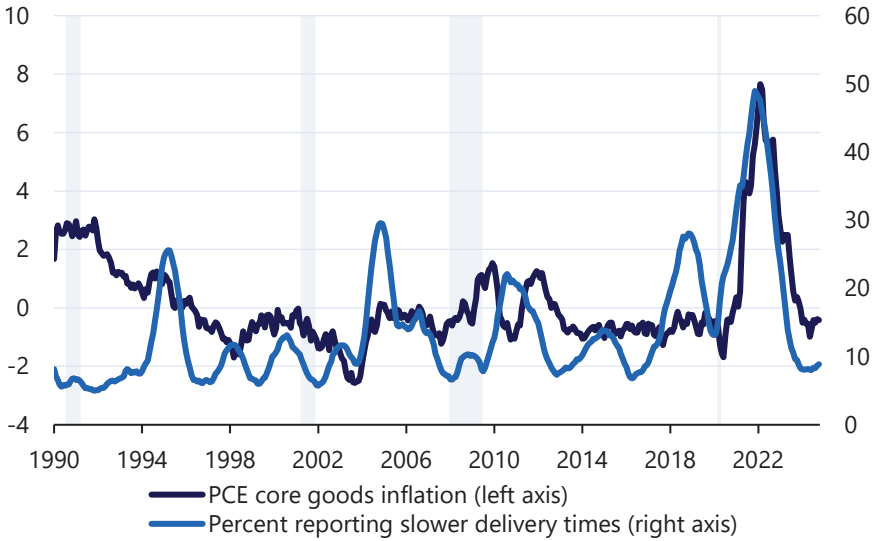
In March 2021, inventory-to-sales ratios in both the retail sector and overall economy hit record lows, with inventory shortages hampering business activity in sectors like homebuilding, and semiconductor shortages devastating the market for new and used vehicles ([Helper and Soltas 2021](#)). Global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

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

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

*12-month percent change*

*Percent, 12-month  
moving average*



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Sources: Institute for Supply Management (ISM); Bureau of Economic Analysis; CEA calculations.

Note: Gray bars indicate recessions. Data are seasonally adjusted. ISM index represents manufacturing firms.

*2025 Economic Report of the President*

resolve supply chain disruptions by establishing the Supply Chain Task Force and with legislators to pass shipping-rate reforms ([White House 2021](#); [Congress 2022](#)). The inflationary effects of supply disruptions and disinflationary effects of their resolution highlight the fragility of global supply chains and the role of federal action to resolve disruptions.

***Strong Demand Meets Constrained Supply***

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

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

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

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

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

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

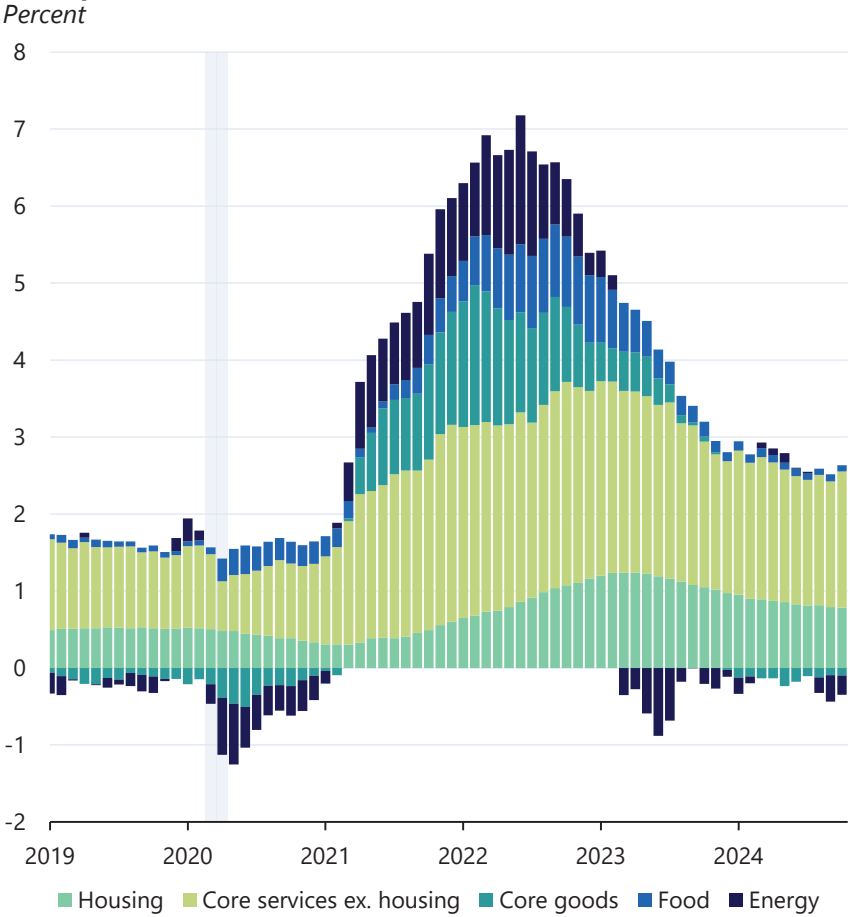
*Energy (3.6 percent).* Energy inflation spiked in 2021 and remained elevated throughout 2022 after pandemic-related disruptions left supply unable to keep up with demand. Crude oil prices rose in early 2022 following

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<sup>8</sup> PCE weights reflect nominal expenditure share for each category in the October 2024 Personal Income Report.

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

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



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Sources: Bureau of Economic Analysis; CEA calculations.

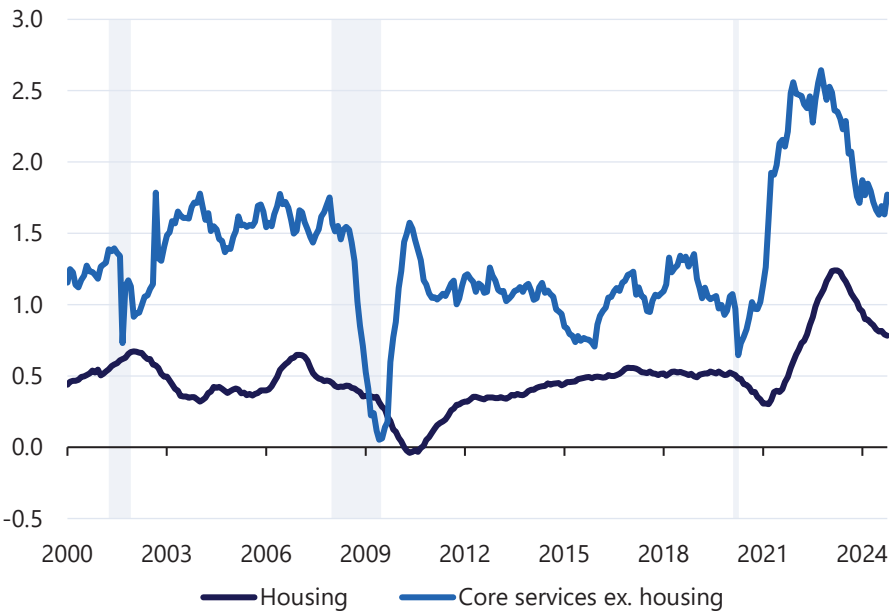
Note: Figure shows monthly contributions to year-over-year PCE inflation. Core goods refers to goods less food and energy components. Gray bar indicates recession.

2025 Economic Report of the President

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

Figure 1-21. Contribution to Headline PCE Inflation

Percentage point contribution to year-over-year inflation



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Sources: Bureau of Economic Analysis; CEA calculations.  
Note: Gray bars indicate recessions. Data are seasonally adjusted. Core goods, energy goods and services, and food are not included.  
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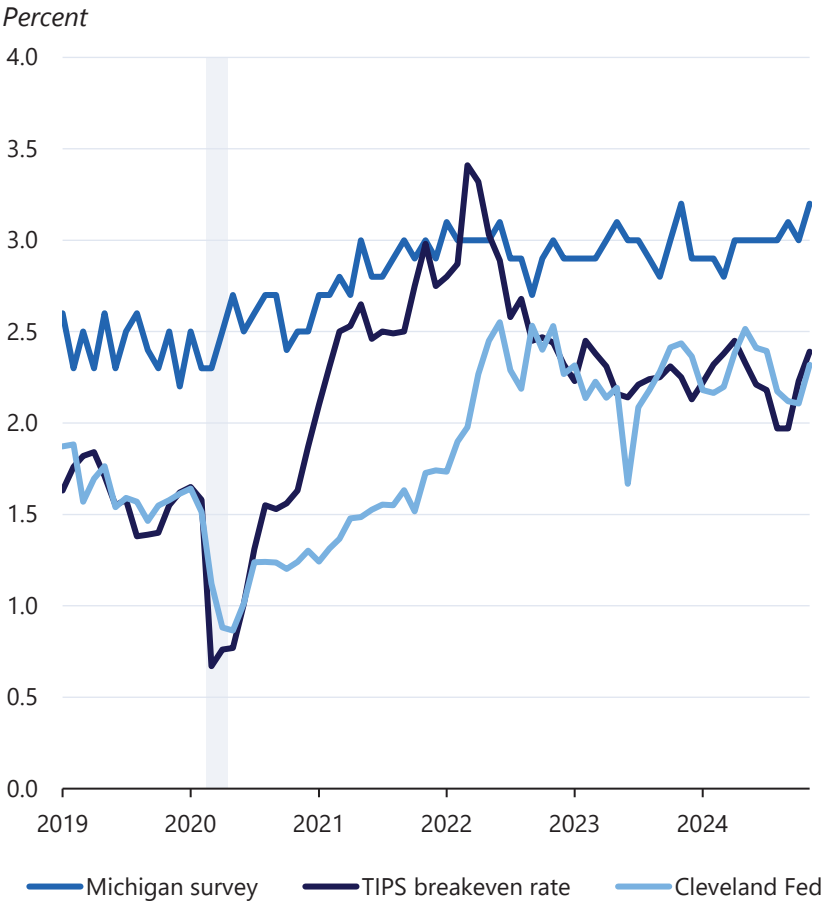
*Housing (15.7 percent).* Yearly housing inflation, which exceeded 3 percent prior to the onset of the pandemic, began increasing in mid-2021 and reached 8.3 percent in April 2023, likely owing to pandemic-induced demand exacerbating the housing market’s structural supply shortfall (Bernstein et al. 2021).<sup>10</sup> Despite 4.9 percentage points of headline disinflation and 3.2 percentage points of housing disinflation, housing inflation remained elevated at 5.0 percent in October 2024 amid a tight housing market. At its peak, housing inflation contributed more than 1 percentage point to yearly PCE inflation, more than double the category’s average contribution over the past two decades (see figure 1-21).

*Inflation Expectations*

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

<sup>10</sup> The contribution of housing inflation to CPI inflation is larger than its contribution to PCE inflation due to the relatively larger weight the former index places on housing.

Figure 1-22. Five-year Inflation Expectations



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Sources: University of Michigan Consumer Survey; Federal Reserve Bank of St. Louis; Federal Reserve Bank of Cleveland; CEA calculations.

Note: The breakeven inflation rate represents a measure of expected inflation derived from five-year Treasury constant maturity securities and five-year Treasury inflation-indexed constant maturity securities. Survey data from the University of Michigan reflects median household expectations. Model-based estimates from the Federal Reserve Bank of Cleveland are based on fixed income markets and survey-based measures. Gray bar indicates recession.

2025 Economic Report of the President

relatively close to the Federal Reserve’s 2 percent inflation target, likely owing to the central bank’s credibility and independence ([CEA 2024d](#)). Because expectations about future inflation directly influence current inflation, anchored expectations were an essential component of disinflation ([Lee, Powell, and Wessel 2020](#)). Longer-term household inflation

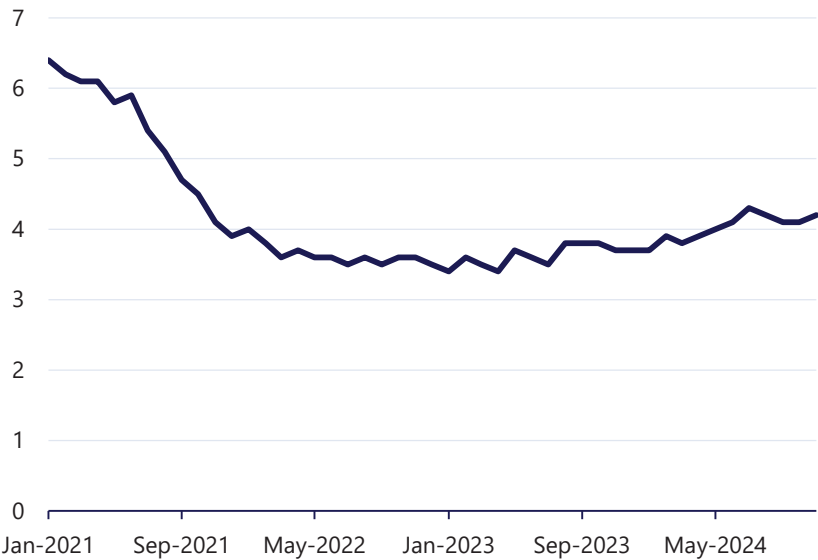
expectations, at 3 percent in October 2024, remain modestly above their pre-pandemic levels. Near-term inflation expectations, particularly those of households, followed inflation’s rise and fall but moved less than one-for-one with actual inflation. As of November 2024, household and market expectations of near-term inflation were close to their pre-pandemic levels.

## The Labor Market: A Quick Return to Full Employment

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

**Figure 1-23. Unemployment Rate**

Percent



**Council of Economic Advisers**

Source: Bureau of Labor Statistics.

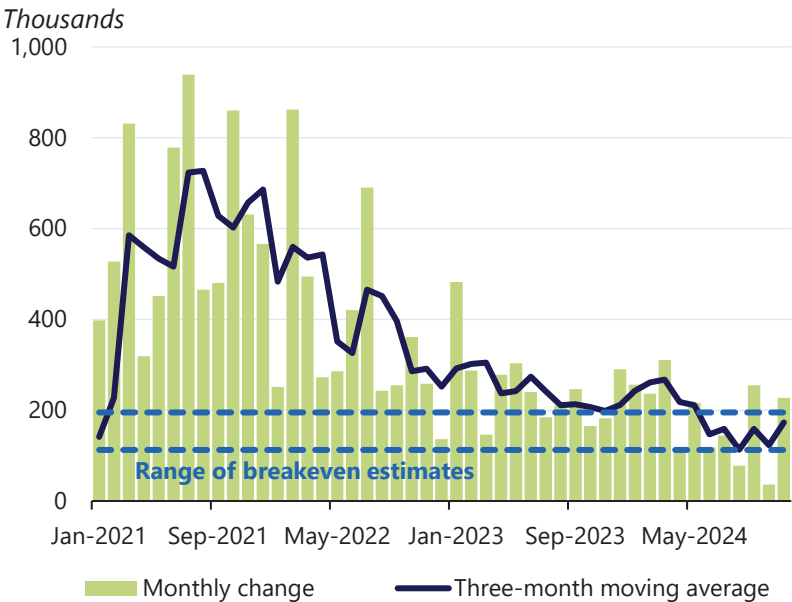
Note: The data reflect the seasonally adjusted civilian unemployment rate for ages 16 and older.

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

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

**Figure 1-24. Monthly Change in Nonfarm Payroll Employment**



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

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

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

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

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

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

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

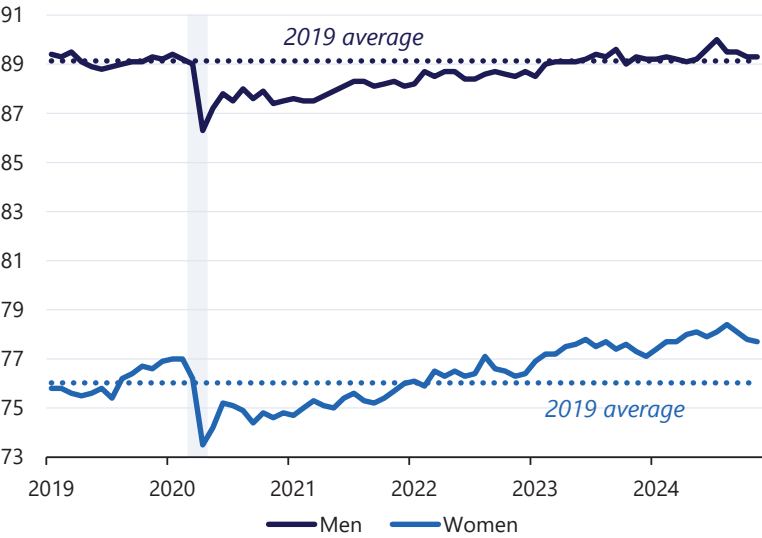
In early 2021, the ARP launched a national program to ramp up vaccine access and distribute test kits to families and health centers across the country (HRSA 2022). With vaccines substantially reducing economic duress, businesses reopened and labor demand quickly increased (Agarwal and Gopinath 2021).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

---

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

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

Percent



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Sources: Bureau of Labor Statistics; CEA calculations.

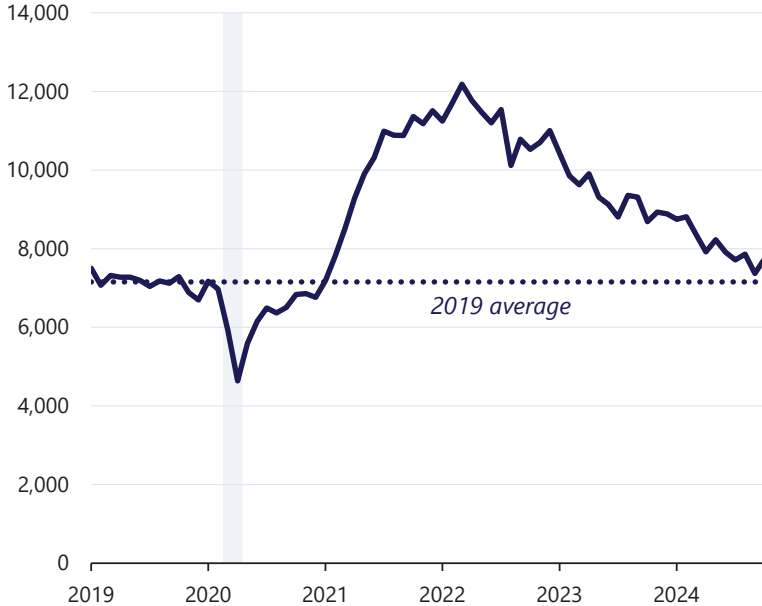
Note: Prime age refers to individuals ages 25 through 54. Gray bar indicates recession.

Data are seasonally adjusted.

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Figure 1-26. Job Openings

Thousands



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Sources: Bureau of Labor Statistics; CEA calculations.

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

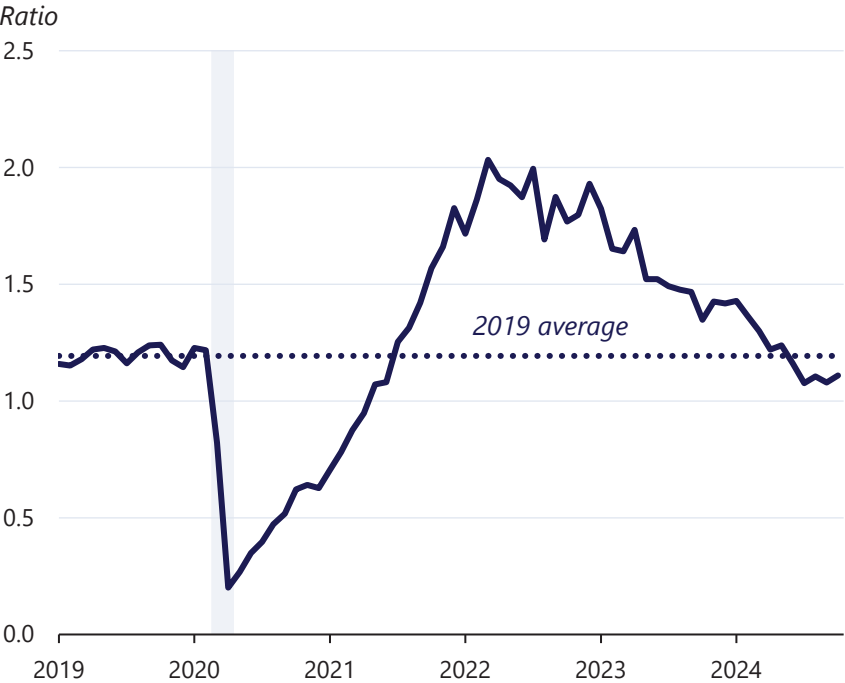
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double the 2017–2019 average of 6.8 million. Labor supply did not rise commensurately; both overall and prime age labor force participation were still below their February 2020 levels in March 2022. In turn, the job openings per unemployed person ratio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

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

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

**Figure 1-27. Job Openings per Unemployed Person**



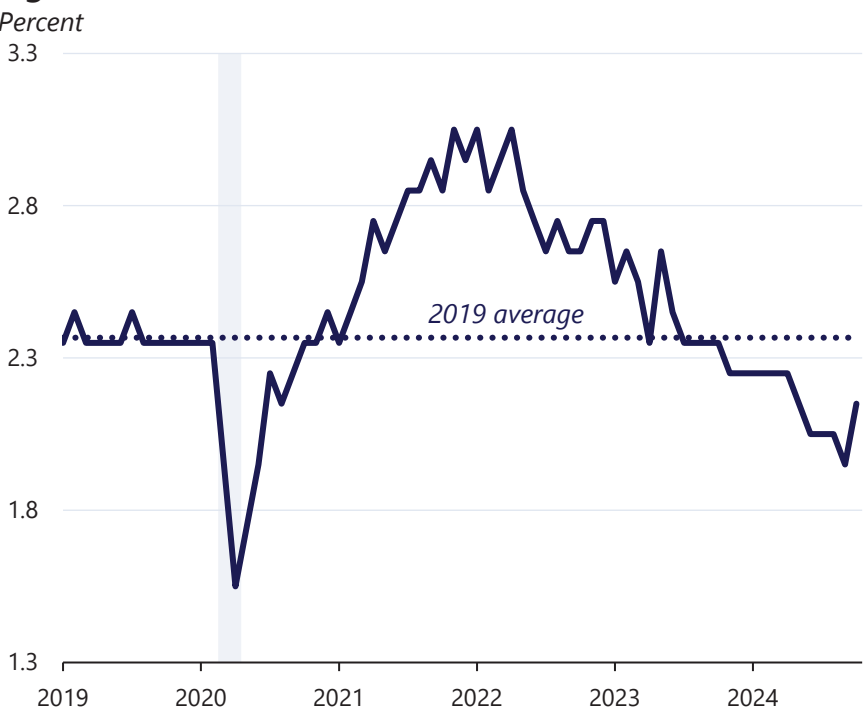
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Sources: Bureau of Labor Statistics; CEA calculations.  
Note: Unemployed persons are ages 16 and older. Gray bar indicates recession. Data are seasonally adjusted.  
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As shown in figure 1-28, the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

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

**Figure 1-28. Quits Rate**



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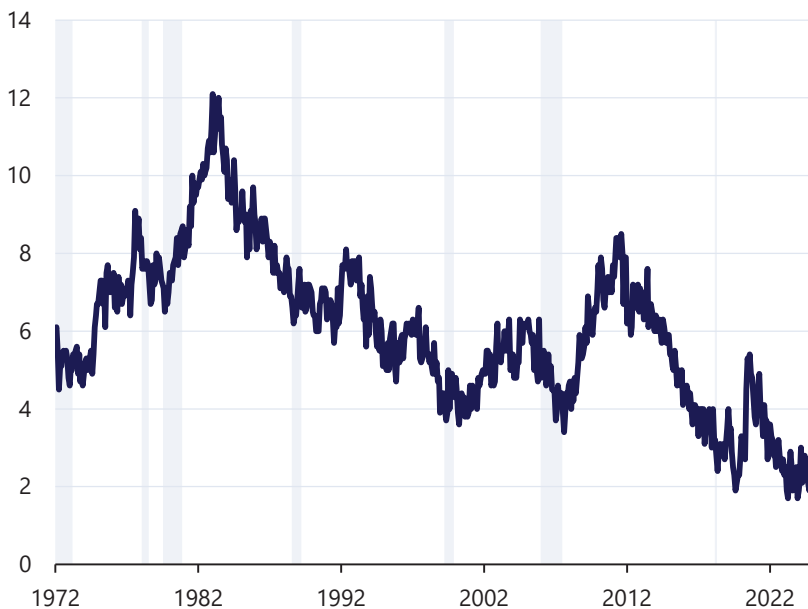
Sources: Bureau of Labor Statistics; CEA calculations.

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

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**Figure 1-29. Black-white Unemployment Rate Gap**

Percent



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Sources: Bureau of Labor Statistics; CEA calculations.

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

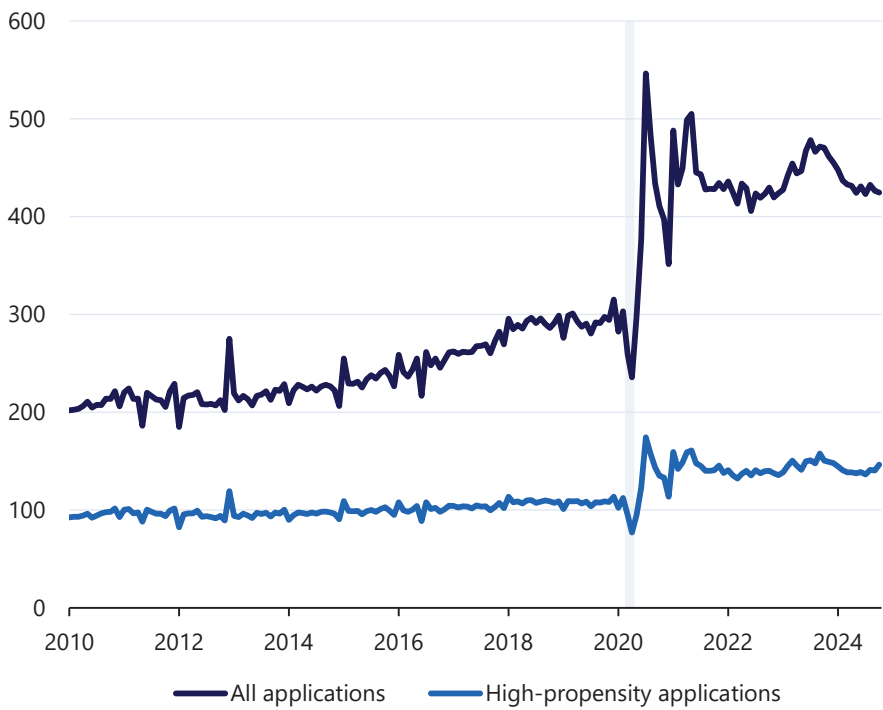
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Though full employment is not a cure-all for every labor market barrier, it has helped remedy some prominent inequalities. For example, as shown in figure 1-29, the Black-white unemployment rate gap has contracted and the share of people with a disability holding a job has substantially risen compared to pre-pandemic levels. Yet disparities still exist in the labor market by gender, race, age, and criminal record ([CEA 2022](#), [2023b](#), [2024a](#); [Couloute and Kopf 2018](#); [Choi-Allum 2024](#); [Neumark, Burn, and Button 2019](#)). Effective macroeconomic stabilization is required to reap the benefits of full employment, and remaining inequities underscore the need for targeted interventions to address structural, as opposed to cyclical, barriers.

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

Figure 1-30. Monthly Business Applications

Thousands



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Sources: Census Bureau; CEA calculations.

Note: Gray bar indicates recession. Data are seasonally adjusted. High-propensity applications are defined by Census as applications with a high likelihood of becoming businesses with payroll. *2025 Economic Report of the President*

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

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

## Economic Wellbeing of Workers

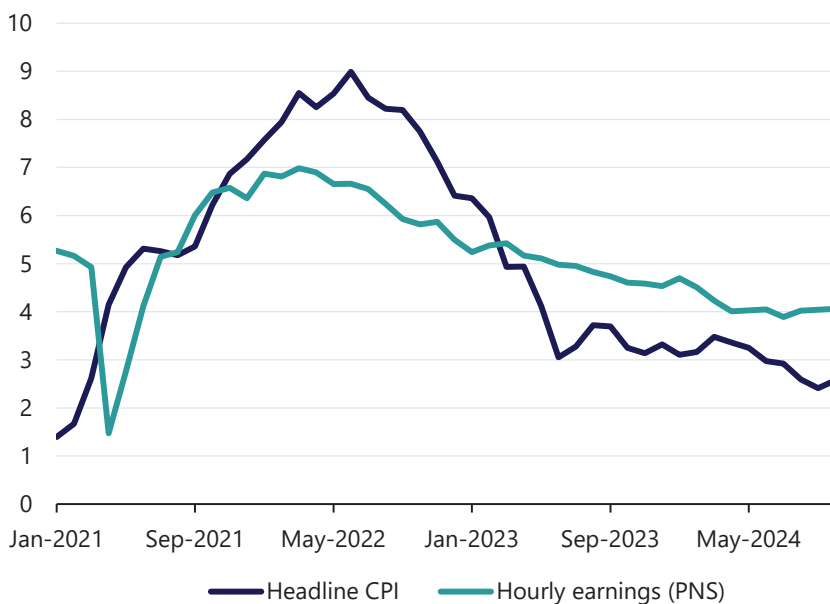
From personal income to child poverty, a holistic perspective is necessary to understand Americans' economic wellbeing over the last four years.

### *Dollars and Cents Measures*

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

**Figure 1-31. Wage Growth and CPI Inflation**

*Percent, year-over-year*



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Sources: Bureau of Labor Statistics; CEA calculations.

Note: PNS means production and nonsupervisory workers.

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

<sup>14</sup> Wage growth measures spiked in 2020 due to the volume of low wage workers losing their jobs and falling out of the calculation.

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

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

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

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

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

**Figure 1-32. Selected Nominal Wage Measures**

*Percent, year-over-year*



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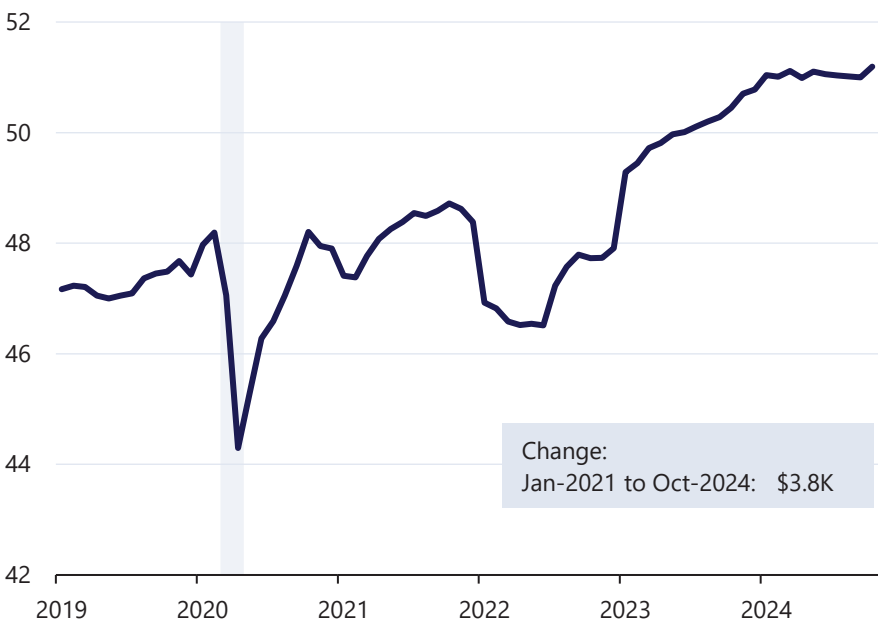
Sources: Bureau of Labor Statistics; Federal Reserve Bank of Atlanta; CEA calculations.

Note: Gray bar indicates recession. ECI means employment cost index, which is at a quarterly frequency. Atlanta Federal Reserve wage data are non-seasonally adjusted three-month moving averages; all other data are seasonally adjusted. AHE means average hourly earnings. PNS means production and nonsupervisory.

*2025 Economic Report of the President*

Figure 1-33. Real DPI ex. Transfers per Capita

Thousands of October 2024 dollars



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Sources: Bureau of Economic Analysis; CEA calculations.

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

2025 Economic Report of the President

Household Financial Situation

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

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

<sup>16</sup> Reported holdings are median values of assets and liabilities held by each income quintile.

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

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

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

Note: Assets and liabilities do not equate to net worth as only a few balance sheet items are presented.

2025 Economic Report of the President

nonfinancial assets, including vehicles and primary residences, reached its peak since the modern survey began in 1989. Though gains in stock holdings remain concentrated at the top of the income distribution, the share of households directly owning stock posted its largest gain since the survey’s inception, jumping to 21 percent of all households from 15 percent. For families owning their primary residence, the median net housing value rose 44 percent due to strong pandemic-induced housing demand and insufficient supply (Aladangady et al. 2023; Gamber et al. 2022).<sup>17</sup>

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

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

<sup>17</sup> The metric is defined by the Survey of Consumer Finances as the home’s value minus debts secured by the home, such as mortgages or home equity lines of credit.

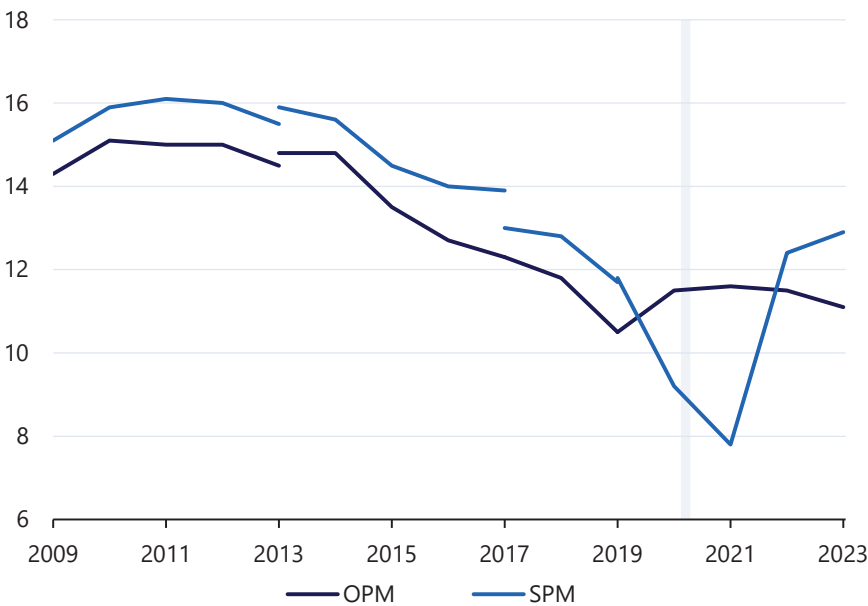
While racial disparities in median wealth narrowed between 2019 and 2022, gaps remain. The median wealth ratio between white and Black families improved, yet Black families have \$16 in wealth relative to every \$100 of a typical white family. The gap between Hispanic and white families also narrowed,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

*Additional Measures of Economic Wellbeing*

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

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

*Poverty rate (percent)*



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Sources: Census Bureau; Annual Social Economic Component of Current Population Survey; CEA calculations.

Note: Population as of March of the following year. Breaks in the series reflect methodological changes. Gray bar indicates recession.

2025 Economic Report of the President

timeframe, from a series low of 5.2 percent to 13.7 percent, a consequence<sup>18</sup> of the expiration of the enhanced Child Tax Credit (CTC), which the Administration has consistently worked to reinstate.

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

## Lessons for Future Crises

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

### *Benefits of a Robust Fiscal Response*

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

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

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

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

<sup>19</sup> Another benefit over the period was increased health insurance coverage. See chapter 4 in this volume for more on the topic.

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

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

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

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

– CEA Chairman Jason Furman, July 2016

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

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

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

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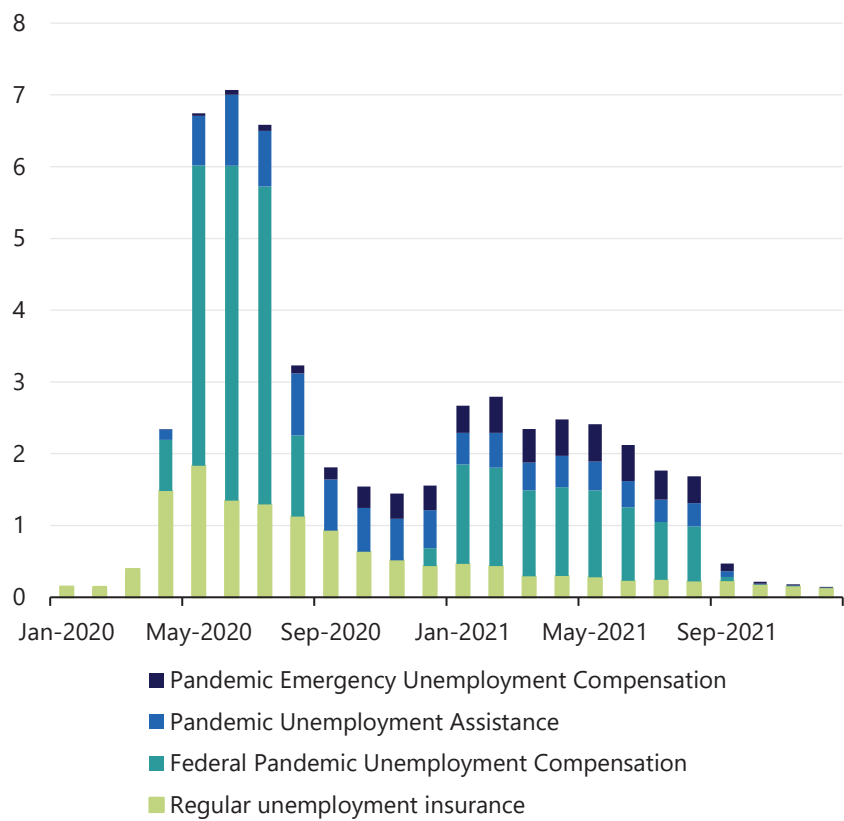
<sup>20</sup> For individuals not covered by regular UI but meeting criteria like being a gig worker or independent contractor, Pandemic Unemployment Assistance (PUA) was available for up to 75 weeks. The PUA benefit amount was based on state UI calculations. Individuals who had exhausted regular UI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

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

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

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

Percent



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Sources: Bureau of Economic Analysis; CEA calculations.

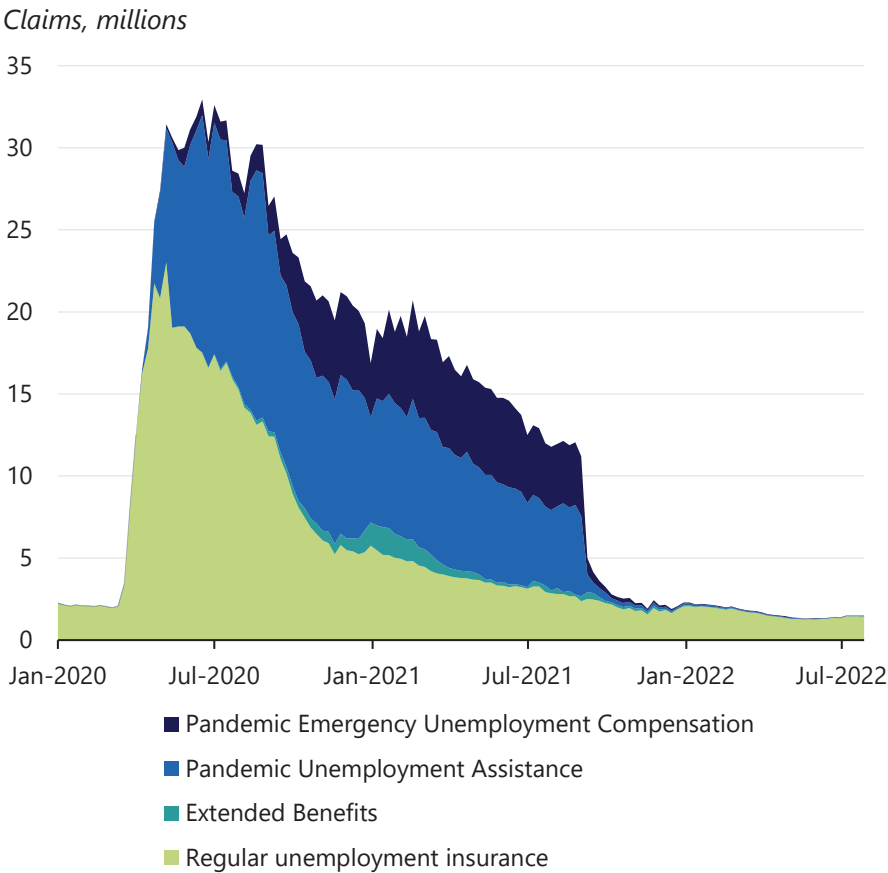
Note: Regular unemployment insurance includes state and federal programs.

2025 Economic Report of the President

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

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

Figure 1-36. Unemployment Insurance Continuing Claims by Program



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Sources: Department of Labor; CEA calculations.

Note: Data are not seasonally adjusted.

2025 Economic Report of the President

West et al. 2016; von Wachter 2016; DOL 2024). Due to antiquated technology, under-resourcing, and the need to rapidly distribute benefits to millions of workers, pandemic UI programs became a target for fraudsters, including organized criminal operations. The Government Accountability Office estimates that 11–15 percent of total unemployment benefits paid between April 2020 and May 2023 were fraudulent, amounting to \$100 billion–\$135 billion in fraud (GAO 2023). The Department of Labor continues to work to reduce future fraud risks by various means, including modernizing states’ IT infrastructure. Navarrete (2024) finds that in states with technologically

antiqued UI systems, consumption recovered more slowly than in states with modern systems.<sup>23</sup>

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

## The Forecast for the Years Ahead

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

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

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

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

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

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<sup>23</sup> Use of the COBOL programming language is deployed as a proxy for lack of UI modernization.

Table 1-3. Economic Projections, 2024–35

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

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Sources: Bureau of Economic Analysis; Bureau of Labor Statistics; Department of the Treasury; Office of Management and Budget; CEA calculations.  
Note: The forecast is based on data available as of November 7, 2024. The interest rate on 3-month (91-day) Treasury Bills is measured on a secondary-market discount basis.  
2025 Economic Report of the President

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

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

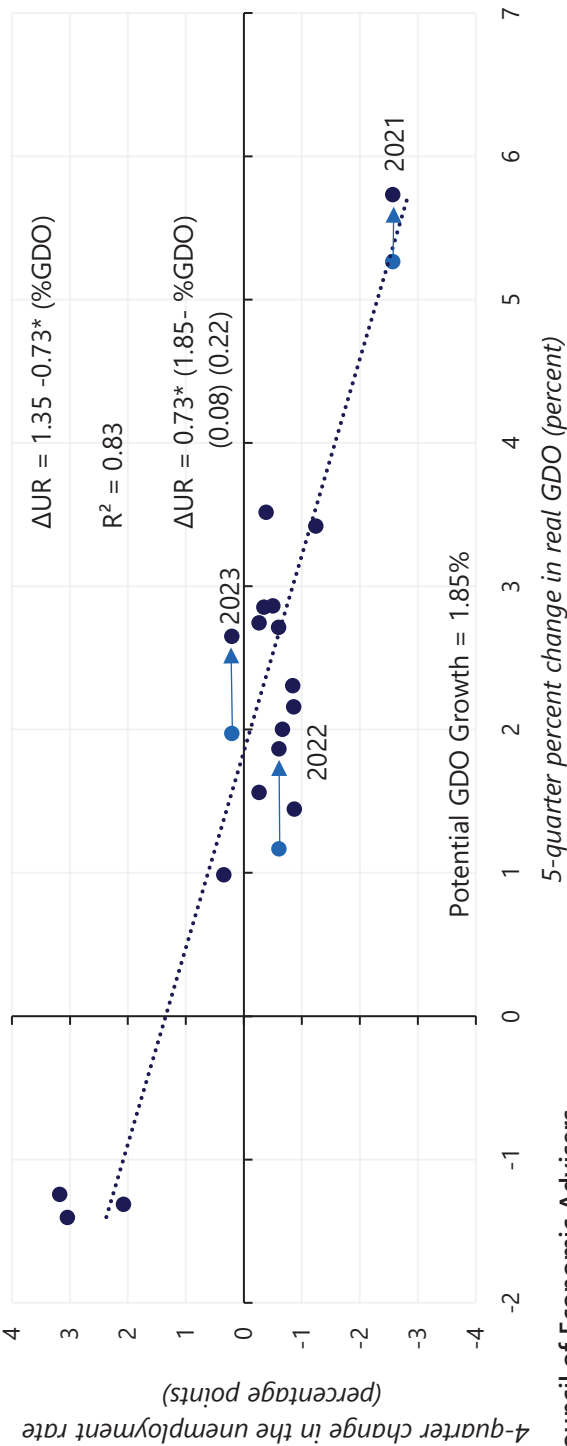
The CEA’s methodology relies on Okun’s Law to estimate potential real GDP growth during the past roughly two decades, as shown in figure 1-37, which illustrates the relationship between the change in the unemployment rate and the growth rate of real output.<sup>24</sup> The rate of real potential output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

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

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<sup>24</sup> 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  $\Delta UR$  is the change in the unemployment rate, and  $y^*$  and  $y$  are the rates of potential real GDP growth and actual real GDP growth, respectively.  $\beta$  and  $y^*$  are estimated coefficients, where  $\beta$  should be between zero and one, and  $y^*$  is the estimated rate of potential real GDP growth.

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



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

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

2025 Economic Report of the President

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

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

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

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

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<sup>25</sup> This calculation uses the retroactive series from the BLS: R-CPI-U-RS.

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

### ***The Long-term Outlook for Real GDP Growth***

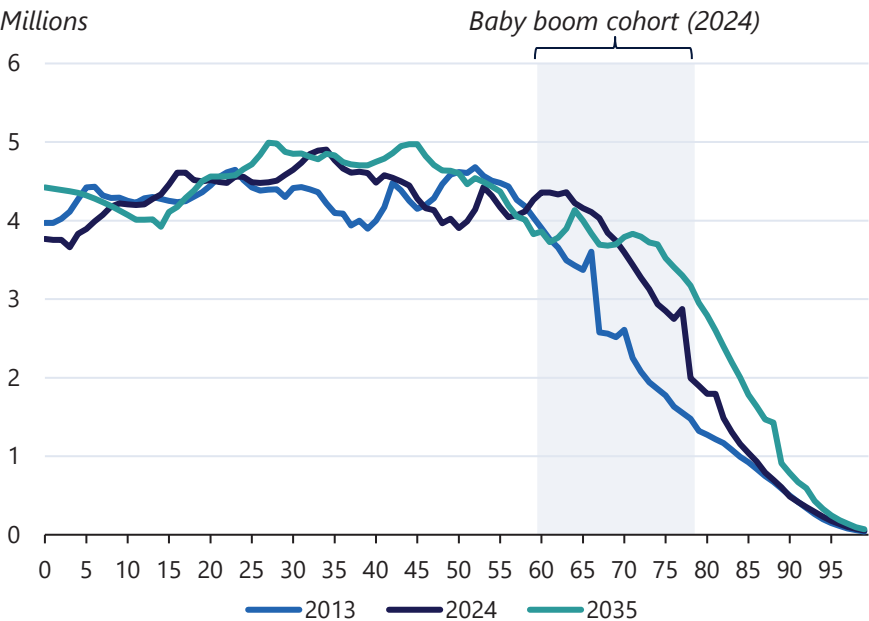
After some upward adjustments in the near term, the Administration's long-term forecast for real GDP growth is unchanged from the forecast presented one year earlier and the one presented with the mid-session review of the FY 2024 Budget. The current forecast exceeds the Blue Chip consensus forecast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

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

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

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

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



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Sources: Social Security Administration; CEA calculations.  
Note: Baby boom cohort is defined as individuals born from 1946 through 1964.  
*2025 Economic Report of the President*

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

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

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

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

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

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

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

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

2025 Economic Report of the President

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

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

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

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

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

<sup>27</sup> The Administration's population forecast is based on the forecast from the Office of the Social Security Actuary at the Social Security Administration (2024).

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

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

### ***Outlook Summary***

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

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