For use at 11:00 a.m. EST
February 7, 2025

REPORT TO CONGRESS

Monetary Policy Report

February 2025

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Letter of Transmittal

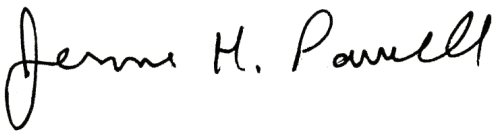
Board of Governors of the
Federal Reserve System

Washington, D.C., February 7, 2025

The President of the Senate
The Speaker of the House of Representatives

The Board of Governors is pleased to submit its *Monetary Policy Report* pursuant to section 2B of the Federal Reserve Act.

Sincerely,



Jerome H. Powell, Chair

Contents

Data Notes

This report reflects information that was publicly available as of 9 a.m. EST on February 6, 2025. Unless otherwise stated, the time series in the figures extend through, for daily data, February 4, 2025; for monthly data, December 2024; and, for quarterly data, 2024:Q4. In bar charts, except as noted, the change for a given period is measured to its final quarter from the final quarter of the preceding period.[1]

[1] For figures 27 and 38, note that the S&P/Case-Shiller U.S. National Home Price Index, the S&P 500 Index, and the Dow Jones Bank Index are products of S&P Dow Jones Indices LLC and/or its affiliates and have been licensed for use by the Board. Copyright © 2025 S&P Dow Jones Indices LLC, a division of S&P Global, and/or its affiliates. All rights reserved. Redistribution, reproduction, and/or photocopying in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC. For more information on any of S&P Dow Jones Indices LLC's indices, please visit www.spdji.com. S&P® is a registered trademark of Standard & Poor's Financial Services LLC, and Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC. Neither S&P Dow Jones Indices LLC, Dow Jones Trademark Holdings LLC, their affiliates, nor their third-party licensors make any representation or warranty, express or implied, as to the ability of any index to accurately represent the asset class or market sector that it purports to represent, and neither S&P Dow Jones Indices LLC, Dow Jones Trademark Holdings LLC, their affiliates, nor their third-party licensors shall have any liability for any errors, omissions, or interruptions of any index or the data included therein.

Statement on Longer-Run Goals and Monetary Policy Strategy

Adopted effective January 24, 2012; as reaffirmed effective January 30, 2024

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Employment, inflation, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Monetary policy plays an important role in stabilizing the economy in response to these disturbances. The Committee's primary means of adjusting the stance of monetary policy is through changes in the target range for the federal funds rate. The Committee judges that the level of the federal funds rate consistent with maximum employment and price stability over the longer run has declined relative to its historical average. Therefore, the federal funds rate is likely to be constrained by its effective lower bound more frequently than in the past. Owing in part to the proximity of interest rates to the effective lower bound, the Committee judges that downward risks to employment and inflation have increased. The Committee is prepared to use its full range of tools to achieve its maximum employment and price stability goals.

The maximum level of employment is a broad-based and inclusive goal that is not directly measurable and changes over time owing largely to nonmonetary factors that affect the structure and dynamics of the labor market. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the shortfalls of employment from its maximum level, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. The Committee judges that longer-term inflation expectations that are well anchored at 2 percent foster price stability and moderate long-term interest rates and enhance the Committee's ability to promote maximum employment in the face of

significant economic disturbances. In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time.

Monetary policy actions tend to influence economic activity, employment, and prices with a lag. In setting monetary policy, the Committee seeks over time to mitigate shortfalls of employment from the Committee's assessment of its maximum level and deviations of inflation from its longer-run goal. Moreover, sustainably achieving maximum employment and price stability depends on a stable financial system. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The Committee's employment and inflation objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it takes into account the employment shortfalls and inflation deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to review these principles and to make adjustments as appropriate at its annual organizational meeting each January, and to undertake roughly every 5 years a thorough public review of its monetary policy strategy, tools, and communication practices.

Abbreviations

AFE	advanced foreign economy
AI	artificial intelligence
BLS	Bureau of Labor Statistics
BTFP	Bank Term Funding Program
CES	Current Employment Statistics
COVID-19	coronavirus disease 2019
CPI	consumer price index
CRE	commercial real estate
DI	depository institution
ECI	employment cost index
EFFR	effective federal funds rate
ELB	effective lower bound
EME	emerging market economy
EPOP ratio	employment-to-population ratio
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
JOLTS	Job Openings and Labor Turnover Survey
LFPR	labor force participation rate
MBS	mortgage-backed securities
MMF	money market fund
MSA	metropolitan statistical area
ON RRP	overnight reverse repurchase agreement
OPEC	Organization of the Petroleum Exporting Countries
PCE	personal consumption expenditures
QCEW	Quarterly Census of Employment and Wages
SEC	Securities and Exchange Commission
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices

SOMA	System Open Market Account
S&P	Standard & Poor's
VIX	implied volatility for the S&P 500 index

Summary

Inflation moderated a little further last year after having slowed notably in 2023, but it remains somewhat above the Federal Open Market Committee's (FOMC) objective of 2 percent. The labor market appears to have stabilized following a period of easing, with the unemployment rate flattening out at a relatively low level over the second half of last year. Real gross domestic product (GDP) increased solidly last year, supported by strength in consumer spending.

As labor market tightness continued to ease and inflation moderated a bit further, the FOMC lowered the target range for the policy rate by a cumulative 100 basis points over its September, November, and December meetings, bringing it to the current range of 4¼ to 4½ percent. The Federal Reserve has also continued to reduce its holdings of Treasury and agency mortgage-backed securities. The FOMC is strongly committed to supporting maximum employment and returning inflation to its 2 percent objective, and it remains attentive to the risks to both sides of its dual mandate. In considering the extent and timing of additional adjustments to the target range for the federal funds rate, the Committee will carefully assess incoming data, the evolving outlook, and the balance of risks.

Recent Economic and Financial Developments

Inflation. After stepping down notably in 2023, consumer price inflation eased a bit more last year, although recent progress has been bumpy and inflation remains somewhat above 2 percent. The price index for personal consumption expenditures (PCE) rose 2.6 percent over the 12 months ending in December, down from a peak of 7.2 percent in 2022. The core PCE price index—which excludes often-volatile food and energy prices and is generally considered a better guide to the future of inflation—rose 2.8 percent last year, only a little less than its increase in 2023, as core services price inflation remained elevated. However, some other approaches to removing the influence of volatile components of inflation, such as the trimmed mean PCE measure produced by the Federal Reserve Bank of Dallas, showed more marked deceleration in prices last year. Measures of longer-term inflation expectations are within the range of values seen in the decade before the pandemic and continue to be broadly consistent with the FOMC's longer-run objective of 2 percent inflation.

The labor market. The labor market remains solid and appears to have stabilized after a period of easing. The unemployment rate moved up over the first half of last year but was mostly flat thereafter, ending the year at 4.1 percent—still low by historical standards—while job vacancies, which had been trending down, also flattened out over the second half at a solid level. As labor demand cooled somewhat further last year, monthly job gains slowed to a moderate pace on average.

Labor supply likely increased less robustly than in previous years, with immigration appearing to have slowed over the second half of last year. Given the further rebalancing of labor demand and supply last year, the labor market no longer appears especially tight. Reflecting this further balancing, nominal wage gains continued to slow in 2024 and are now closer to the pace consistent with 2 percent inflation over the longer term.

Economic activity. Real GDP is reported to have increased last year by 2.5 percent, a little slower than in 2023. Consumer spending continued to grow robustly, supported by a solid labor market and rising real wages, while real business fixed investment increased moderately. In the housing market, new home construction was solid but existing home sales remained depressed, with mortgage rates still elevated. In contrast to GDP, manufacturing output was little changed, in part reflecting weak production in interest-sensitive sectors.

Financial conditions. Financial conditions continue to appear to be somewhat restrictive on balance. Short-term Treasury yields declined, in line with the easing of monetary policy since September; however, the market-implied path for the federal funds rate over the next year shifted up notably, and long-term Treasury yields increased markedly in the fourth quarter. Broad equity prices continued to increase despite the rise in longer-term Treasury yields, and yields on corporate bonds were little changed, as spreads narrowed. Credit continued to be broadly available to large-to-midsize businesses, most households, and municipalities but remained relatively tight for small businesses and households with lower credit scores. Bank lending to households and businesses continued to decelerate in the second half of 2024, likely reflecting still-elevated interest rates and tight lending standards.

Financial stability. The financial system remains sound and resilient. Valuations remained high relative to fundamentals in a range of markets, including those for equity, corporate debt, and residential real estate. Total debt of households and nonfinancial businesses as a fraction of GDP continued to trend down to a level that is very low relative to that in the past two decades. Most banks continued to report capital levels well above regulatory requirements and have reduced their reliance on uninsured deposits, but fair value losses on fixed-rate assets were still sizable for some banks. In terms of funding risks, while the 2023–24 Securities and Exchange Commission reforms on money market funds (MMFs) have partially mitigated vulnerabilities of prime MMFs, other less regulated short-term investment vehicles remain vulnerable and somewhat opaque, and their assets have been growing. Meanwhile, hedge fund leverage appears to be high and concentrated. (See the box “Developments Related to Financial Stability.”)

International developments. Foreign growth remained modest in the second half of 2024. Foreign manufacturing in general was weak, as the cumulative effects of restrictive monetary policy weighed on the sector and, in Europe, energy-intensive industries continued to grapple with elevated energy costs. That said, high-tech manufacturing and exports remained strong in Asia on robust U.S. artificial intelligence (AI) and data center demand. In China, while exports were strong,

domestic demand remained sluggish despite stimulus measures to shore up the ailing property sector. Meanwhile, foreign headline inflation continued to decline, but progress on inflation reduction was uneven across economies.

Many foreign central banks cut policy rates further since mid-2024, citing declining inflationary pressures, easing labor markets, and concerns about economic growth. Policymakers generally stressed the importance of maintaining vigilance amid persistent geopolitical risks and, in some economies, still-somewhat-elevated services inflation and wage pressures. Since mid-2024, the trade-weighted exchange value of the U.S. dollar has increased significantly, on net, reflecting widening gaps of U.S. interest rates over those of major advanced foreign economies, the relative strength of the U.S. economy, and political and fiscal developments in some foreign economies.

Monetary Policy

Interest rate policy. After having held the target range for the policy rate at 5¼ to 5½ percent between late July 2023 and mid-September 2024, the FOMC lowered the target range for the policy rate by a cumulative 100 basis points over its September, November, and December meetings, bringing it to the current range of 4¼ to 4½ percent. The FOMC's decision to begin reducing the degree of policy restraint reflected the FOMC's greater confidence in inflation moving sustainably toward 2 percent and the judgment that it was appropriate to recalibrate the policy stance. The FOMC remains attentive to the risks to both sides of its dual mandate. In considering the extent and timing of additional adjustments to the target range for the federal funds rate, the Committee will carefully assess incoming data, the evolving outlook, and the balance of risks.

Balance sheet policy. The Federal Reserve has continued the process of significantly reducing its holdings of Treasury and agency securities in a predictable manner. Beginning in June 2022, principal payments from securities held in the System Open Market Account have been reinvested only to the extent that they exceeded monthly caps. Under this policy, the Federal Reserve has reduced its securities holdings by $297 billion since June 2024, bringing the total reduction in securities holdings since the start of balance sheet reduction to about $2 trillion. The FOMC has stated that it intends to maintain securities holdings at amounts consistent with implementing monetary policy efficiently and effectively in its ample-reserves regime. To ensure a smooth transition, the FOMC slowed the pace of decline of its securities holdings in June 2024 and intends to stop reductions in its securities holdings when reserve balances are somewhat above the level that the FOMC judges to be consistent with ample reserves.

Special Topics

Employment and earnings across groups. The tight labor market in recent years has been especially beneficial for historically disadvantaged groups of workers, and many of the disparities in employment and wages by sex, race, ethnicity, education, and geography have narrowed. Over the

past year, even as labor market conditions have eased, employment disparities continue to be near their recent lows, while wage growth has remained solid across many groups despite slowing a bit from post-pandemic highs. Even so, in absolute levels, significant disparities in groups remain. (See the box "Employment and Earnings across Demographic Groups.")

Strong productivity growth. Labor productivity in the business sector increased 1.8 percent per year, on average, since the fourth quarter of 2019, stronger than its 1.5 percent average annual pace over the previous expansion. Should this faster pace of productivity growth persist, it can support stronger GDP growth without adding inflationary pressure. Some factors that have boosted productivity growth recently may continue providing support, such as new business formation, which surged early into the pandemic and has remained strong. Other factors may have had more short-lived influences on productivity growth, including a temporary burst in worker reallocation across jobs earlier in the pandemic. Any measured productivity gains from integration of AI technologies into production processes have likely been small so far, but productivity gains may grow as AI use becomes more widespread. (See the box "Labor Productivity since the Start of the Pandemic.")

Federal Reserve's balance sheet and money markets. The size of the Federal Reserve's balance sheet has declined since June as the FOMC has continued to reduce its securities holdings. Usage of the overnight reverse repurchase agreement facility decreased further, while reserve balances were little changed. Conditions in money markets remained stable. (See the box "Developments in the Federal Reserve's Balance Sheet and Money Markets.")

Framework review. The Federal Reserve has begun its periodic public review of the monetary policy framework it uses to pursue its dual-mandate goals of maximum employment and price stability. The review is focused on the FOMC's Statement on Longer-Run Goals and Monetary Policy Strategy, which articulates the Committee's approach to monetary policy, and the Committee's policy communications tools. Like the Federal Reserve's 2019–20 review of its monetary policy framework, the current review will include outreach and public events attended by policymakers, community leaders, experts from outside the Federal Reserve System, and other members of the public. (See the box "Periodic Review of Monetary Policy Strategy, Tools, and Communications.")

Monetary policy rules. Simple monetary policy rules, which prescribe a setting for the policy interest rate in response to the behavior of a small number of economic variables, can provide useful guidance to policymakers. With inflation easing and the unemployment rate having increased somewhat, the policy rate prescriptions of most simple monetary policy rules have generally declined since 2023. Currently, most of the rules call for levels of the federal funds rate that are within the current target range. (See the box "Monetary Policy Rules in the Current Environment.")

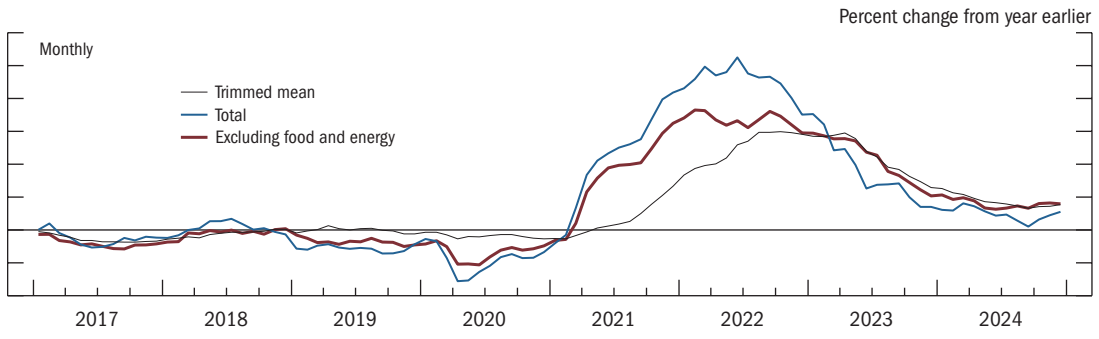
Recent Economic and Financial Developments

Domestic Developments

Inflation eased a little further last year

After stepping down notably in 2023, inflation moderated a little further last year, although it remains somewhat elevated. The price index for personal consumption expenditures (PCE) rose 2.6 percent over the 12 months ending in December, down slightly from its 2.7 percent pace the previous year and well below its peak of 7.2 percent in mid-2022. Thus, inflation has moved closer to—although still somewhat above—the Federal Open Market Committee's (FOMC) longer-run objective of 2 percent (figure 1). Progress on disinflation last year was bumpy, with both total PCE prices and core PCE prices—which exclude often-volatile food and energy prices and are generally considered a better guide to the future of inflation—showing firmer monthly price increases over the first quarter of last year and more moderate price gains thereafter. For 2024 as a whole, core PCE prices rose 2.8 percent—a little less than the 3.0 percent gain over the previous year. However, some alternative measures that attempt to reduce the influence of idiosyncratic price movements showed more marked disinflation. For example, the trimmed mean measure of PCE prices constructed by the Federal Reserve Bank of Dallas increased 2.8 percent over the 12 months ending in December, a noticeable step-down from its 3.3 percent increase in 2023.

Figure 1. Personal consumption expenditures price indexes

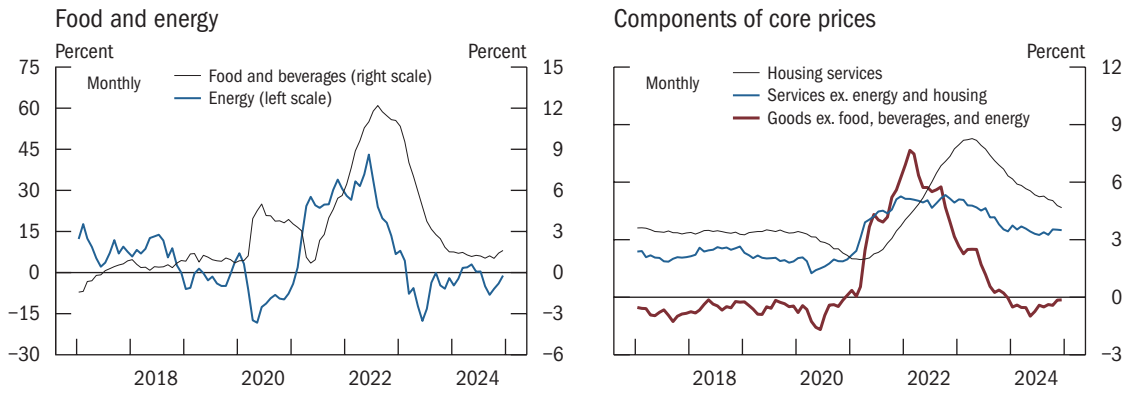


Note: The horizontal line indicates the Federal Open Market Committee's objective of 2 percent.

Consumer energy prices declined last year, while food prices increased modestly

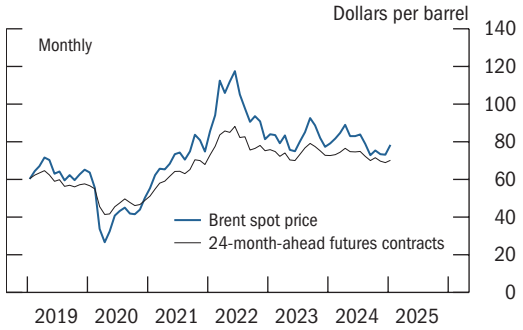
PCE energy prices fell a modest 1.1 percent over the 12 months ending in December, as oil prices moved a little lower over 2024 (figure 2, left panel). The decline in oil prices was partially due to tepid oil demand from China and rising production in the U.S. and other non-OPEC

Figure 2. Price indexes for subcomponents of personal consumption expenditures



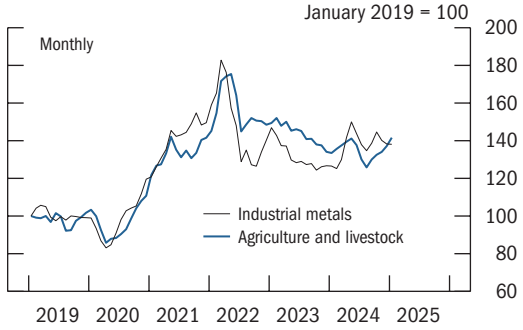
Note: Percent change is from year earlier.

Figure 3. Spot and futures prices for crude oil



Note: The data are monthly averages of daily data and extend through January 31, 2025.

Figure 4. Spot prices for commodities



Note: The data are monthly averages of daily data and extend through January 31, 2025.

(Organization of the Petroleum Exporting Countries) members; the effect of these factors more than offset upward price pressure from sustained geopolitical tension, including conflicts in the Middle East (figure 3). More recently, however, oil prices increased amid colder-than-expected weather and news of stricter sanctions on Russian oil exports. Continuing geopolitical tensions remain an upside risk to energy prices.

PCE food prices increased a modest 1.6 percent last year, a second year of low increases following the much larger increases in 2021 and 2022. Since the middle of 2024, egg prices surged in response to bird flu-related supply disruptions, while price increases across other agricultural commodities have been more modest (figure 4).

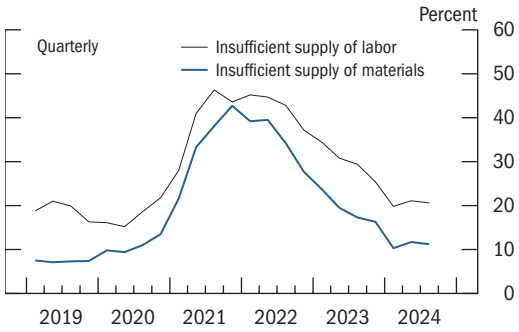
Prices of both energy and food products are of particular importance for lower-income households, for whom such necessities account for a large share of expenditures.

Reflecting the sharp increases seen in 2021 and 2022, these price indexes remain around 25 percent higher than before the pandemic.

Core goods prices have been declining slightly, close to pre-pandemic declines . . .

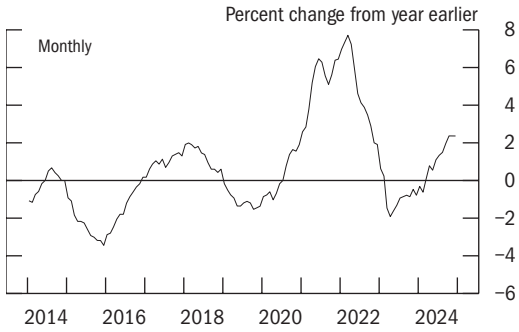
In assessing the outlook for inflation, it remains helpful to consider three separate components of core prices: core goods, housing services, and core nonhousing services (figure 2, right panel). Price changes for core goods appear to have nearly normalized, with core goods prices declining slightly last year at a pace that was just a little slower than the average annual decline that prevailed in the years before the pandemic. The movement toward pre-pandemic conditions for this category of inflation in part reflects the resolution of supply chain issues and other supply constraints that had boosted goods prices earlier, and supply–demand conditions in goods markets now appear to be relatively balanced. As one indication, the shares of respondents to the Quarterly Survey of Plant Capacity Utilization who cite insufficient labor or materials as reasons for operating below capacity have returned close to their pre-pandemic levels (figure 5). Core goods inflation received a small boost last year from price gains in nonfuel import prices, which rose 2.4 percent over the year (figure 6).

Figure 5. Reasons for operating below full capacity



Note: The series are the share of firms selecting each reason for operating below full capacity. The data extend through 2024:Q3.

Figure 6. Nonfuel import price index

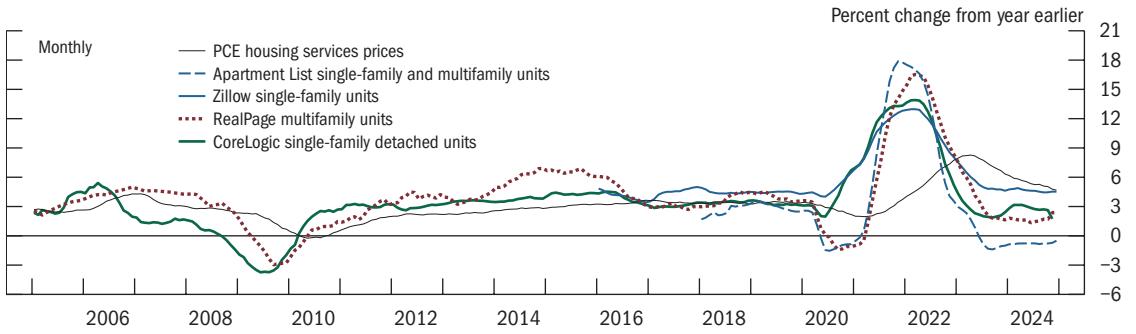


. . . while housing services price inflation moved lower last year but remains elevated . . .

Housing services price inflation continued moderating last year, with prices rising 4.7 percent over the 12 months ending in December, down from 6.3 percent in 2023 and 7.7 percent in 2022. Despite this moderation, housing services inflation remains notably above its pre-pandemic level.

Housing services inflation tends to respond with a lag to movements in rents for new leases to new tenants ("market rents"), and as these market rents have largely returned to pre-pandemic rates of increase, housing services inflation will likely continue to move lower as well (figure 7).[2]

Figure 7. Measures of rental price inflation



Note: Zillow data start in January 2016, and Apartment List data start in January 2018. CoreLogic data extend through November 2024. Apartment List, Zillow, RealPage, and CoreLogic measure market-rate rents—that is, rents for a new lease by a new tenant. PCE is personal consumption expenditures.

. . . and core nonhousing services price inflation has flattened out at a somewhat elevated level

Finally, prices for core nonhousing services—a broad group that includes services such as medical, travel and dining, and financial services—increased 3.5 percent last year, a bit above their increase in 2023 and their pre-pandemic pace. However, the lack of further progress in this category masks important heterogeneity within its components. For the "market-based" category of core services, which account for roughly three-fourths of core nonhousing services, prices increased 2.9 percent last year—similar to its pre-pandemic pace and slower than its 3.5 percent increase in 2023. Market-based core services include components such as food service and lodging that are more directly influenced by supply–demand conditions, so easing in the labor market has likely contributed to the ongoing deceleration in this category of prices. In contrast, price inflation for the "non-market-based" category, where prices are imputed and which includes some volatile categories such as portfolio management that tend to be heavily influenced by idiosyncratic factors, jumped last year.[3]

Measures of longer-term inflation expectations have been stable, while shorter-term expectations generally moved down a bit last year

A generally held view among economists is that inflation expectations influence actual inflation by affecting wage- and price-setting decisions. Measures of inflation expectations over a longer

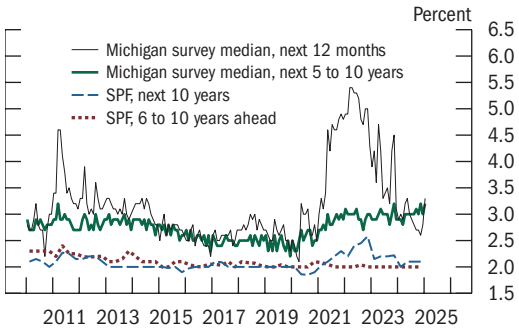
[2] Because prices for housing services measure the rents paid by *all* tenants (and the equivalent rent implicitly paid by all homeowners)—including those whose leases have not recently come up for renewal—they tend to adjust slowly to changes in rental market conditions.

[3] The market-based services prices are derived from specific consumer price indexes or producer price indexes associated with observable market transactions, whereas the non-market-based services prices are imputed to account for the value of the service provided because no observable transactions are available.

horizon from surveys of households (such as the University of Michigan Surveys of Consumers) and professional forecasters have remained broadly consistent with the FOMC's longer-run 2 percent inflation objective (figure 8). Over the past year, these measures have been little changed and within the range seen in the decade before the pandemic. For example, the median forecaster in the Survey of Professional Forecasters, conducted by the Federal Reserve Bank of Philadelphia, continued to expect inflation to average 2 percent over the five years beginning five years from now.

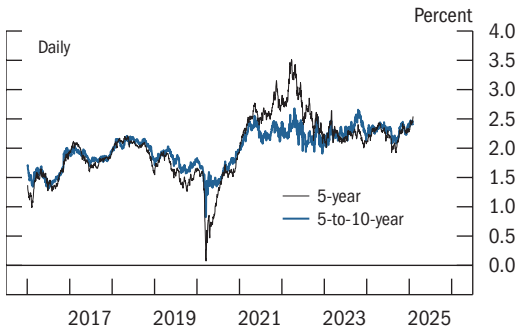
Similarly, market-based measures of longer-term inflation compensation, which are based on financial instruments linked to inflation such as Treasury Inflation-Protected Securities, are also broadly in line with readings seen in the years before the pandemic and consistent with PCE inflation returning to 2 percent (figure 9).

Figure 8. Measures of inflation expectations



Note: The data for the Michigan survey are monthly and extend through January 2025. The data for the Survey of Professional Forecasters (SPF) are quarterly.

Figure 9. Inflation compensation implied by Treasury Inflation-Protected Securities



Note: The data are at a business-day frequency and are estimated from smoothed nominal and inflation-indexed Treasury yield curves.

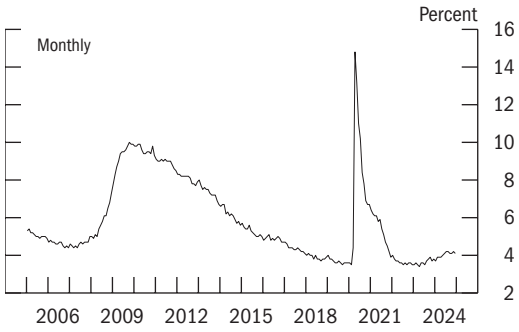
Survey-based inflation expectations over a shorter horizon—which tend to follow observed inflation more closely—rose along with inflation in 2020 and 2021 but then moved back down through the end of 2024. More recently, the median value for expected inflation over the next year from the University of Michigan survey moved up some in December and January. Even so, both this measure and a similar measure from the Federal Reserve Bank of New York's Survey of Consumer Expectations are in line with pre-pandemic levels.

The labor market remains solid . . .

The labor market remains in solid shape. At the end of the year, the unemployment rate was low relative to historical experience, the labor force participation rate (LFPR) among workers aged 25 to 54 remained above its high from the years just before the pandemic, and job vacancies were at a strong level. For the year, employment rose moderately, layoffs remained low, and wage gains were solid.

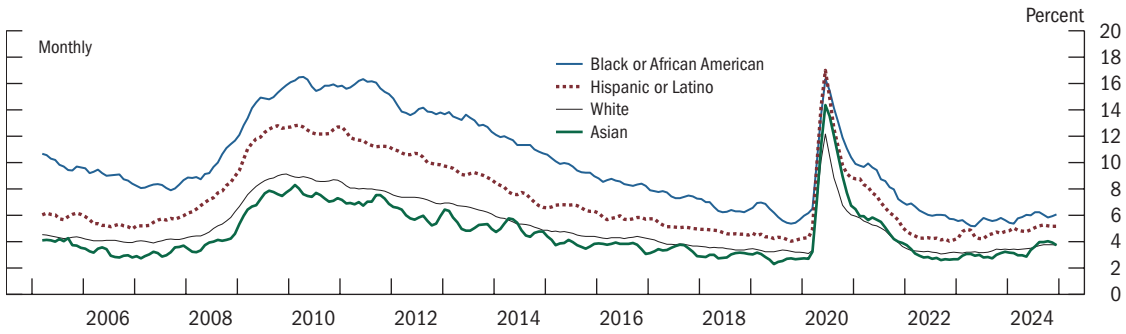
. . . with labor market conditions appearing to stabilize over the second half of last year after a period of easing

Figure 10. Civilian unemployment rate



After gradually increasing over much of 2023, the unemployment rate rose somewhat further in the first half of last year, from 3.8 percent in December 2023 to 4.1 percent in June 2024. However, it was mostly unchanged thereafter, ending the year at 4.1 percent—still low by historical standards (figure 10). Among most age, educational attainment, sex, and racial and ethnic groups, unemployment rates moved up, on net, last year, but to still relatively low levels (figure 11). (The box "Employment and Earnings across Demographic Groups" provides further details.)

Figure 11. Unemployment rate, by race and ethnicity



Note: All data displayed are 3-month moving averages. Unemployment rate measures total unemployed as a percentage of the labor force. Persons whose ethnicity is identified as Hispanic or Latino may be of any race. Small sample sizes preclude reliable estimates for Native Americans and other groups for which monthly data are not reported by the Bureau of Labor Statistics.

Similar to the unemployment rate, measures of job vacancies—which had been gradually moving lower since mid-2022—also appear to have stabilized over the second half of last year. For example, job openings as measured in the Job Openings and Labor Turnover Survey (JOLTS), as well as an alternative measure using job postings data from the large online job board Indeed, edged down, on net, over the first half of last year and flattened out more recently. In December, both measures were a bit above their 2019 average levels.[4]

[4] While job openings might be above pre-pandemic levels because labor demand is stronger than in that period, it might instead, at least in part, reflect changes in firms' job-posting behavior. For example, some firms might be more willing than they were pre-pandemic to post openings that they are unsure they might fill, because they experienced severe labor shortages and hiring difficulties earlier in the pandemic and want to avoid a similar situation.

Box 1. Employment and Earnings across Demographic Groups

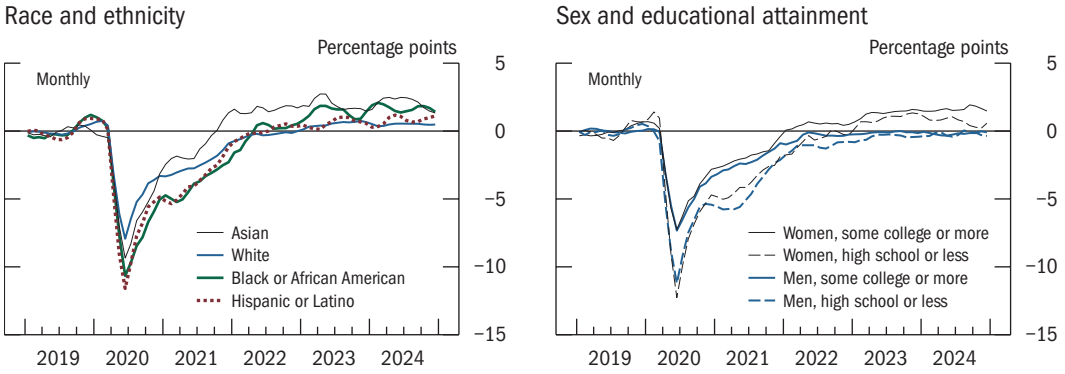
Economic expansions have tended to narrow long-standing disparities in employment and earnings across demographic groups, which can help make up for disproportionate losses experienced during downturns. These benefits have been evident during the expansion in recent years as an exceptionally tight labor market has allowed gaps between groups to narrow significantly. Over the past year, even as labor market conditions have eased, employment disparities continue to be near their recent lows, while wage growth has remained solid across many groups despite slowing a bit from post-pandemic highs. However, despite the progress in recent years, significant disparities in absolute levels across groups remain.

Among prime-age people (aged 25 to 54), employment for Black or African American workers remains relatively high. The employment-to-population (EPOP) ratio for this group increased from mid-2020 until 2023 and has been mostly flat, on net, near its historical peak since then (figure A, left panel). This movement, combined with relatively smaller increases in the EPOP ratio for white workers over the same period, led the gap between the EPOP ratios for Blacks and whites to fall to its lowest point in 50 years. Over the past year, as the labor market has eased, this gap appears to have widened slightly but remains near its historical low.[1] Employment for Hispanic or Latino workers has also remained quite strong, with an EPOP ratio close to its historical high. As a result, the gap between the EPOP ratios between this group and white workers is also near its narrowest point. The EPOP ratio for prime-age Asian workers remains high as well, sitting slightly below its historical peak.[2]

Similarly, the EPOP ratio for prime-age women of all levels of education grew strongly in the post-pandemic recovery, surpassing its pre-pandemic level, and peaked last year. The increase in the EPOP ratio among this group most likely reflects both the continuation of the pre-pandemic trend of rising female labor force participation—some of which is likely attributable to increased educational

(continued)

Figure A. Prime-age employment-to-population ratios compared with the 2019 average ratio, by group



Note: The data are 3-month moving averages. Prime age is 25 to 54. All series are seasonally adjusted by Federal Reserve Board staff.

[1] In figures A and B, EPOP ratios are shown indexed to their 2019 average; therefore, gaps between groups are not readily evident.

[2] As monthly series have greater sampling variability for smaller groups, we do not plot EPOP ratio estimates for American Indians or Alaska Natives.

Box 1—*continued*

attainment—and the continuing availability of remote work.[3] In contrast, the EPOP ratio for prime-age men has remained mostly flat near 2019 levels over the past several years, and, as a result, the male–female EPOP ratio gap narrowed significantly to a record low. That said, the EPOP ratios for women by education level diverged a bit in the latter half of 2024 (figure A, right panel). While the EPOP ratio for college-educated women remained well above 2019 levels through the second half of last year, that for non-college-educated women moved closer to 2019 levels, reflecting both a small decline in labor force participation and a small increase in unemployment.

Like the experiences of women and minority workers, employment for prime-age people living outside of large metropolitan areas also especially benefited from the economic expansion of recent years. While the EPOP ratios for workers in all areas increased over this period, those for rural areas ("nonmetros") and smaller cities have been particularly strong (figure B, top panel).[4] As a result, and given that EPOP ratios are relatively low in rural areas, the gap between EPOP ratios for workers in larger cities and those for workers in rural areas has declined over the past several years and now sits 1 percentage point below its 2019 average. The EPOP ratio gap between smaller and larger cities also dropped below its pre-pandemic level during this period; however, as the labor market has rebalanced over the past year, this gap appears to have widened back to its 2019 level. Interestingly, the employment gains for workers in rural areas and smaller cities differed significantly by education level. In rural areas, employment for non-college-educated workers increased by more than for similarly educated workers in cities (figure B, bottom-left panel). In contrast, employment for college-educated workers increased relatively more in smaller cities than in either of the other areas (figure B, bottom-right panel).

While employment disparities across many demographic groups are within range of historical lows reached during the post-pandemic recovery period, substantial gender, racial, ethnic, and geographic gaps remain, underscoring long-standing structural factors. Currently, prime-age women are employed at a rate 11 percentage points less than men, while prime-age Black and Hispanic workers are employed at a rate 3 to 4 percentage points less than white workers. Further, workers in rural areas are employed at a rate 1 to 3 percentage points below workers in cities.

Similar to employment, a solid but cooling labor market has supported nominal wage growth over the past year—albeit at a slower pace than that during the exceptionally tight labor market in the previous two years. Even so, with headline inflation declining, these wage gains imply continued solid increases in real wages across many groups. In recent years, real wage growth was particularly robust for lower-wage workers and for many historically disadvantaged groups; however, by the end of 2024, wage growth for these groups had moderated. As shown in the top-left panel of figure C, real wage growth—as measured by the Federal Reserve Bank of Atlanta's Wage Growth Tracker and deflated by the personal consumption expenditures price index—was relatively strong for workers in the bottom half of the income distribution during the post-pandemic recovery through the first half of

(continued)

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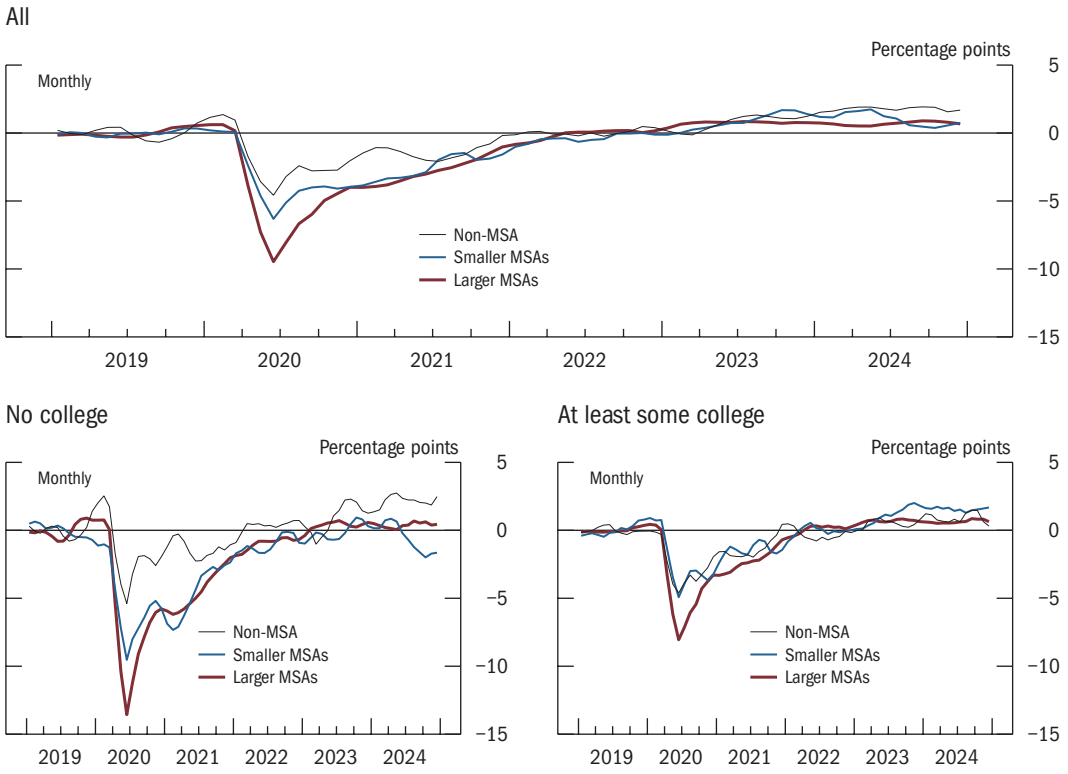
[3] For a discussion of the contribution of educational attainment to prime-age female labor force participation before the pandemic, see Didem Tüzemen and Thao Tran (2019), "The Uneven Recovery in Prime-Age Labor Force Participation," Federal Reserve Bank of Kansas City, *Economic Review*, vol. 104 (Third Quarter), pp. 21–41, https://www.kansascityfed.org/Economic%20Review/documents/652/2019-The%20Uneven%20Recovery%20in%20Prime-Age%20Labor%20Force%20Participation.pdf. For a discussion on access to remote work and participation rates, see Maria D. Tito (2024), "Does the Ability to Work Remotely Alter Labor Force Attachment? An Analysis of Female Labor Force Participation," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, January 19), https://doi.org/10.17016/2380-7172.3433.

[4] Calculations of the series shown are as described in Alison Weingarden (2017), "Labor Market Outcomes in Metropolitan and Non-metropolitan Areas: Signs of Growing Disparities," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, September 25), https://doi.org/10.17016/2380-7172.2063. Larger metropolitan statistical areas (MSAs) are defined as metropolitan areas with a population greater than 500,000 or more, while smaller MSAs are those with a population between 100,000 and 500,000. Non-MSAs consist of counties without strong commuting ties to an urbanized center.

Box 1—*continued*

Figure B. Prime-age employment-to-population ratios compared with the 2019 average ratio, by metropolitan status and education



Note: The data are 3-month moving averages. Prime age is 25 to 54. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more, and smaller MSAs consist of 100,000 to 500,000 people. All series are seasonally adjusted by Federal Reserve Board staff.

2024; however, by the end of the year, wage growth had edged down for this group, and growth had become similar across all quartiles.[5]

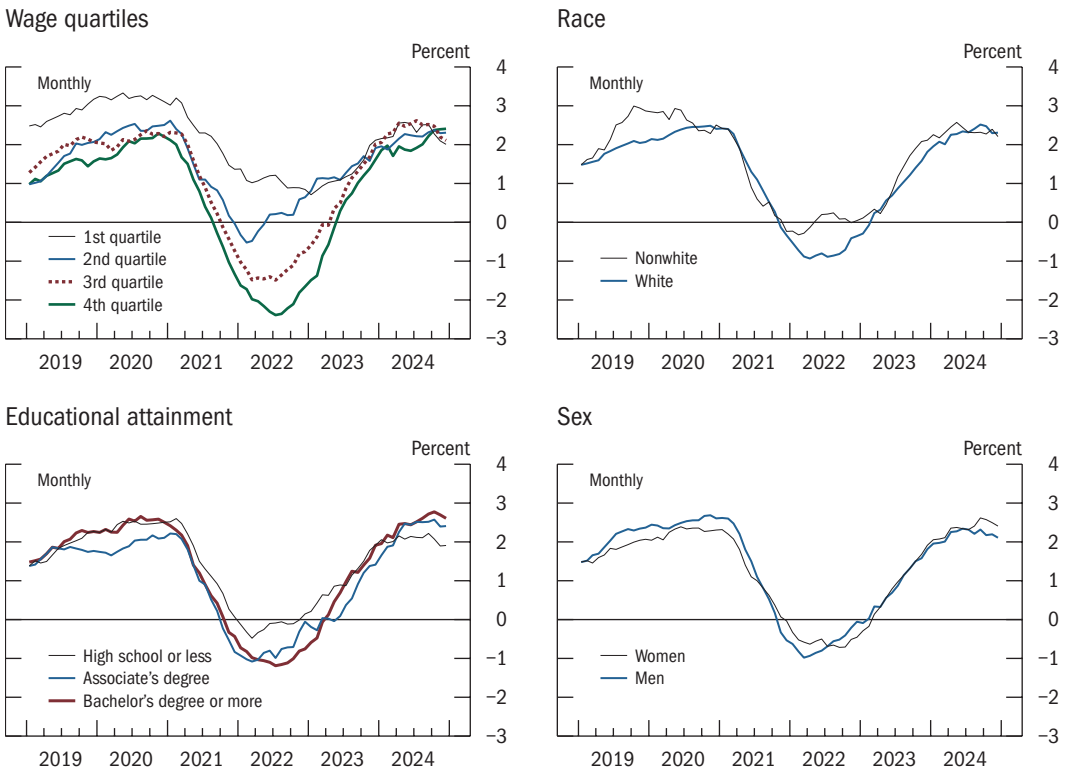
This pattern in wage growth across the income distribution is reflected in the experiences of different demographic groups. Wage growth for nonwhite workers had been a bit stronger than that for white workers since 2022 but, by mid-2024, had fallen to a similar rate of growth (figure C, top-right panel). Similarly, wage growth for workers with a high school diploma or less was strong relative to other groups in the post-pandemic tight labor market; however, as labor market conditions softened in 2024, wage growth for this group tapered and fell below that for college-educated workers (figure C, bottom-left panel). In contrast, wages for men and women largely grew in tandem until the middle of last year, but real wage growth for women outpaced a bit that for men by the end of 2024 (figure C, bottom-right panel).

(continued)

[5] To reduce noise due to sampling variation, which can be pronounced when considering disaggregated groups' wage changes, the series shown in figure C are the 12-month moving averages of the groups' median 12-month real wage change. Thus, by construction, these series lag the actual real wage changes.

Box 1—*continued*

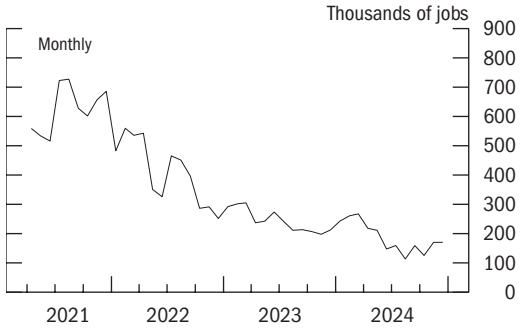
Figure C. Median real wage growth, by group



Note: Series show 12-month moving averages of the median percent change in the hourly wage of individuals observed 12 months apart, deflated by the 12-month moving average of the 12-month percent change in the personal consumption expenditures price index. In the top-left panel, workers are assigned to wage quartiles based on the average of their wage reports in both Current Population Survey outgoing rotation group interviews; workers in the lowest 25 percent of the average wage distribution are assigned to the 1st quartile, and those in the top 25 percent are assigned to the 4th quartile.

Job gains eased some last year, slowing from a strong average monthly pace of 267,000 in the first quarter to a more moderate 159,000 average pace over the rest of the year (figure 12).[5] Job growth remained relatively strong in health care and state and local governments (where employment levels have been normalizing toward pre-pandemic trends after earlier staffing shortages), but employment declined in manufacturing.

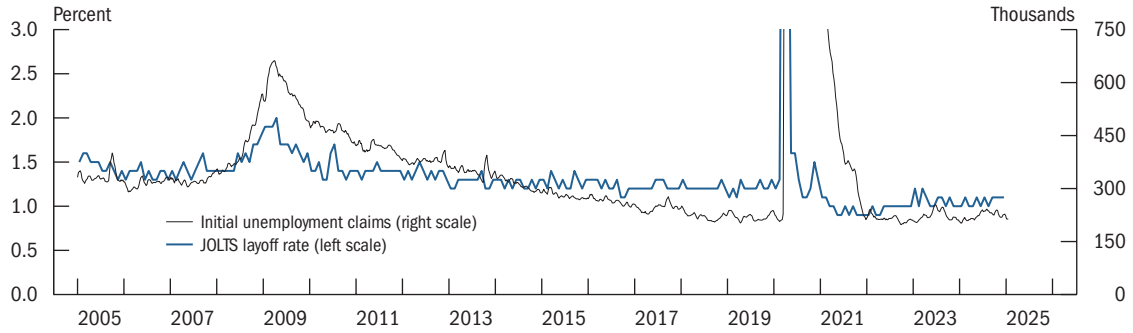
Figure 12. Nonfarm payroll employment



Note: The data shown are a 3-month moving average of the change in nonfarm payroll employment.

Much of the additional easing in labor demand last year manifested as a slowdown in hiring rather than an increase in layoffs. Indeed, many hiring indicators, such as the hiring rate from the JOLTS and the rate at which unemployed individuals became employed each month from the Current Population Survey, moved lower last year. In contrast, layoffs indicators, such as initial claims for unemployment insurance and the layoffs rate from JOLTS, were mostly little changed and have remained low (figure 13).

Figure 13. Indicators of layoffs



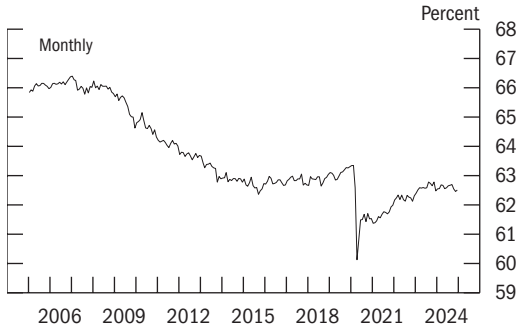
Note: The data for initial claims are reported as a 4-week moving average and extend through January 18, 2025. The data for the Job Openings and Labor Turnover Survey (JOLTS) layoff rate are monthly. Series are truncated at the top of the figure in 2020 and 2021.

[5] Job growth last year has likely been somewhat less strong than currently reported in the Current Employment Statistics (CES), as suggested by the Bureau of Labor Statistics' (BLS) preliminary benchmark revision to the CES and administrative data from the Quarterly Census of Employment and Wages (QCEW). The CES payroll data will be revised with the release of the January employment report on February 7, when the BLS will benchmark payroll estimates to employment counts from the QCEW as part of its annual benchmarking process. Should payroll gains be downwardly revised as suggested by these indicators, payroll employment gains would then be more consistent with the edging up of the unemployment rate last year.

Increases in labor supply appear to have slowed

At the same time, the supply of labor—determined by both the LFPR (the share of the population either working or seeking work) and population growth—appears to have increased more slowly over the second half of last year, after substantial increases over the past several years.

Figure 14. Labor force participation rate



Note: Values before January 2024 are estimated by Federal Reserve Board staff to eliminate discontinuities in the published history.

After having rebounded notably from its pandemic lows, the LFPR has been little changed since mid-2023 and was 62.5 percent in December (figure 14). Although population aging has continued to put downward pressure on the LFPR, this influence has been offset by increasing participation among some age groups. In particular, the LFPR among those aged 25 to 54 has increased substantially over the past few years (especially among women) and, despite declining a bit, on net, over the second half of last year, has remained at a high level.

Regarding population growth, the Census Bureau now estimates that immigration increased strongly from 2022 through June 2024, contributing to strong annual population growth over this period.[6] While official Census Bureau immigration estimates are unavailable after June, more recent indicators point to a sharp slowdown in immigration and population growth since the middle of last year.[7]

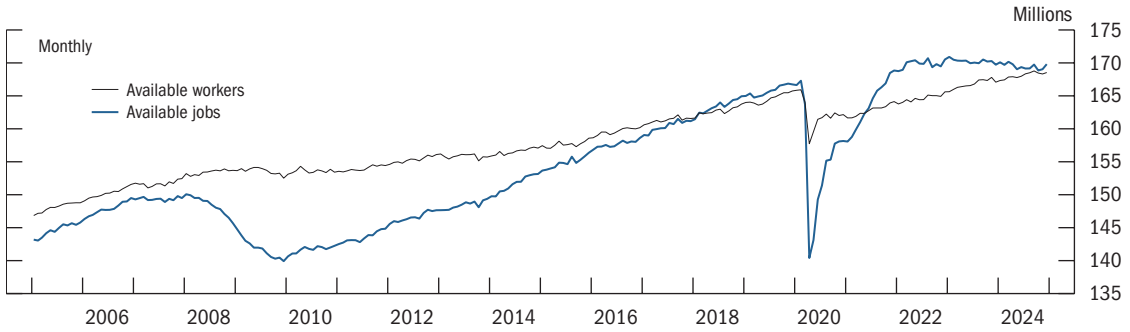
The labor market no longer appears especially tight

As labor demand has slowed further, labor demand and supply have continued to move into closer alignment. By many measures, the labor market appears somewhat less tight than just before the pandemic; for example, the gap between the number of total available jobs (measured by employed workers plus job openings) and the number of available workers (measured by the size of the labor force) averaged 0.8 million in the fourth quarter of last year—well below its 2022 peak of 6.0 million and somewhat below its 2019 average (figure 15). Additionally, the

[6] See U.S. Census Bureau (2024), "Net International Migration Drives Highest U.S. Population Growth in Decades," press release, December 19, https://www.census.gov/newsroom/press-releases/2024/population-estimates-international-migration.html.

[7] Some of these more recent indicators include data from the Department of Homeland Security on encounters between migrants and Customs and Border Patrol agents on the southwest border; see U.S. Department of Homeland Security (2025), "Immigration Enforcement and Legal Processes Monthly Tables," webpage, https://ohss.dhs.gov/topics/immigration/immigration-enforcement/immigration-enforcement-and-legal-processes-monthly.

Figure 15. Available jobs versus available workers



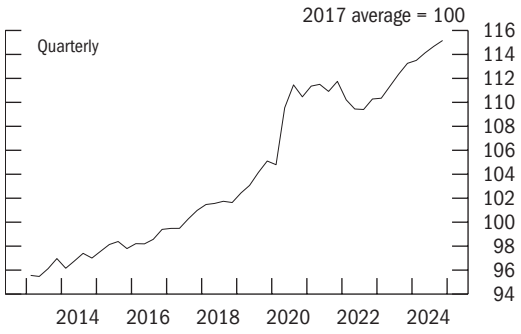
Note: Available jobs are employment plus job openings as of the end of the previous month. Available workers are the labor force. Data for employment and labor force before January 2024 are estimated by Federal Reserve Board staff to eliminate discontinuities in the published history.

share of respondents to the Conference Board Consumer Confidence Survey who say that jobs are plentiful, and the monthly percentage of the workforce that has quit their job as measured in JOLTS (an indicator of the availability of attractive job prospects), are also somewhat below 2019 levels (but above their ranges that prevailed over much of the previous expansion). Similarly, the unemployment rate in December was about ½ percentage point higher than its 2019 average (but still low relative to its range over the past 50 years).

Labor productivity increased solidly in 2024

Labor productivity in the business sector increased 1.97 percent in 2024 (figure 16). Productivity growth has swung wildly since the onset of the pandemic, but looking through this volatility, average labor productivity since the fourth quarter of 2019 is estimated to have increased 1.8 percent, 0.3 percentage point faster than the average pace that prevailed over the previous expansion.[8] (For some potential explanations for this faster productivity growth, see the box "Labor Productivity since the Start of the Pandemic.")

Figure 16. U.S. labor productivity



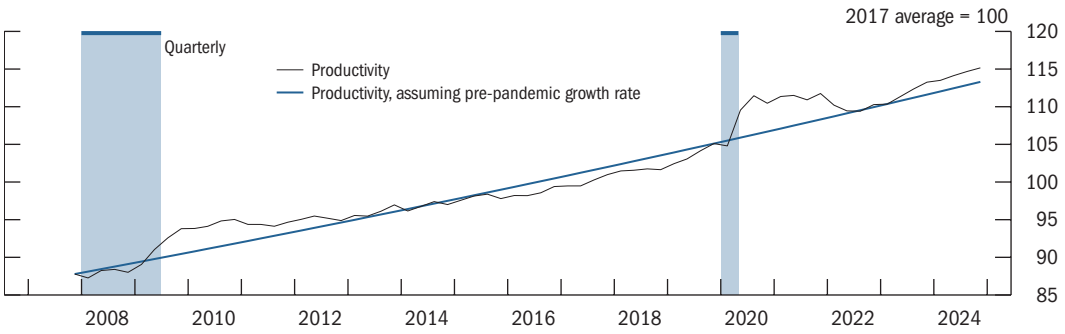
Note: The data are output per hour in the business sector.

[8] Productivity estimates can be subject to large revisions. For example, the anticipated downward revisions to payroll employment discussed in footnote 5 would likely imply a small upward revision to currently published productivity growth. Revisions to gross domestic product estimates, in either direction, could also have a substantial effect on measured productivity.

Box 2. Labor Productivity since the Start of the Pandemic

While labor productivity in the business sector has been volatile since the start of the pandemic, smoothing through these swings, productivity has increased at an average annual rate of 1.8 percent from 2019:Q4 to 2024:Q4—stronger than its 1.5 percent annual average pace over the previous business cycle, 2007:Q4 to 2019:Q4 (figure A). This relatively strong growth rate has put the level of productivity more than 1½ percent above where it would have been had it increased at its pre-pandemic pace. Should stronger productivity growth be maintained, it would have important economic consequences, because stronger productivity growth can support stronger growth in gross domestic product and real wages without additional inflationary pressure.

Figure A. Business-sector productivity



Note: The data are output per hour in the business sector. The blue line plots output per hour, assuming a constant growth rate equal to its average from 2007:Q4 to 2019:Q4. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: December 2007 to June 2009 and February 2020 to April 2020.

Why has productivity growth been stronger than its pre-pandemic pace? One key contributing factor has likely been new business formation, which surged early in the pandemic and remains strong (figure B). This strength has likely supported productivity growth because newer firms are more likely to adopt new technologies or production processes, use existing processes more efficiently, or create new products themselves.[1] Moreover, the surge in business formation has been disproportionately concentrated in high-tech industries, which historically have been important drivers of productivity gains.[2] As some of the more productive businesses started over the past few years grow further, they

(continued)

[1] Although the latest data on new establishment formation is available only through 2024:Q2, new business applications—many of which lead to new businesses forming—remained high through 2024:Q4, suggesting that new businesses continued to be created at a strong pace throughout the second half of last year. For evidence that newer businesses have historically been an important driver of productivity gains, see Titan Alon, David Berger, Robert Dent, and Benjamin Pugsley (2018), "Older and Slower: The Startup Deficit's Lasting Effects on Aggregate Productivity Growth," *Journal of Monetary Economics*, vol. 93 (January), pp. 68–85. For some evidence that the surge in business formation from the past few years has featured genuine new entrepreneurial activity (rather than only reflecting, for example, a surge in gig work or in new establishments among incumbent firms), see Ryan A. Decker and John Haltiwanger (2023), "Surging Business Formation in the Pandemic: Causes and Consequences?" *Brookings Papers on Economic Activity*, Fall, pp. 249–302, https://www.brookings.edu/wp-content/uploads/2023/09/Decker-Haltiwanger_16820-BPEA-FA23_WEB.pdf; and Ryan A. Decker and John Haltiwanger (2024), "Surging Business Formation in the Pandemic: A Brief Update," working paper, September.

[2] See Ryan Decker and John Haltiwanger (2024), "High Tech Business Entry in the Pandemic Era," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, April 19), https://www.federalreserve.gov/econres/notes/feds-notes/high-tech-business-entry-in-the-pandemic-era-20240419.html.

Box 2—*continued*

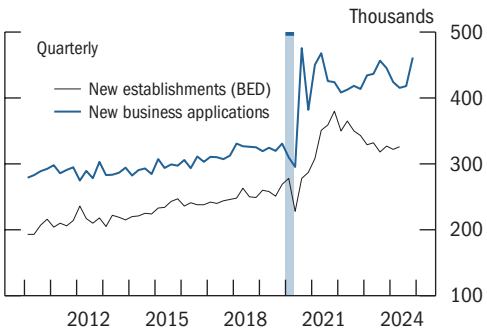
may continue to support strong productivity growth, even if the rate of business formation slows. That said, much is still unknown about the nature and growth prospects of these pandemic-era new businesses, so there is considerable uncertainty around how much these businesses have contributed to recent productivity growth and how consequential they will be to productivity going forward.

Other contributing factors may have provided a more short-lived boost to productivity growth. For example, some firms facing severe labor shortages early in the pandemic likely expanded their use of labor-saving technologies and more efficiently restructured aspects of production, which enhanced their workers' productivity and reduced some firms' need for pre-pandemic levels of labor. However, as labor supply has gradually returned, firms' need for further expansion of labor-saving technologies may have diminished.

Another temporary factor has likely been worker reallocation across jobs (figure C). Measures of worker reallocation, such as the rate of transitions between jobs (black line) and quits (blue line), jumped early in the pandemic and may have resulted in more productive matches between some workers and jobs.[3] However, these measures have returned to pre-pandemic levels (or lower), so worker reallocation is unlikely to still be providing much support to productivity growth.

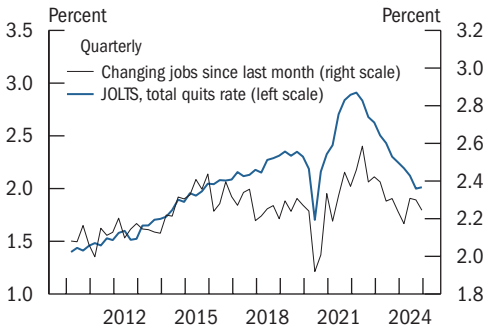
(continued)

Figure B. Establishment births and new business applications



Note: Quarterly new business applications are the sum of high-propensity applications over the month. The Business Employment Dynamics (BED) data extend through 2024:Q2. The shaded bar with a top cap indicates a period of business recession as defined by the National Bureau of Economic Research: February 2020 to April 2020.

Figure C. Measures of worker reallocation



Note: The data are seasonally adjusted quarterly averages. The black line applies only to persons aged 16 or older. JOLTS is the Job Openings and Labor Turnover Survey.

[3] For evidence that job-to-job movements have historically been an important contributor to productivity gains, see John Haltiwanger, Henry Hyatt, Erika McEntarfer, and Matthew Staiger (2025), "Cyclical Worker Flows: Cleansing vs. Sullying," *Review of Economic Dynamics*, vol. 55 (January), 101252. For evidence suggesting that the recent period of elevated worker reallocation may have been productivity enhancing because it in part reflected transitions from lower-wage (lower-productivity) jobs to higher-wage (higher-productivity) jobs, see David Autor, Arindrajit Dube, and Annie McGrew (2023), "The Unexpected Compression: Competition at Work in the Low Wage Labor Market," NBER Working Paper Series 31010 (Cambridge, Mass.: National Bureau of Economic Research, March; revised May 2024), https://www.nber.org/papers/w31010.

Box 2—*continued*

Finally, integration of artificial intelligence (AI) into production processes may already be contributing to productivity gains. However, any effects on measured productivity so far have probably been small, since it will likely take many firms some time to figure out how to effectively integrate AI into the workplace.[4] As AI becomes more widely adopted and more efficiently used, it may contribute more substantially to productivity, although there are conflicting views about any potential economic implications.[5]

It seems possible that all of the aforementioned factors have contributed, at least to some degree, to the strength in productivity since the start of the pandemic, although it is difficult to separate out their relative contributions. Going forward, whether productivity growth can remain above its pre-pandemic pace depends in part on how persistent the influence of some of these factors proves to be and whether these or other factors become even more consequential (for example, how much further AI technologies develop and how widespread their usage becomes).

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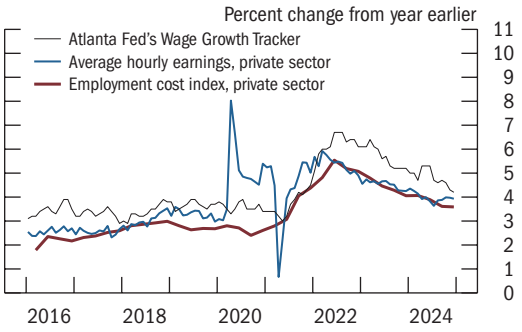
[4] Evidence is mixed on how prevalent AI use is in the workplace currently. For example, the Census Bureau's Business Trends and Outlook Survey reports that, as of January, only around 6 percent of firms reported using AI in production, and around 10 percent planned to do so in the next six months. That said, some other surveys indicate higher usage among firms. For example, 25 percent of service firms and 16 percent of manufacturing firms that responded to an August 2024 survey by the Federal Reserve Bank of New York reported using AI in production; see Jaison R. Abel, Richard Deitz, Natalia Emanuel, and Benjamin Hyman (2024), "AI and the Labor Market: Will Firms Hire, Fire, or Retrain?" *Liberty Street Economics* (blog), September 4, https://libertystreeteconomics.newyorkfed.org/2024/09/ai-and-the-labor-market-will-firms-hire-fire-or-retrain). Some worker-based surveys also point to a substantial share of workers using AI-enabled tools in their workflow—for example, one recent survey found that one-fourth of workers used generative AI in their work over the previous week; see Alexander Bick, Adam Blandin, and David J. Deming, "The Rapid Adoption of Generative AI," NBER Working Paper Series 32966 (Cambridge, Mass.: National Bureau of Economic Research, September), https://www.nber.org/papers/w32966; and Conference Board (2023), "Majority of U.S. Workers Are Already Using Generative AI Tools—But Company Policies Trail Behind," press release, September 13, https://www.conference-board.org/press/us-workers-and-generative-ai.

[5] For an estimate that AI could result in significant productivity gains, see Martin Neil Baily, Erik Brynjolfsson, and Anton Korinek (2023), "Machines of Mind: The Case for an AI-Powered Productivity Boom" (Washington: Brookings Institution, May 10), https://www.brookings.edu/articles/machines-of-mind-the-case-for-an-ai-powered-productivity-boom. For an estimate that the productivity effects of AI could be more modest, see Daron Acemoglu (2024), "The Simple Macroeconomics of AI," *Economic Policy*, eiae042 (August).

Wage growth has slowed but remains solid

As labor market tightness eased somewhat further last year, nominal wage growth has also continued to slow, although to a still-solid pace (figure 17). Total hourly compensation, as measured by the employment cost index (ECI), increased 3.6 percent over the 12 months ending in December and has gradually slowed from its peak increase of 5.5 percent in mid-2022. Other measures also slowed some last year, with the Federal Reserve Bank of Atlanta's Wage Growth Tracker (which reports the median 12-month wage growth of individuals responding to the Current Population Survey) slowing in line with the ECI and growth in average hourly earnings (a less comprehensive measure) slowing in the first half but flattening out over the second half.

Figure 17. Measures of change in hourly compensation



Note: For the private-sector employment cost index, change is over the 12 months ending in the last month of each quarter; for private-sector average hourly earnings, the data are 12-month percent changes; for the Atlanta Fed's Wage Growth Tracker, the data are shown as a 3-month moving average of the 12-month percent change.

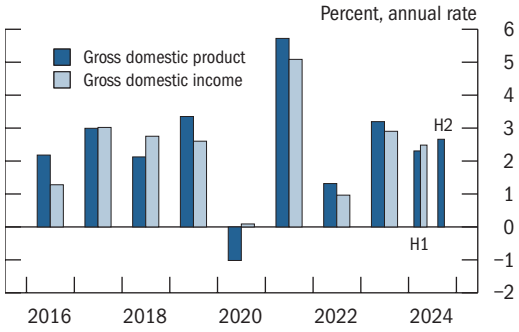
Despite this slowing, wage growth remains somewhat above its 2019 pace. This contrasts with the normalization in other labor market tightness indicators cited earlier and might reflect persistence in the adjustment process of wages to earlier shocks as well as support from strong productivity growth. Nominal wage growth may still remain somewhat too high to be consistent with 2 percent inflation over time, although this depends in part on how persistent the recent strength in productivity proves to be.

With PCE prices having risen 2.6 percent last year, these wage measures suggest that most workers saw increases in the purchasing power of their wages in 2024. That said, the extent of these increases depends in part on workers' individual circumstances—because nominal wage changes vary significantly across industry and occupation and because households consume different baskets of goods than the one represented in the aggregate PCE price index. (For details on how real wage gains have differed across demographic groups, see the box "Employment and Earnings across Demographic Groups.")

Gross domestic product rose solidly last year

Real gross domestic product (GDP) is reported to have increased at a solid annual rate of 2.7 percent over the second half of last year, a little stronger than its pace over the first half

Figure 18. Change in real gross domestic product and gross domestic income



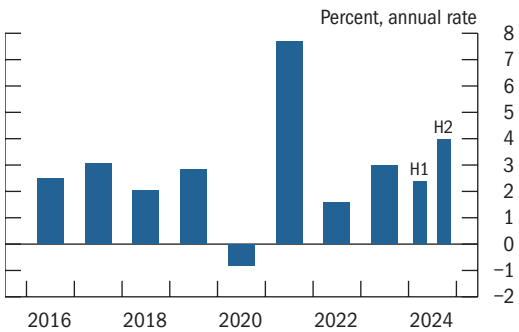
Note: The key identifies bars in order from left to right. The data for gross domestic income extend through 2024:H1.

(figure 18). GDP growth last year was importantly supported by strength in consumer spending. Meanwhile, business investment grew moderately, while activity in the housing market was lackluster. For the year, GDP increased 2.5 percent—somewhat slower than its 3.2 percent pace from 2023, primarily because of moderation in both state and local government spending and nonresidential structures investment (which surged in 2023 from booming construction of manufacturing facilities), and more of a drag from net exports (as imports grew faster than exports).

In contrast to GDP, manufacturing output was little changed last year. In part, weakness in manufacturing production reflects tight financing conditions, as manufacturing output was weaker, on average, in sectors that tend to be more responsive to interest rates. Moreover, recent growth in domestic goods spending has largely been accommodated by increased imports. Special factors also held down production in some key industries like aircraft, where a labor dispute held down output. In all, manufacturing output has been fairly flat in recent years and remains below its recent peak from 2018.

Consumer spending has been resilient despite some headwinds

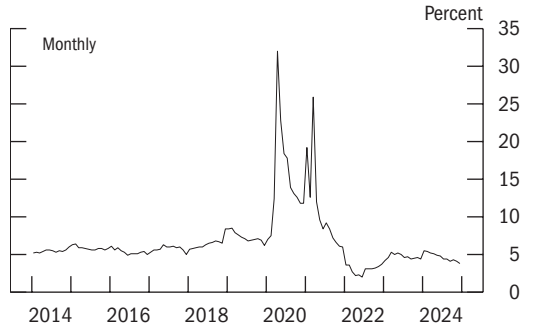
Figure 19. Change in real personal consumption expenditures



Despite headwinds from high interest rates, consumer spending adjusted for inflation grew a strong 3.2 percent last year, a little above its pace in 2023 (figure 19). Consumer spending has been supported by a still-solid labor market, high levels of household wealth relative to income, and rising real wages—indeed, real disposable personal income increased at an average pace of 3.6 percent over the past two years. However, consumers continued to spend more of their income than was typical before the pandemic, and the saving rate—the difference between current income and spending, as a share of income—has remained somewhat below its

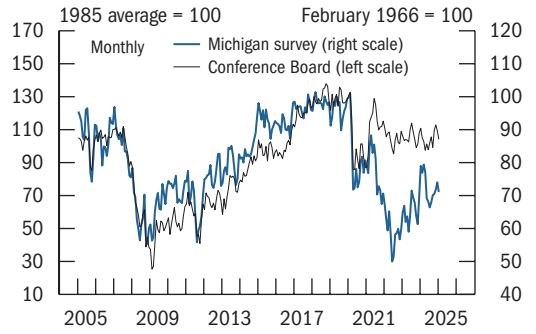
pre-pandemic level for much of the past two years (figure 20). Consumers maintained this pace of spending in part by drawing down their stock of liquid assets (such as checking and savings accounts) that had accumulated to elevated levels during and after the pandemic and by relying more on credit. Even so, households' stock of liquid assets appears to have stabilized at a solid level somewhat above its pre-pandemic trend, suggesting that households, in the aggregate, may have a larger-than-usual buffer to weather economic shocks.

Figure 20. Personal saving rate



Consumer spending has been more robust than measures of consumer sentiment would suggest (figure 21). Although sentiment in the University of Michigan survey has improved notably since 2022, it remains well below its pre-pandemic level. A similar measure from the Conference Board also remains somewhat low—though stronger than the University of Michigan survey measure, as it puts more weight on labor market conditions.

Figure 21. Indexes of consumer sentiment



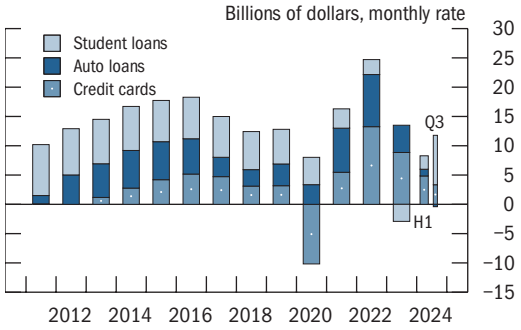
Note: The data extend through January 2025.

Consumer financing conditions remain somewhat restrictive

Despite a tick down in interest rates over the second half of the year in many categories of consumer loans, consumer financing conditions have remained restrictive, reflecting still-high borrowing costs and tight bank lending standards. According to the October 2024 and January 2025 Senior Loan Officer Opinion Surveys on Bank Lending Practices (SLOOS), conducted by the Federal Reserve Board, over the second half of last year banks reported tightening lending standards further for credit cards but loosening them somewhat for auto loans, albeit from tight levels.[9] For credit cards, the relatively tight consumer lending standards likely reflect, in part, delinquency rates that have remained somewhat elevated relative to the pre-pandemic period.

[9] These results reported from the SLOOS are based on banks' responses weighted by each bank's outstanding loans in the respective loan category, and they might therefore differ from the published SLOOS results (which are based on banks' unweighted responses).

Figure 22. Consumer credit flows

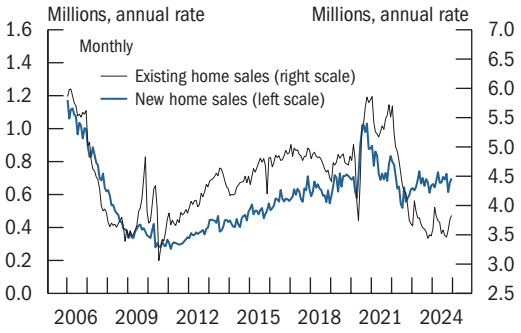


Note: Credit card balances were little changed in 2011 and 2012.

Figure 23. Mortgage interest rates

Note: The data are contract rates on 30-year, fixed-rate conventional home mortgage commitments and extend through January 30, 2025.

Figure 24. New and existing home sales



Note: New and existing home sales include only single-family sales.

Even so, financing has generally remained available to support spending for most households, other than those with low credit scores, and consumer credit expanded moderately through the third quarter of last year (figure 22).

Residential investment increased modestly last year

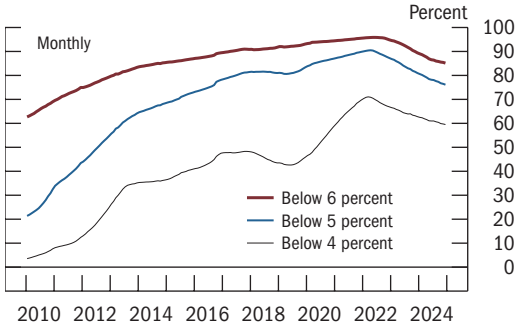
After steep declines in 2022, residential investment turned around in the middle of 2023 and increased modestly, on net, last year, supported by solid income growth and mortgage rates—which moved down a bit through the fall of last year, although to levels still far above pre-pandemic mortgage rates (figure 23). More recently, however, mortgage rates have moved back up again.

The markets for new and existing homes have evolved differently over the past few years (figure 24). Existing home sales remain depressed, as many homeowners who purchased or refinanced homes when fixed mortgage rates were lower appear unwilling to move and take out a new mortgage with a much higher rate. Indeed, the majority of outstanding mortgages still have interest rates below 4 percent, well below the prevailing 30-year fixed interest rate of 7.0 percent at the end of January (figure 25).

In contrast, sales of new homes bounced back to pre-pandemic levels in early 2023 and remained around these levels throughout last year. The new home market has likely been supported by demand from buyers who are unable to find homes in the existing home market. The rebound in demand for new

homes encouraged builders to increase housing construction, and starts for single-family housing generally maintained solid levels last year (figure 26). Reflecting some additional rebalancing in the housing market, in part from supply improvements, house prices increased moderately last year, well below the pace seen in 2021 and 2022 (figure 27).

Figure 25. Distribution of interest rates on outstanding mortgages



Note: The sample only includes outstanding mortgages current on their payments.

Figure 26. Private housing starts

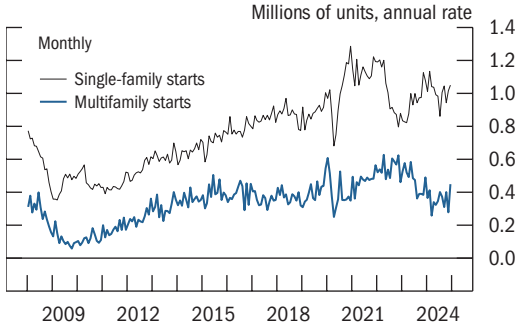
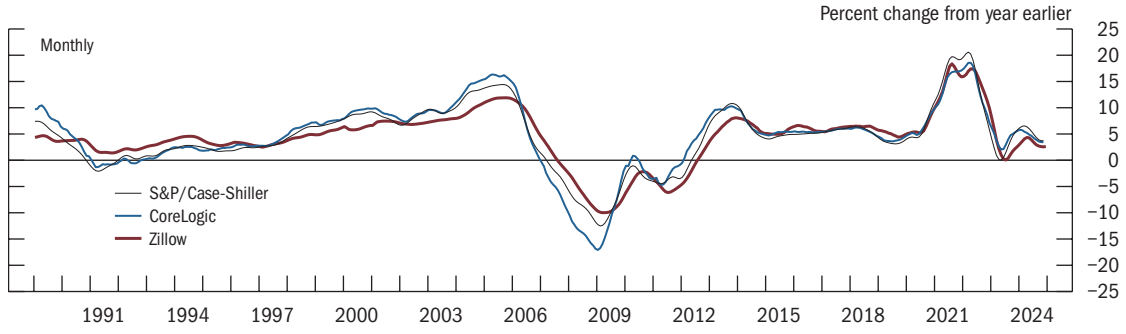


Figure 27. Growth rate in house prices



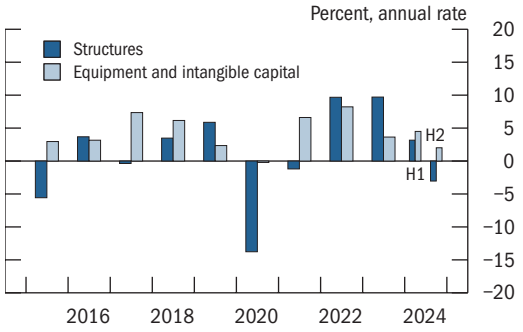
Note: S&P/Case-Shiller and CoreLogic data extend through November 2024.

Meanwhile, starts of multifamily units—which are predominantly rental units—continued to trend lower last year because of weaker rent growth, increasing vacancies, and as a large backlog of new units have entered the market following a wave of multifamily construction from 2021 through mid-2023.

Capital spending grew moderately last year

After increasing solidly in 2023, business investment spending rose moderately last year despite high interest rates, supported by strong sales growth and improving business sentiment

Figure 28. Change in real business fixed investment



Note: Business fixed investment is known as "private nonresidential fixed investment" in the national income and product accounts. The key identifies bars in order from left to right.

(figure 28). The sources of strength in business investment have shifted over the past year. Investment in structures, which surged in 2023 largely from a boom in manufacturing construction (especially for factories that produce semiconductors or electric vehicle batteries), has flattened out, albeit at a high level. Meanwhile, growth in business investment in equipment and intellectual property (which includes software and research and development) has picked up a bit, in part as businesses have been outfitting new manufacturing structures and data centers with high-tech equipment, as well as from continued investment related to artificial intelligence technologies.

Business financing conditions remained somewhat restrictive, but credit remains generally available

While businesses have still faced somewhat restrictive financing conditions as interest rates have stayed elevated, credit has remained generally available to most nonfinancial corporations. Over the second half of last year, banks reported leaving lending standards for business loans basically unchanged, after tightening them since the middle of 2022. Issuance of corporate bonds remained solid across credit categories, although below the levels that prevailed at the start of the tightening cycle.

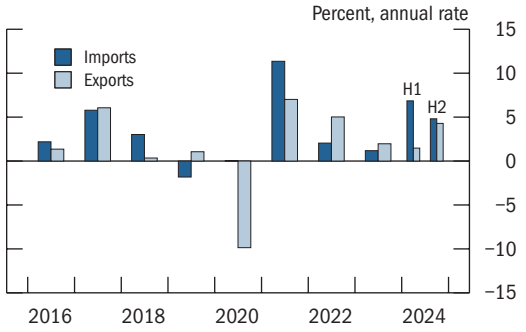
For small businesses, which are more reliant on bank financing than large businesses are, credit conditions were little changed over the second half of last year. Surveys indicate that credit supply for small businesses remained relatively tight, while interest rates on loans to small businesses decreased some late in the year but remained near the top of the range observed since 2008. Loan default rates and delinquency rates, which had risen since mid-2022, moved down somewhat starting in the fall but still stand above their pre-pandemic rates. Finally, loan originations trended down slowly since the summer but are in the range observed before the pandemic, suggesting that credit continues to be available for small businesses with sound financial positions.

Exports and imports grew moderately in the second half of 2024

After lackluster growth in the first half of last year, real exports of goods and services picked up in the second half, led by exports of capital goods (figure 29). Meanwhile, real imports were

robust throughout much of the year, supported by imports of high-tech capital goods. Combined, net exports subtracted 0.2 percentage point from U.S. GDP growth in the second half and subtracted 0.5 percentage point from overall 2024 GDP growth. The current account deficit as a share of GDP widened somewhat in the third quarter to roughly twice as wide as it was before the pandemic.

Figure 29. Change in real imports and exports of goods and services



Note: The key identifies bars in order from left to right.

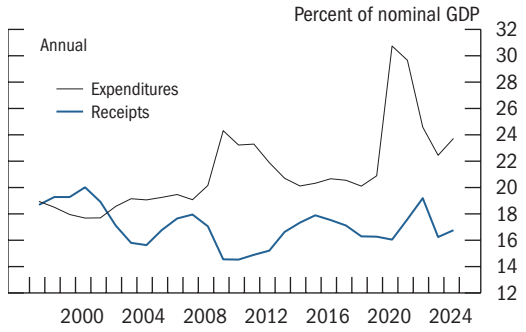
Federal fiscal policy actions provided a modest boost to GDP growth last year

Last year, federal purchases grew moderately, and some policies enacted after the pandemic continued to boost private investment and consumption. This support to economic activity was offset somewhat by the fading effects of earlier pandemic-related fiscal policy support. All told, the contribution of discretionary changes in federal fiscal policy was a modest boost to real GDP growth in 2024.

The budget deficit and federal debt remain elevated

After surging to about 15 percent of GDP in fiscal year 2020, the federal budget deficit—the difference between federal expenditures and receipts—declined through fiscal 2022 as the imprint of the pandemic faded, but it has been fairly flat since then (figure 30). In fiscal 2024, the budget deficit was 6.4 percent of GDP—notably larger than in the years before the pandemic—as noninterest outlays continued to outpace receipts and as the cost of debt service increased as a result of higher interest rates and a higher level of debt.

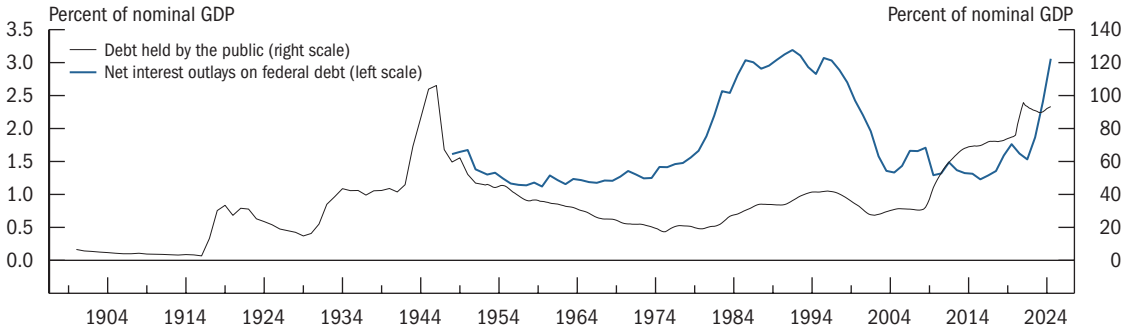
Figure 30. Federal receipts and expenditures



Note: The receipts and expenditures data are on a unified-budget basis and are for fiscal years (October through September); gross domestic product (GDP) data are on a 4-quarter basis ending in Q3.

As a result of the fiscal support enacted early in the pandemic, federal debt held by the public jumped during the pandemic, reaching nearly 100 percent of GDP in early 2021—the highest debt-to-GDP ratio since 1946—and has only edged lower since then (figure 31). The debt-to-GDP ratio has been about flat since then, as the large primary deficits have occurred along with strong nominal GDP growth, but the Congressional Budget Office projects that debt-to-GDP will resume rising in the coming years as deficits remain elevated.

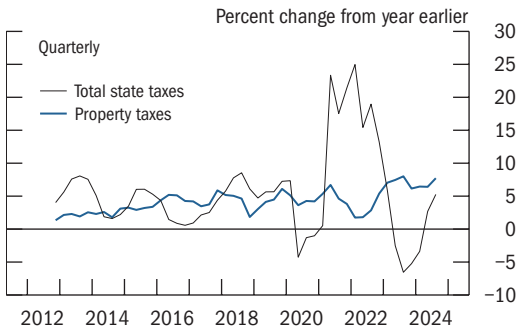
Figure 31. Federal government debt and net interest outlays



Note: The data for net interest outlays are annual, begin in 1948, and extend through 2024. Net interest outlays are the cost of servicing the debt held by the public, offset by certain types of interest income the government receives. Federal debt held by the public equals federal debt excluding most intragovernmental debt, evaluated at the end of the quarter. The data for federal debt are annual from 1900 to 1951 and a 4-quarter moving average thereafter and extend through 2024:Q3. GDP is gross domestic product.

The fiscal position of most state and local governments remains in good shape, as tax revenue growth has normalized . . .

Figure 32. State and local tax receipts



Note: Receipts shown are year-over-year percent changes of 4-quarter moving averages, begin in 2012:Q4, and extend through 2024:Q3. Property taxes are primarily collected by local governments.

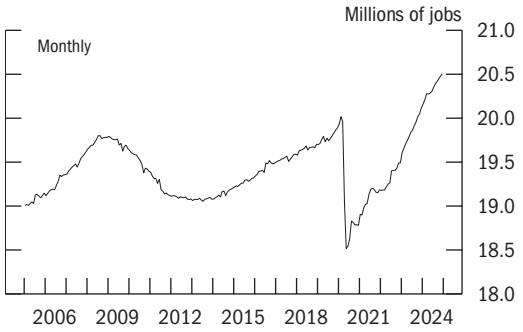
Federal policymakers provided a historically high level of fiscal support to state and local governments during the pandemic, which—together with robust state tax collections in 2021 and 2022—left the sector in a strong budget position overall (figure 32). After falling somewhat in 2023, state tax revenues grew modestly in 2024, and taxes as a percentage of GDP remain somewhat above historical norms. According to the National Association of State Budget Officers, states' total balances—that is, including rainy day fund balances and previous-year surplus funds—declined in 2024 from their all-time high in 2023 but remained well above pre-pandemic levels. At the local level, overall property tax receipts rose at a solid pace in 2024, and the typically long lags between changes in the market value of real estate and changes in taxable assessments suggest that—given past house price appreciation—property tax revenues will continue to rise going forward.

. . . contributing to above-average growth in employment and construction spending last year

Against the backdrop of continued strong budget positions, state and local government employment has moved up sharply over the past two years, after hiring and retention difficulties earlier

in the pandemic faded, in part because wages have become more competitive with those in other sectors (figure 33). As employment has approached its pre-pandemic trend, growth slowed somewhat last year, although to a still-strong pace. Similarly, real construction outlays—which grew at a historically high pace in 2023 owing to support from federal grants and easing bottlenecks—increased last year at a more moderate (though still-strong) pace as support from these factors faded.

Figure 33. State and local government payroll employment

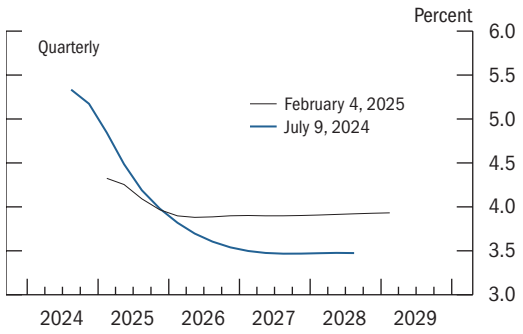


Financial Developments

The expected level of the federal funds rate over the next year shifted up notably . . .

Market-based measures of the expected path of the federal funds rate declined over the summer and early fall as the Federal Reserve eased monetary policy beginning at its September meeting. Subsequently, these measures moved up in the fourth quarter as market participants scaled back their expectations of the extent of further easing. On net, the market-implied path for the federal funds rate in 2025 is little changed since last July, and the path for 2026 is notably higher (figure 34). Financial market prices now imply that the federal funds rate will decline a further 40 basis points from current levels to 3.9 percent by year-end 2025 and remain near that level through the end of 2026. Consistent with current market prices, respondents to the January Blue Chip Financial Forecasts survey expected the federal funds rate to average 3.8 percent in the fourth quarter of 2025.

Figure 34. Market-implied federal funds rate path



Note: The federal funds rate path is implied by quotes on overnight index swaps—a derivative contract tied to the effective federal funds rate. The implied path as of July 9, 2024, is compared with that as of February 4, 2025. The path is estimated with a spline approach, assuming a term premium of 0 basis points. The July 9, 2024, path extends through 2028:Q3 and the February 4, 2025, path through 2029:Q1.

. . . and yields on long-term U.S. nominal Treasury securities are higher on net

While short-term Treasury yields declined somewhat, on net, since last July, yields on long-term nominal Treasury securities increased markedly on balance. After declining from early summer to

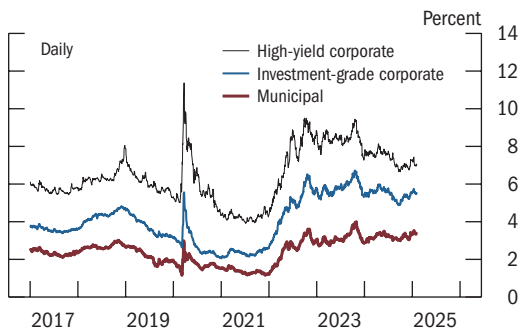
Figure 35. Yields on nominal Treasury securities

mid-September to a level just above 3.6 percent, the 10-year Treasury yield rose notably, reaching a level of 4.6 percent by early February (figure 35). The rise in long-term nominal yields since mid-September largely reflected an increase in real yields, as measured by yields on Treasury Inflation-Protected Securities.

Yields on other long-term debt were little changed on net

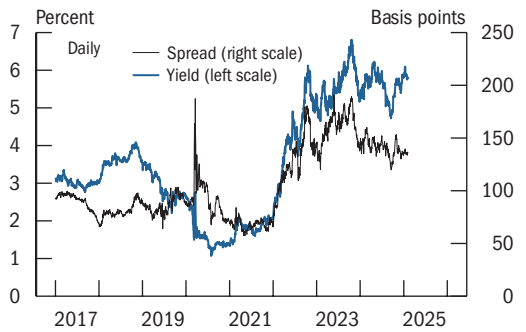
Amid the easing of monetary policy and improved market sentiment since September, spreads on corporate bonds over comparable-maturity Treasury securities narrowed, particularly for speculative-grade bonds, and are now very low relative to their respective historical distributions. As the decline in spreads largely offset the increase in Treasury yields, corporate bond yields were little changed, on net, across credit categories and remained elevated (figure 36). Similarly, municipal bond spreads over comparable-maturity Treasury securities narrowed somewhat, on net, and stand near the bottom of the historical distribution. Meanwhile, municipal bond yields increased slightly since July. Yields on agency mortgage-backed securities (MBS)—an important factor for home mortgage interest rates—were little changed, on net, and currently stand at similar levels to those observed in June (figure 37). The MBS spreads narrowed notably but remained elevated by historical standards, at least partly due to high interest rate volatility, which increases prepayment risk and reduces the value of holding MBS.

Figure 36. Corporate bond yields, by securities rating, and municipal bond yield



Note: High-yield corporate reflects the effective yield of the ICE Bank of America Merrill Lynch (BofAML) High Yield Index (H0A0). Investment-grade corporate reflects the effective yield of the ICE BofAML triple-B U.S. Corporate Index (C0A4). Municipal reflects the yield to worst of the ICE BofAML U.S. Municipal Securities Index (U0A0).

Figure 37. Yield and spread on agency mortgage-backed securities



Note: Yield shown is for the uniform mortgage-backed securities 30-year current coupon, the coupon rate at which new mortgage-backed securities would be priced at par, or face, value for dates after May 31, 2019; for earlier dates, the yield shown is for the Fannie Mae 30-year current coupon. Spread shown is to the average of the 5-year and 10-year nominal Treasury yields.

Broad equity price indexes increased further

Amid elevated expectations of long-term earnings growth and broad-based optimism about the corporate outlook, the S&P 500 index increased further since June (figure 38). Similarly, equity prices for small market capitalization firms rose during this period. Bank equity prices increased during the second half of the year. One-month option-implied volatility on the S&P 500 index—the VIX—increased moderately since July amid higher uncertainty about the strength of the economy and the corresponding monetary policy path (figure 39). Currently, the level of the VIX is below the median of its historical distribution since 1990. (For a discussion of financial stability issues, see the box "Developments Related to Financial Stability.")

Figure 38. Equity prices

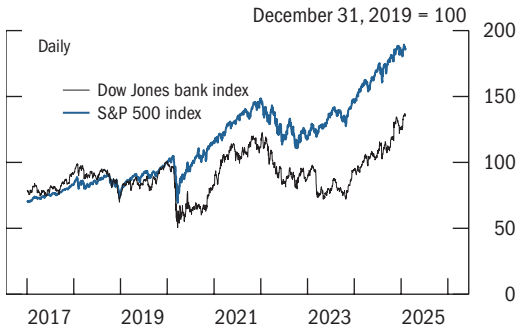
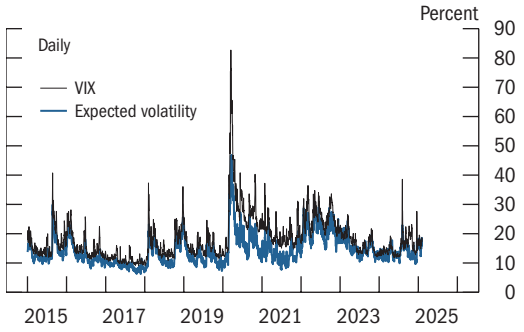


Figure 39. S&P 500 volatility



Note: The VIX is an option-implied volatility measure that represents the expected annualized variability of the S&P 500 index over the following 30 days. The expected volatility series shows a forecast of 1-month realized volatility, using a heterogeneous autoregressive model based on 5-minute S&P 500 returns.

Major asset markets functioned in an orderly manner, but liquidity remained low

Treasury securities market functioning continued to be orderly, but a number of indicators suggest that liquidity remained low by historical standards. The persistence of low liquidity is broadly in line with the continued high level of interest rate volatility. Liquidity in equity markets continued to be low, at levels comparable with those observed last July. Meanwhile, corporate and municipal bond markets continued to function well amid stable liquidity and trading conditions.

Short-term funding market conditions remained stable

Conditions in overnight bank funding and repurchase agreement markets continued to be stable. The reduction in the target range for the federal funds rate in the September, November, and December FOMC meetings fully passed through to overnight money market rates. Since June, the effective federal funds rate has remained 7 basis points below the interest rate on reserve balances. The Secured Overnight Financing Rate has been slightly above the offering rate on the overnight reverse repurchase agreement (ON RRP) facility, except for short-lived periods of upward pressure on quarter-ends. Take-up at the ON RRP facility continued to decline amid an increase in net Treasury bill issuance and more favorable rates on private investments.

Box 3. Developments Related to Financial Stability

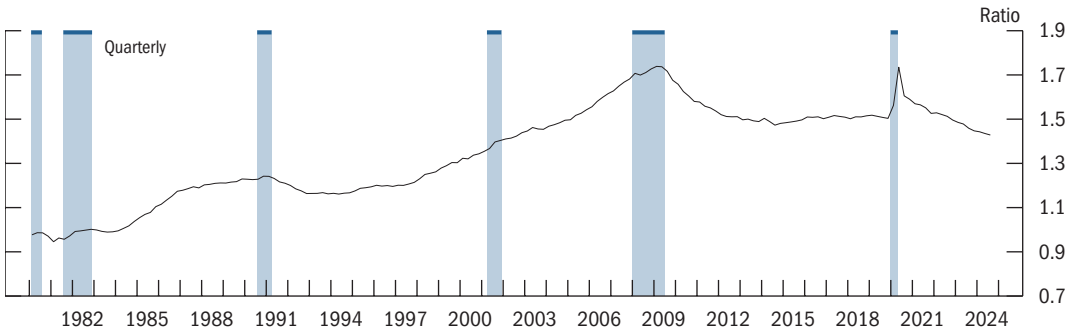
This discussion reviews vulnerabilities in the U.S. financial system. The framework used by the Federal Reserve Board for assessing the resilience of the U.S. financial system focuses on financial vulnerabilities in four broad areas: asset valuations, business and household debt, leverage in the financial sector, and funding risks. All told, the financial system remains sound and resilient. Valuations remained high relative to fundamentals in a range of markets, including those for equity, corporate debt, and residential real estate. Total debt of households and nonfinancial businesses as a fraction of gross domestic product (GDP) continued to trend down to a level that is very low relative to that in the past two decades. Most banks continued to report capital levels well above regulatory requirements, but fair value losses on fixed-rate assets were still sizable for some banks. In addition, the trend of reduced reliance by banks on uninsured deposits continued, and recent Securities and Exchange Commission (SEC) reforms mitigated some vulnerabilities associated with prime money market funds (MMFs). Meanwhile, hedge fund leverage appears to be high and concentrated.

Valuation pressures increased somewhat from already high levels. The ratio of equity prices to 12-month forward earnings is close to the high end of its historical range, driven to a substantial extent by the largest companies. Spreads between yields on corporate bonds and those on comparable-maturity Treasury securities were very low compared with their history. In residential property markets, the ratio of house prices to rents rose to near the highest levels on record, though high house prices do not appear to have been supported by excessive borrower leverage. Meanwhile, conditions in commercial real estate (CRE) markets have recently showed signs of stabilization after a sustained period of deterioration. Nominal long-term Treasury yields increased moderately and Treasury market depth remained low, suggesting market liquidity remained low by historical standards.

Vulnerabilities from nonfinancial business and household debt remained moderate. The combined debt of both sectors as a share of GDP continued to trend down and is at its lowest level in the past 20 years (figure A). Household debt as a share of GDP is especially subdued relative to recent history and is owed primarily by prime-rated borrowers (figure B). However, delinquency rates on credit cards and auto loans among borrowers with nonprime credit ratings remained above pre-pandemic levels. Business debt as a share of GDP has declined significantly from the post-COVID-19 peak and stands

(continued)

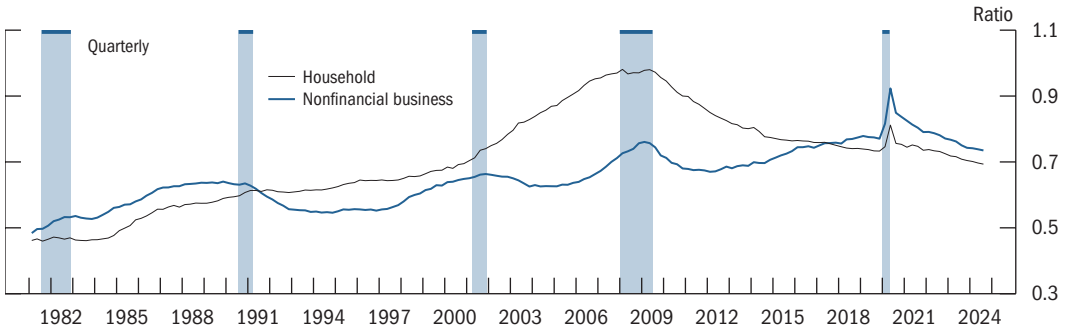
Figure A. Private nonfinancial-sector credit-to-GDP ratio



Note: The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: January 1980 to July 1980, July 1981 to November 1982, July 1990 to March 1991, March 2001 to November 2001, December 2007 to June 2009, and February 2020 to April 2020. GDP is gross domestic product. The data extend through 2024:Q3.

Box 3—*continued*

Figure B. Nonfinancial business and household debt-to-GDP ratios



Note: The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: July 1981 to November 1982, July 1990 to March 1991, March 2001 to November 2001, December 2007 to June 2009, and February 2020 to April 2020. GDP is gross domestic product. The data extend through 2024:Q3.

near the bottom of its range over the past decade (as shown in figure B); however, business debt as a share of business assets was high by historical standards, and private credit arrangements have also been growing rapidly. That said, measures of the ability of businesses to service their debt have been stable within typical ranges, in part reflecting robust corporate earnings.

Vulnerabilities associated with financial leverage remained notable. The banking sector remained sound and resilient overall, and most banks continued to report capital levels well above regulatory requirements. Although fair value losses on fixed-rate assets have moderated, they were still sizable for some banks and remained sensitive to changes in long-term interest rates. The overall credit quality of banks' assets was sound, with the aggregate bank loan delinquency rate remaining at historically low levels. However, some banks, insurers, and securitization vehicles continued to have concentrated exposures to CRE. Indicators suggest that hedge fund leverage was at or near the highest level in the past decade while broker-dealer leverage stayed near historical lows. Hedge funds' Treasury cash–futures basis trade, which is highly leveraged and involves shorting a Treasury futures contract and purchasing a Treasury note deliverable into that contract, remained elevated through the second half of 2024. Separately, some highly leveraged hedge funds may also have contributed to the spike in volatility that hit equity markets in early August, as they had to quickly deleverage positions, largely to meet internal volatility targets.

Liquidity at most domestic banks remained sound. Many banks have significantly reduced the fraction of assets funded with uninsured deposits. This funding was replaced, in part, by increased use of brokered and reciprocal deposits and, at large banks, short-term wholesale funding. Some open-end bond mutual funds remained vulnerable to significant withdrawals, as they are required to permit daily redemptions despite holding assets that can suffer losses and become illiquid under stress. While the 2023–24 SEC reforms on MMFs have mitigated some vulnerabilities associated with prime MMFs, structural vulnerabilities remained in certain other short-term investment vehicles. Moreover, assets in these alternative vehicles, including prime-like offshore MMFs, as well as stablecoins which are also vulnerable to runs, grew notably in the second half of 2024. Bond and loan funds remained susceptible to redemptions during periods of stress, with more severe pressures possible if assets become more illiquid or redemptions become unusually large. In addition, life insurers continued to rely on a higher-than-average share of nontraditional liabilities.

The implementation of new rules for institutional prime money market funds (MMFs) in October by the SEC passed in an orderly manner. In anticipation of the rules, there were multiple conversions from prime to government MMFs and closures of prime MMFs. Assets under management of MMFs reached historical highs in January as MMFs continued to offer favorable yields relative to bank deposits. Meanwhile, MMFs extended the maturity profile of their portfolios somewhat, on net, in the second half of 2024.

Bank credit continued to decelerate

Banks' core loan holdings continued to decelerate in the second half of 2024, growing at a 1.3 percent annualized rate, down from 1.9 percent during the first half of last year (figure 40). The subdued loan growth likely reflects still-elevated interest rates and tight lending standards. Delinquency rates remained relatively stable in the second half of 2024 following several quarters of deterioration. Even so, delinquencies for commercial real estate loans and credit cards remained elevated relative to the pre-pandemic period. In contrast, delinquency rates for commercial and industrial loans remained in line with their pre-pandemic levels. Measures of bank profitability edged down during the second half of last year amid a decline in net interest margins and remain below the levels that prevailed before the pandemic (figure 41).

Figure 40. Ratio of total commercial bank credit to nominal gross domestic product

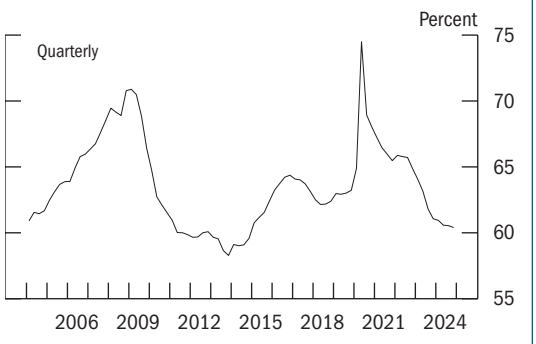
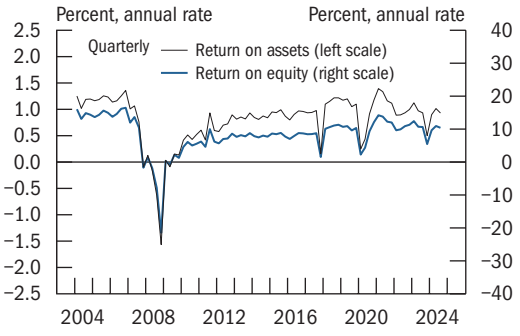


Figure 41. Profitability of bank holding companies



Note: The data extend through 2024:Q3.

International Developments

Foreign economic growth has remained modest in the second half of 2024

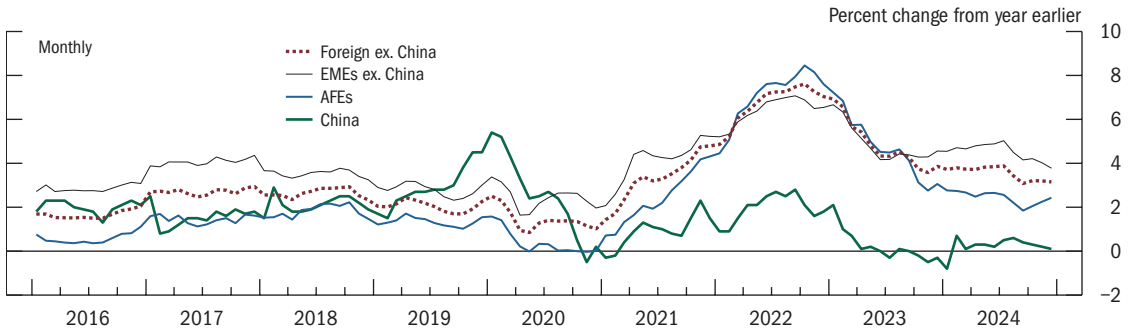
Foreign growth remained modest in the second half of last year, as the cumulative effects of restrictive monetary policy became more pronounced, curbing both private investment and consumer spending. Additionally, in Europe, energy-intensive sectors continued to grapple with elevated energy costs that resulted from Russia's war on Ukraine. By contrast, growth in Asian economies stepped up somewhat in the second half of the year, bolstered by strong export activity in

the high-tech sector associated with robust U.S. artificial intelligence and data center demand. In China, growth was also supported by a slew of government stimulus measures, including monetary easing, support for the property sector and stock market, and a program to boost consumer purchases of automobiles and large appliances. These economic stimulus measures have been enacted both to stabilize the property market, which has experienced large declines in activity and prices in recent years, and to restore confidence in the broader economy.

Inflation abroad slowed but remains uneven across economies

After mostly moving sideways in the first half of last year, foreign headline inflation slowed in the second half, largely driven by declines in core inflation (figures 42 and 43). However, progress on inflation reduction remains uneven across economies and sectors, with services inflation and wage growth still running above levels consistent with central banks' inflation objectives in several economies. China stood out with near-zero inflation, reflecting weak domestic demand and falling housing prices despite government stimulus measures. Global risks to inflation include upside risk from potential disruptions to energy supplies driven by geopolitical events and downside risk from the possibility that deflationary forces in China could become entrenched.

Figure 42. Consumer price inflation in foreign economies

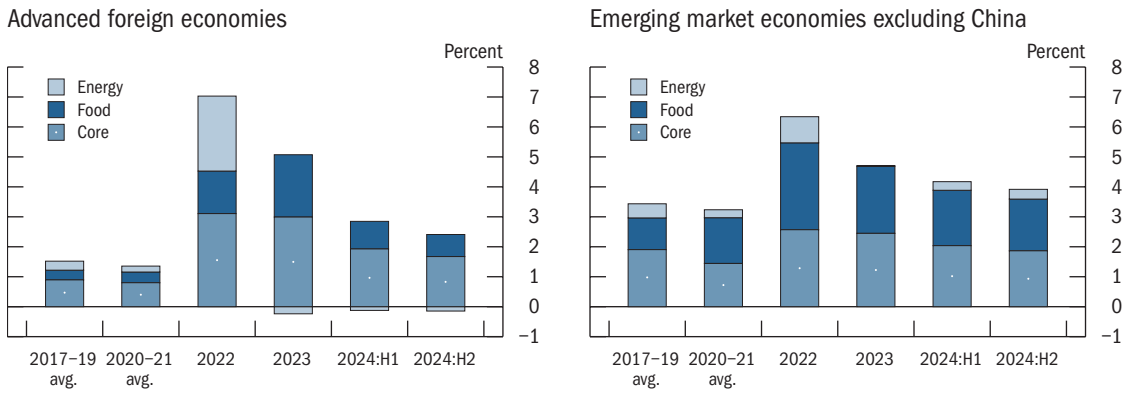


Note: The advanced foreign economy (AFE) aggregate is the average of Canada, the euro area, Japan, and the U.K., weighted by shares of U.S. non-oil goods imports. The emerging market economy (EME) aggregate is the average of Argentina, Brazil, Chile, Colombia, Hong Kong, India, Indonesia, Israel, Malaysia, Mexico, the Philippines, Russia, Saudi Arabia, Singapore, South Korea, Taiwan, Thailand, and Vietnam, weighted by shares of U.S. non-oil goods imports. The foreign aggregate is the import-weighted average of all aforementioned economies. The inflation measure is the Harmonised Index of Consumer Prices for the euro area and the consumer price index for the other economies.

Many foreign central banks continued to ease monetary policy

Many foreign central banks, including the European Central Bank and the Bank of Canada as well as several central banks in Latin America and Southeast Asia, continued to cut policy rates since mid-2024, citing declining inflationary pressures, easing labor markets, and concerns about economic growth. Policymakers generally emphasized that they are following a data-dependent

Figure 43. Components of foreign consumer price inflation



Note: The advanced foreign economy aggregate is the average of Canada, the euro area, Japan, and the U.K., weighted by shares of U.S. non-oil goods imports. The emerging market economy (EME) aggregate is the average of Argentina, Brazil, Chile, Colombia, Hong Kong, India, Indonesia, Israel, Malaysia, Mexico, the Philippines, Russia, Saudi Arabia, Singapore, South Korea, Taiwan, Thailand, and Vietnam, weighted by shares of U.S. non-oil goods imports, and begins in May 2017. The inflation measure is the Harmonised Index of Consumer Prices for the euro area and the consumer price index for other economies. The stacked bars measure the percentage point contribution of each component to 12-month headline inflation in each referenced period. For each of these periods, the values shown are averages over all monthly 12-month changes ending in that period. The energy component of inflation for the EMEs was little changed in 2023.

approach and underscored the importance of maintaining vigilance amid persistent geopolitical risks as well as still-elevated services inflation and wage pressures in some economies.

In contrast, the Bank of Japan raised its policy rates last summer and again this January and has continued to emphasize its commitment to achieving its inflation target after more than two decades of low-inflation outcomes. Brazil was also a notable exception, as a resurgence of inflation amid tight labor markets and large depreciation of the currency has prompted the Central Bank of Brazil to raise its policy rates forcefully since early September and to signal that further hiking is likely.

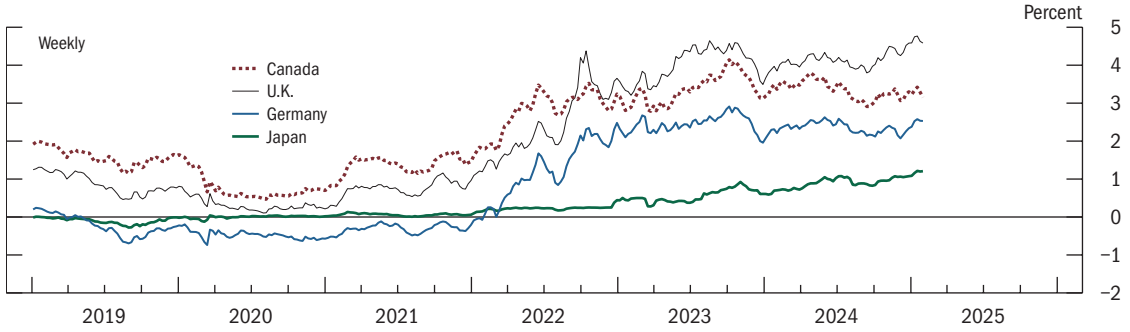
Financial conditions abroad are little changed on balance . . .

Since mid-2024, short-term sovereign yields declined notably in many advanced foreign economies (AFEs) as many AFE central banks cut policy rates. By contrast, short-term yields rose in Japan, where market-based measures of policy expectations suggest further policy rate hikes by the Bank of Japan in 2025. Meanwhile, AFE longer-term sovereign yields rose moderately in some countries, with declines in expected policy rates being more than offset by increases in term premiums on market expectations of large bond issuance due to persistently large government deficits (figure 44). Relatedly, most AFE equity indexes were moderately higher, on net, since mid-2024.

Chinese equity prices increased sharply in late September, and China-focused investment funds recorded large inflows in response to announcements by Chinese authorities of economic

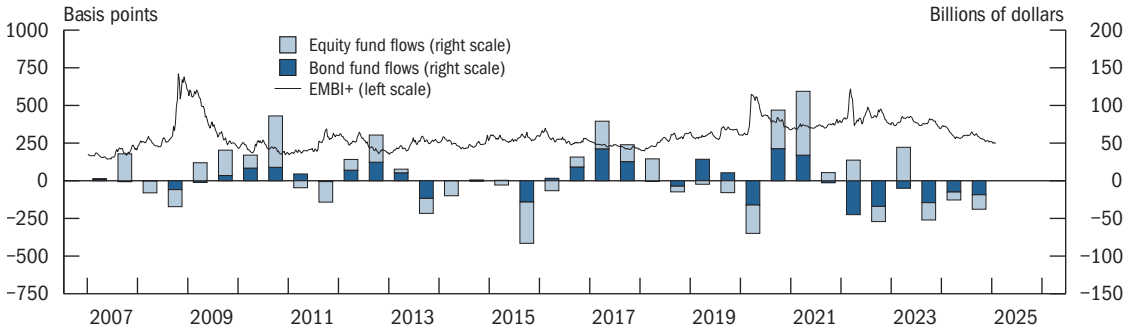
stimulus measures and policies to support equity markets. These movements were later partially reversed, however, as investors expressed disappointment at the size and scope of the stimulus when details of the measures became clearer. More broadly, while aggregate emerging market economy (EME) funds recorded strong inflows last September, these turned to large outflows in the fourth quarter as investors reacted to the deterioration in the economic outlook for China, rising U.S. longer-term interest rates, and the prospect of new U.S. tariffs on EME exports to the U.S. (figure 45). Nevertheless, EME sovereign spreads narrowed significantly amid a broad narrowing in dollar-denominated credit spreads.

Figure 44. Nominal 10-year government bond yields in selected advanced foreign economies



Note: The data are weekly averages of daily benchmark yields and extend through January 31, 2025.

Figure 45. Emerging market mutual fund flows and spreads



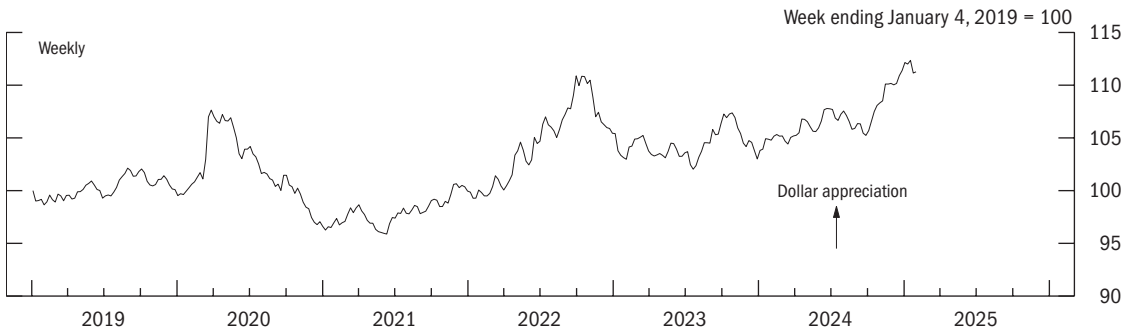
Note: The bond and equity fund flows data are semiannual sums of weekly data from December 28, 2006, to December 25, 2024, and exclude domestically focused funds in emerging market economies. Weekly data span Thursday through Wednesday, and the semiannual values are sums over weekly data for weeks ending in that half year. The J.P. Morgan Emerging Markets Bond Index Plus (EMBI+) data are weekly averages of daily data, extend through January 31, 2025, and exclude Venezuela.

. . . and the exchange value of the dollar has increased significantly

Since mid-2024, the broad dollar index—a measure of the exchange value of the dollar against a trade-weighted basket of foreign currencies—increased significantly, on net, continuing its notable rise seen in the first half of 2024 and reaching its highest level in decades (figure 46). The

dollar index was, however, somewhat volatile since mid-2024; it decreased initially as U.S. yields declined in the third quarter of 2024, before increasing steadily afterward. Market participants attributed the recent increase in the dollar index to widening gaps of U.S. interest rates over those of major AFEs, the relative strength of the U.S. economy, and political and fiscal developments in some foreign economies. Some market participants also pointed to potential increases in U.S. tariffs on imports as a factor pushing the dollar higher in recent months.

Figure 46. U.S. dollar exchange rate index



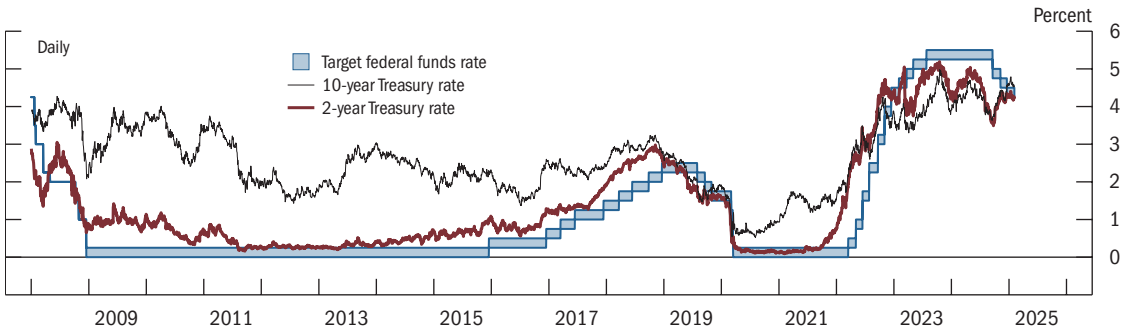
Note: The data, which are in foreign currency units per dollar, are weekly averages of daily values of the broad dollar index and extend through January 31, 2025. As indicated by the arrow, increases in the data reflect U.S. dollar appreciation and decreases reflect U.S. dollar depreciation.

Monetary Policy

The Federal Open Market Committee lowered the target range for the federal funds rate

After having held the target range for the policy rate at 5¼ to 5½ percent between late July 2023 and mid-September 2024, the Federal Open Market Committee (FOMC) lowered the target range for the policy rate by a cumulative 100 basis points over the last three meetings of 2024, bringing the range to 4¼ to 4½ percent (figure 47). The FOMC's decision to begin reducing the degree of policy restraint reflected the FOMC's greater confidence in inflation moving sustainably toward 2 percent and the judgment that it was appropriate to recalibrate the policy stance. In considering the extent and timing of additional adjustments to the target range for the federal funds rate, the FOMC will carefully assess incoming data, the evolving outlook, and the balance of risks.

Figure 47. Selected interest rates



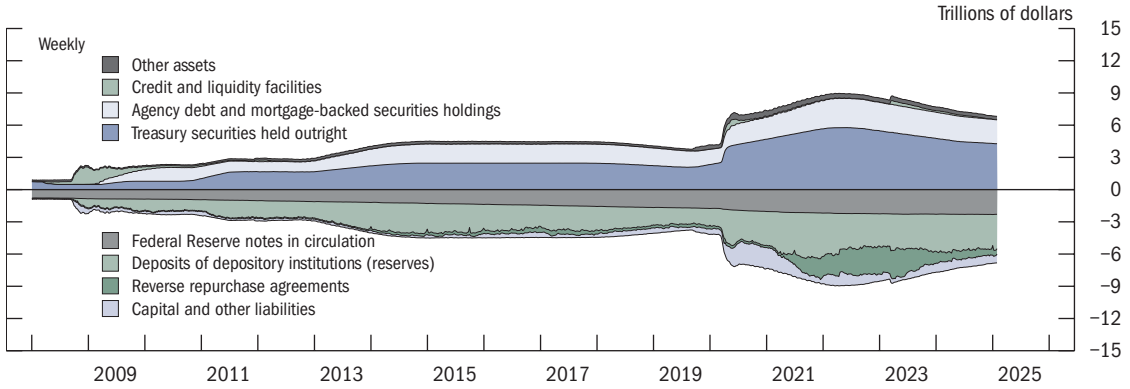
Note: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities.

The FOMC has continued the process of significantly reducing its holdings of Treasury and agency securities

The FOMC began reducing its securities holdings in June 2022 and, since then, has continued to implement its plan for significantly reducing the size of the Federal Reserve's balance sheet in a predictable manner. Over the second half of last year, the FOMC reduced the size of the Federal Reserve's balance sheet with redemption caps of $25 billion per month on Treasury securities and $35 billion per month on agency debt and agency mortgage-backed securities (MBS). Any principal payments in excess of the agency debt and agency MBS caps are to be reinvested into Treasury securities, consistent with the FOMC's intention to hold primarily Treasury securities in the longer run.

The System Open Market Account holdings of Treasury and agency securities have declined about $2 trillion since the start of the balance sheet reduction and $297 billion since June 2024 to around $6.5 trillion, a level equivalent to 22 percent of U.S. nominal gross domestic product, down from a peak of 35 percent reached at the end of 2021 (figure 48). Reserve balances—the largest liability item on the Federal Reserve's balance sheet—have edged down $68 billion since late June 2024 to a level of around $3.2 trillion. Since the beginning of balance sheet runoff, reserves have been little changed because the reserve-draining effect of balance sheet runoff has been largely offset by a $1.8 trillion decline in balances at the overnight reverse repurchase agreement facility. (See the box "Developments in the Federal Reserve's Balance Sheet and Money Markets.")

Figure 48. Federal Reserve assets and liabilities



Note: "Other assets" includes repurchase agreements, FIMA (Foreign and International Monetary Authorities) repurchase agreements, and unamortized premiums and discounts on securities held outright. "Credit and liquidity facilities" consists of primary, secondary, and seasonal credit; term auction credit; central bank liquidity swaps; support for Maiden Lane, Bear Stearns Companies, Inc., and AIG; and other credit and liquidity facilities, including the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, the Term Asset-Backed Securities Loan Facility, the Primary and Secondary Market Corporate Credit Facilities, the Paycheck Protection Program Liquidity Facility, the Municipal Liquidity Facility, and the Main Street Lending Program. "Agency debt and mortgage-backed securities holdings" includes agency residential mortgage-backed securities and agency commercial mortgage-backed securities. "Capital and other liabilities" includes the U.S. Treasury General Account and the U.S. Treasury Supplementary Financing Account. The key identifies shaded areas in order from top to bottom. The data extend through January 29, 2025.

The FOMC has stated that it intends to maintain securities holdings at amounts consistent with implementing monetary policy efficiently and effectively in its ample-reserves regime. To ensure a smooth transition to ample reserve balances, the FOMC slowed the pace of decline of its securities holdings in June 2024 and intends to stop reductions in its securities holdings when reserve balances are somewhat above the level that the FOMC judges to be consistent with ample reserves. Once balance sheet runoff has ceased, reserve balances will likely continue to decline at a slower pace—reflecting growth in other Federal Reserve liabilities—until the FOMC judges that reserve balances are at an ample level. Thereafter, the FOMC will manage securities holdings as needed to maintain ample reserves over time.

The FOMC will continue to monitor the implications of incoming information for the economic outlook

The FOMC is strongly committed to supporting maximum employment and returning inflation to its 2 percent objective. In considering the extent and timing of additional adjustments to the target range for the federal funds rate, the FOMC will carefully assess incoming data, the evolving outlook, and the balance of risks. Its assessments will take into account a wide range of information, including readings on labor market conditions, inflation pressures and inflation expectations, and financial and international developments.

In addition to considering a wide range of economic and financial data, the FOMC gathers information from business contacts and other informed parties around the country, as summarized in the Beige Book. The Federal Reserve has regular arrangements under which it hears from a broad range of participants in the U.S. economy about how monetary policy affects people's daily lives and livelihoods. In particular, the Federal Reserve has continued to gather insights into these matters through the *Fed Listens* initiative and the Federal Reserve System's community development outreach. Additionally, this year the Federal Reserve has begun a public review of its monetary policy framework. (See the box "Periodic Review of Monetary Policy Strategy, Tools, and Communications.")

Policymakers also routinely consult prescriptions for the policy interest rate provided by various monetary policy rules. These rule prescriptions can provide useful benchmarks for the consideration of monetary policy. However, simple rules cannot capture all of the complex considerations that go into the formation of appropriate monetary policy, and many practical considerations make it undesirable for the FOMC to adhere strictly to the prescriptions of any specific rule. Nevertheless, some principles of good monetary policy can be brought out by examining these simple rules. (See the box "Monetary Policy Rules in the Current Environment.")

Box 4. Developments in the Federal Reserve's Balance Sheet and Money Markets

The Federal Open Market Committee (FOMC) continued to reduce the size of the Federal Reserve's System Open Market Account (SOMA) portfolio. Loans extended under the Bank Term Funding Program—which made longer-term funding and liquidity available to eligible depository institutions amid the banking-sector developments of spring 2023 to help ensure the stability of the banking system and the ongoing provision of money and credit to the economy—have also decreased $106 billion to a level of $213 million since late June 2024.[1] Since the previous report, total Federal Reserve assets have decreased $413 billion, leaving the total size of the balance sheet at $6.8 trillion, $2.1 trillion smaller since the reduction in the size of the SOMA portfolio began in June 2022 (table A and figure A).[2]

Reserves, the largest liability item on the Federal Reserve's balance sheet, have edged down $68 billion since late June 2024 to a level of about $3.2 trillion.[3] Since the beginning of balance sheet runoff, reserves have been little changed because the reserve-draining effect of balance sheet runoff was largely offset by a $1.8 trillion decline in balances at the overnight reverse repurchase agreement (ON RRP) facility. Since June 2024, usage of the ON RRP facility has continued to decline to levels below $200 billion (figure B). Reduced usage of the ON RRP facility largely reflects money market mutual funds shifting their portfolios toward higher-yielding investments, including Treasury bills and private-market repurchase agreements.

Conditions in overnight money markets remained stable. The ON RRP facility continued to serve its intended purpose of supporting the control of the effective federal funds rate (EFFR), and the Federal Reserve's administered rates—the interest rate on reserve balances and the ON RRP offering rate—remained highly effective at maintaining the EFFR within the target range. Following the December 2024 FOMC meeting, the Federal Reserve made a technical adjustment to lower the ON RRP offering rate 5 basis points. The technical adjustment aligned the ON RRP offering rate with the bottom of the target range for the federal funds rate.

The Federal Reserve's deferred asset has increased $43 billion since late June to a level of around $221 billion.[4] Negative net income and the associated deferred asset do not affect the Federal Reserve's conduct of monetary policy or its ability to meet its financial obligations.[5]

(continued)

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[1] The remaining Bank Term Funding Program (BTFP) loans will mature by March 11, 2025. The BTFP was established under section 13(3) of the Federal Reserve Act with the approval of the Secretary of the Treasury. The BTFP offered loans of up to one year to banks, savings associations, credit unions, and other eligible depository institutions (DIs) against collateral such as U.S. Treasury securities, U.S. agency securities, and U.S. agency mortgage-backed securities. For more details, see Board of Governors of the Federal Reserve System (2024), "Bank Term Funding Program," webpage, https://www.federalreserve.gov/financial-stability/bank-term-funding-program.htm.

[2] The last Federal Reserve Board statistical release H.4.1 ("Factors Affecting Reserve Balances") before the publication of the previous *Monetary Policy Report* on July 5, 2024, was dated June 26, 2024. As a result, this discussion refers to changes in the Federal Reserve's balance sheet since late June.

[3] Reserve balances consist of deposits held at the Federal Reserve Banks by DIs, such as commercial banks, savings banks, credit unions, thrift institutions, and U.S. branches and agencies of foreign banks.

[4] The deferred asset is equal to the cumulative shortfall of net income and represents the amount of future net income that will need to be realized before remittances to the Treasury resume. Although remittances are suspended at the time of this report, over the past decade and a half, the Federal Reserve has remitted over $1 trillion to the Treasury.

[5] Net income is expected to turn positive again as interest expenses fall, and remittances will resume once the temporary deferred asset falls to zero. As a result of the ongoing reduction in the size of the Federal Reserve's balance sheet, interest expenses will fall over time in line with the decline in the Federal Reserve's liabilities.

Box 4—*continued*

Table A. Balance sheet comparison
Billions of dollars

	January 29, 2025	June 26, 2024	Change (since June 2024)	Change (since Fed's balance sheet reduction began on June 1, 2022)
Assets				
Total securities				
Treasury securities	4,275	4,454	−179	−1,496
Agency debt and MBS	2,220	2,338	−118	−490
Unamortized premiums	247	264	−17	−90
Repurchase agreements	0	0	0	0
Loans and lending facilities				
PPPLF	2	3	−1	−18
Discount window	3	7	−4	2
BTFP	0	107	−106	0
Other loans and lending facilities	8	11	−4	−27
Central bank liquidity swaps	0	0	0	0
Other assets	63	47	16	21
Total assets	**6,818**	**7,231**	**−413**	**−2,097**
Liabilities				
Federal Reserve notes	2,298	2,302	−4	67
Reserves held by depository institutions	3,201	3,269	-68	-157
Reverse repurchase agreements				
Foreign official and international accounts	375	390	−15	109
Others	122	490	−368	−1,843
U.S. Treasury General Account	812	744	67	31
Other deposits	176	154	22	−71
Other liabilities and capital	−165	−118	−47	−233
Total liabilities and capital	**6,818**	**7,231**	**−413**	**−2,097**

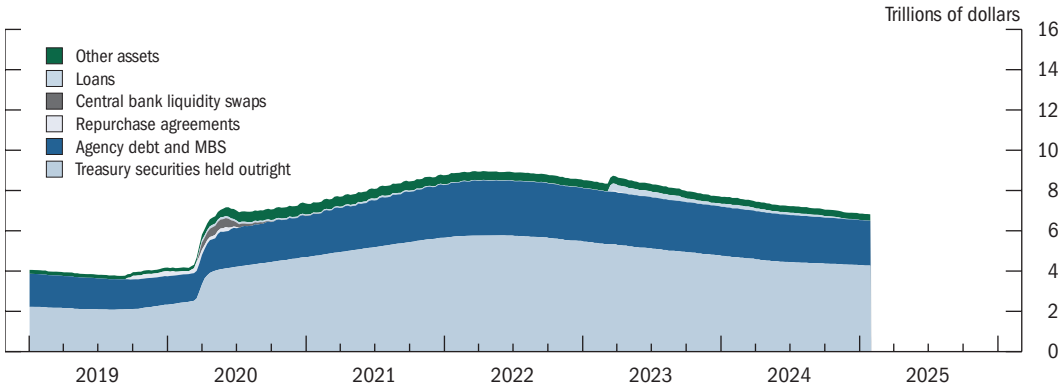
Note: MBS is mortgage-backed securities. PPPLF is Paycheck Protection Program Liquidity Facility. BTFP is Bank Term Funding Program. Components may not sum to totals because of rounding.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

(continued)

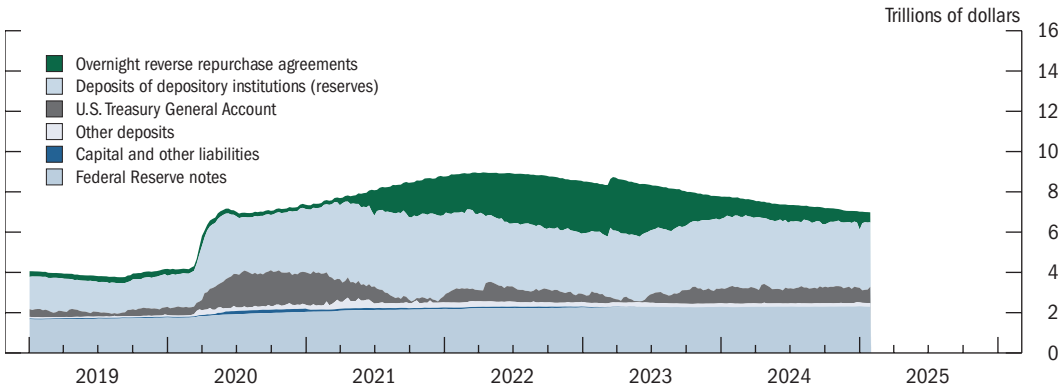
Box 4—*continued*

Figure A. Federal Reserve assets



Note: MBS is mortgage-backed securities. The key identifies shaded areas in order from top to bottom. The data are weekly and extend through January 29, 2025.

Figure B. Federal Reserve liabilities



Note: "Capital and other liabilities" includes the liability for earnings remittances due to the U.S. Treasury and contributions from the U.S. Treasury; the sum is negative from June 2023 onward because of the deferred asset that the Federal Reserve reports. The key identifies shaded areas in order from top to bottom. The data are weekly and extend through January 29, 2025.

Box 5. Periodic Review of Monetary Policy Strategy, Tools, and Communications

The Federal Reserve has begun its periodic public review of its monetary policy strategy, tools, and communication practices—the framework it uses to pursue its dual-mandate goals of maximum employment and price stability. Routine self-evaluation is healthy for any organization, and it is essential that the Federal Open Market Committee's (FOMC) monetary policy framework evolves as needed to best support the dual mandate amid an ever-changing economy. Accordingly, following the review that concluded in 2020, the FOMC indicated that it would carry out a thorough public review roughly every five years.

The review is focused on two specific areas: the FOMC's Statement on Longer-Run Goals and Monetary Policy Strategy, which articulates the Committee's approach to monetary policy, and the Committee's policy communication tools. The Committee's 2 percent longer-run inflation goal is not a focus of the review.[1]

Like the Federal Reserve's 2019–20 review of its monetary policy framework, the ongoing review will include outreach and public events attended by policymakers, community leaders, experts from outside the System, and other members of the public. As part of the public outreach associated with the review, the Federal Reserve Board will host a conference featuring economists and other analysts from outside the Federal Reserve System, who will discuss topics central to the review.[2]

The 2025 review will include a set of events hosted by the Federal Reserve as part of the *Fed Listens* initiative, which began with the FOMC's 2019–20 framework review and has continued since then. At *Fed Listens* events, the Board and Reserve Banks have engaged with a wide range of organizations—employee groups and union members, small business owners, residents of low- and moderate-income communities, workforce development organizations and community colleges, retirees, and others—to hear about how monetary policy affects peoples' daily lives and livelihoods.

FOMC participants discussed topics related to the review at the January 28–29, 2025, FOMC meeting, and these discussions will continue at subsequent meetings. At the end of the process, information and perspectives gathered during the review will inform policymakers' judgments about appropriate changes to the FOMC's monetary policy framework to best serve the American people.

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[1] See the November 22, 2024, press release "Federal Reserve Announces Additional Information about the Periodic Review of Its Monetary Policy Strategy, Tools, and Communications," available on the Board's website at https://www.federalreserve.gov/newsevents/pressreleases/monetary20241122a.htm.

[2] See the September 20, 2024, press release "Federal Reserve Board Announces It Will Host the 2nd Thomas Laubach Research Conference on May 15–16, 2025," available on the Board's website at https://www.federalreserve.gov/newsevents/pressreleases/other20240920a.htm.

Box 6. Monetary Policy Rules in the Current Environment

Simple interest rate rules relate a policy interest rate, such as the federal funds rate, to a small number of other economic variables—typically including the current deviation of inflation from its target value and a measure of resource slack in the economy. As part of their monetary policy deliberations, policymakers regularly consult the prescriptions of a variety of simple interest rate rules without mechanically following the prescriptions of any particular rule.

In 2024, the economy continued to make progress toward the FOMC's dual-mandate goals. Inflation moved a little closer to 2 percent in 2024 and ran well below its peak in 2022. While the labor market remains solid, labor market conditions generally eased. Accordingly, the simple policy rules considered here called for levels of the policy rate in 2024 that were on average lower than in the prior year. In support of its goals of maximum employment and inflation at the rate of 2 percent over the longer run, the FOMC has reduced the target range for the federal funds rate from 5¼ to 5½ percent to 4¼ to 4½ percent, while continuing to reduce its holdings of Treasury securities and agency debt and agency mortgage-backed securities.

Selected Policy Rules: Descriptions

In many economic models, desirable economic outcomes can be achieved over time if monetary policy responds to changes in economic conditions in a manner that is predictable and adheres to some key design principles. In recognition of this idea, economists have analyzed many monetary policy rules, including the well-known Taylor (1993) rule, the "balanced approach" rule, the "adjusted Taylor (1993)" rule, and the "first difference" rule.[1] Table A shows these rules, along with a "balanced approach (shortfalls)" rule, which responds to the unemployment rate only when it is higher than its estimated longer-run level. All of the simple rules shown embody key design principles of good monetary policy, including the requirement that the policy rate should be adjusted by enough over time to ensure a return of inflation to the central bank's longer-run objective and to anchor longer-term inflation expectations at levels consistent with that objective.

All five rules feature the difference between inflation and the FOMC's longer-run objective of 2 percent.[2] The five rules use the unemployment rate gap, measured as the difference between an estimate of the rate of unemployment in the longer run (u_t^{LR}) and the current unemployment rate; the first-difference rule includes the change in the unemployment rate gap rather than its level.[3] All but the first-difference rule include an estimate of the neutral real interest rate in the longer run (r_t^{LR}).[4]

(continued)

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[1] The Taylor (1993) rule was introduced in John B. Taylor (1993), "Discretion versus Policy Rules in Practice," *Carnegie-Rochester Conference Series on Public Policy*, vol. 39 (December), pp. 195–214. The balanced-approach rule was analyzed in John B. Taylor (1999), "A Historical Analysis of Monetary Policy Rules," in John B. Taylor, ed., *Monetary Policy Rules* (Chicago: University of Chicago Press), pp. 319–41. The adjusted Taylor (1993) rule was studied in David Reifschneider and John C. Williams (2000), "Three Lessons for Monetary Policy in a Low-Inflation Era," *Journal of Money, Credit and Banking*, vol. 32 (November), pp. 936–66. The first-difference rule is based on a rule suggested by Athanasios Orphanides (2003), "Historical Monetary Policy Analysis and the Taylor Rule," *Journal of Monetary Economics*, vol. 50 (July), pp. 983–1022. A review of policy rules is provided in John B. Taylor and John C. Williams (2011), "Simple and Robust Rules for Monetary Policy," in Benjamin M. Friedman and Michael Woodford, eds., *Handbook of Monetary Economics*, vol. 3B (Amsterdam: North-Holland), pp. 829–59. The same volume of the *Handbook of Monetary Economics* also discusses approaches to deriving policy rate prescriptions other than through the use of simple rules.

[2] The rules are implemented as responding to core PCE price inflation rather than to headline PCE price inflation because current and near-term core inflation rates tend to outperform headline inflation rates as predictors of the medium-term behavior of headline inflation.

[3] Implementations of simple rules often use the output gap as a measure of resource slack in the economy. In the rules described in table A, the output gap has been replaced with the unemployment rate gap (using a relationship known as Okun's law) because that gap better captures the FOMC's statutory goal to promote maximum employment. Movements in these alternative measures of resource utilization tend to be highly correlated.

[4] The neutral real interest rate in the longer run (r_t^{LR}) is the level of the real federal funds rate that is expected to be consistent, in the longer run, with maximum employment and stable inflation. Like u_t^{LR}, r_t^{LR} is determined largely by nonmonetary factors. The first-difference rule shown in table A does not require an estimate of r_t^{LR}, a feature that is touted by proponents of such rules as providing an element of robustness. However, this rule has its own shortcomings. For example, research suggests that this sort of rule often results in greater volatility in employment and inflation than what would be obtained under the Taylor (1993) and balanced-approach rules.

Box 6—*continued*

Table A. Monetary policy rules

Taylor (1993) rule	$R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$
Balanced-approach rule	$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$
Balanced-approach (shortfalls) rule	$R_t^{BAS} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2min\{(u_t^{LR} - u_t), 0\}$
Adjusted Taylor (1993) rule	$R_t^{T93adj} = max\{R_t^{T93} - Z_t, \text{ELB}\}$
First-difference rule	$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$

Note: R_t^{T93}, R_t^{BA}, R_t^{BAS}, R_t^{T93adj}, and R_t^{FD} represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, balanced-approach (shortfalls), adjusted Taylor (1993), and first-difference rules, respectively.

R_{t-1} denotes the average midpoint of the target range for the federal funds rate in quarter $t-1$, u_t is the average unemployment rate in quarter t, and π_t denotes the 4-quarter core personal consumption expenditures price inflation for quarter t. In addition, u_t^{LR} is the rate of unemployment expected in the longer run, and r_t^{LR} is the level of the neutral real federal funds rate in the longer run that is expected to be consistent with sustaining maximum employment and keeping inflation at the Federal Open Market Committee's 2 percent longer-run objective, represented by π^{LR}. Z_t is the cumulative sum of past deviations of the federal funds rate from the prescriptions of the Taylor (1993) rule when that rule prescribes setting the federal funds rate below an effective lower bound (ELB) of 12.5 basis points. Box note 1 provides references for the policy rules.

Unlike the other simple rules featured here, the adjusted Taylor (1993) rule recognizes that the federal funds rate cannot be reduced materially below the effective lower bound (ELB). By contrast, the standard Taylor (1993) rule prescribed policy rates that, during the pandemic-induced recession, were far below zero. To make up for the cumulative shortfall in policy accommodation following a recession during which the federal funds rate is constrained by its ELB, the adjusted Taylor (1993) rule prescribes delaying the return of the policy rate to the (positive) levels prescribed by the standard Taylor (1993) rule.

Policy Rules: Limitations

As benchmarks for monetary policy, simple policy rules have important limitations. One of these limitations is that the simple policy rules mechanically respond to only a small set of economic variables and thus necessarily abstract from many of the factors that the FOMC considers when it assesses the appropriate setting of the policy rate. In addition, the structure of the economy and current economic conditions differ in important respects from those prevailing when the simple policy rules were originally devised and proposed. Relatedly, the prescriptions of the rules incorporate values of the unemployment rate in the longer run and the neutral real interest rate in the longer run, which are economic concepts that are not only difficult to measure but can also change over time as the economy evolves. Finally, simple policy rules are not forward-looking and do not allow for important risk-management considerations, associated with uncertainty about economic relationships and the evolution of the economy, that factor into FOMC decisions.

Selected Policy Rules: Prescriptions

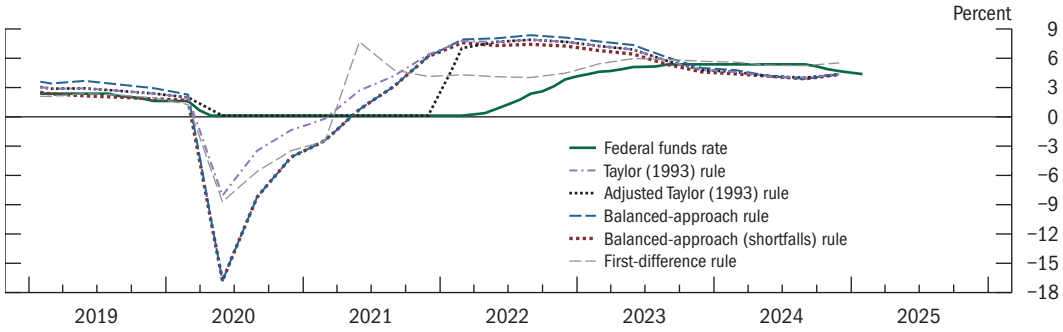
Figure A shows historical prescriptions for the federal funds rate under the five simple rules considered. For each quarterly period, the figure reports the policy rates prescribed by the rules, taking as given the prevailing economic conditions and survey-based estimates of u_t^{LR} and r_t^{LR} at the time. All of the rules considered called for highly accommodative monetary policy in response to the pandemic-driven recession, followed by tighter policy as inflation picked up and labor market conditions

(continued)

Box 6—*continued*

strengthened. The policy rates prescribed by these rules have generally declined since 2023 because inflation moved closer to 2 percent and the unemployment rate increased somewhat. The current prescriptions from these rules are within the current target range for the federal funds rate of 4¼ to 4½ percent except for the first-difference rule, which prescribes a somewhat higher policy rate. All the prescriptions remain higher than survey-based estimates of the longer-run value of the federal funds rate.

Figure A. Historical federal funds rate prescriptions from simple policy rules



Note: The rules use historical values of core personal consumption expenditures inflation, the unemployment rate, and, where applicable, historical values of the midpoint of the target range for the federal funds rate. Quarterly projections of longer-run values for the federal funds rate, the unemployment rate, and inflation used in the computation of the rules' prescriptions are interpolations to quarterly values of projections from the Survey of Primary Dealers. The rules' prescriptions are quarterly, and the federal funds rate data are the monthly average of the daily midpoint of the target range for the federal funds rate and extend through January 2025.

Summary of Economic Projections

The following material was released after the conclusion of the December 17–18, 2024, meeting of the Federal Open Market Committee.

In conjunction with the Federal Open Market Committee (FOMC) meeting held on December 17–18, 2024, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2024 to 2027 and over the longer run. Each participant's projections were based on information available at the time of the meeting, together with her or his assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assumptions of projected appropriate monetary policy, December 2024

Percent

Variable	Median[1]					Central Tendency[2]					Range[3]				
	2024	2025	2026	2027	Longer run	2024	2025	2026	2027	Longer run	2024	2025	2026	2027	Longer run
Change in real GDP	2.5	2.1	2.0	1.9	1.8	2.4–2.5	1.8–2.2	1.9–2.1	1.8–2.0	1.7–2.0	2.3–2.7	1.6–2.5	1.4–2.5	1.5–2.5	1.7–2.5
September projection	2.0	2.0	2.0	2.0	1.8	1.9–2.1	1.8–2.2	1.9–2.3	1.8–2.1	1.7–2.0	1.8–2.6	1.3–2.5	1.7–2.5	1.7–2.5	1.7–2.5
Unemployment rate	4.2	4.3	4.3	4.3	4.2	4.2	4.2–4.5	4.1–4.4	4.0–4.4	3.9–4.3	4.2	4.2–4.5	3.9–4.6	3.8–4.5	3.5–4.5
September projection	4.4	4.4	4.3	4.2	4.2	4.3–4.4	4.2–4.5	4.0–4.4	4.0–4.4	3.9–4.3	4.2–4.5	4.2–4.7	3.9–4.5	3.8–4.5	3.5–4.5
PCE inflation	2.4	2.5	2.1	2.0	2.0	2.4–2.5	2.3–2.6	2.0–2.2	2.0	2.0	2.4–2.7	2.1–2.9	2.0–2.6	2.0–2.4	2.0
September projection	2.3	2.1	2.0	2.0	2.0	2.2–2.4	2.1–2.2	2.0	2.0	2.0	2.1–2.7	2.1–2.4	2.0–2.2	2.0–2.1	2.0
Core PCE inflation[4]	2.8	2.5	2.2	2.0		2.8–2.9	2.5–2.7	2.0–2.3	2.0		2.8–2.9	2.1–3.2	2.0–2.7	2.0–2.6	
September projection	2.6	2.2	2.0	2.0		2.6–2.7	2.1–2.3	2.0	2.0		2.4–2.9	2.1–2.5	2.0–2.2	2.0–2.2	
Memo: Projected appropriate policy path															
Federal funds rate	4.4	3.9	3.4	3.1	3.0	4.4–4.6	3.6–4.1	3.1–3.6	2.9–3.6	2.8–3.6	4.4–4.6	3.1–4.4	2.4–3.9	2.4–3.9	2.4–3.9
September projection	4.4	3.4	2.9	2.9	2.9	4.4–4.6	3.1–3.6	2.6–3.6	2.6–3.6	2.5–3.5	4.1–4.9	2.9–4.1	2.4–3.9	2.4–3.9	2.4–3.8

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The September projections were made in conjunction with the meeting of the Federal Open Market Committee on September 17–18, 2024.

[1] For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

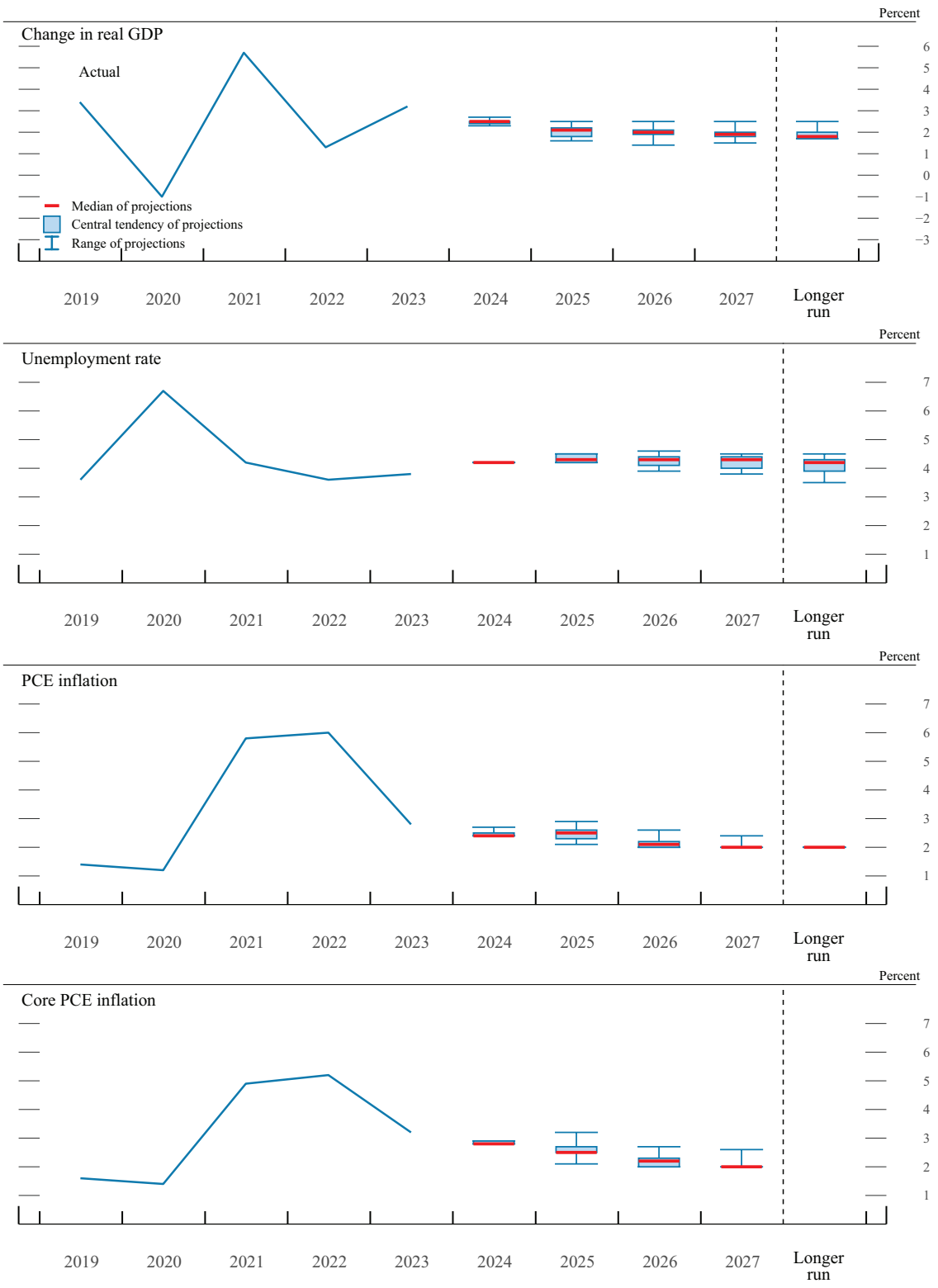
[2] The central tendency excludes the three highest and three lowest projections for each variable in each year.

[3] The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

[4] Longer-run projections for core PCE inflation are not collected.

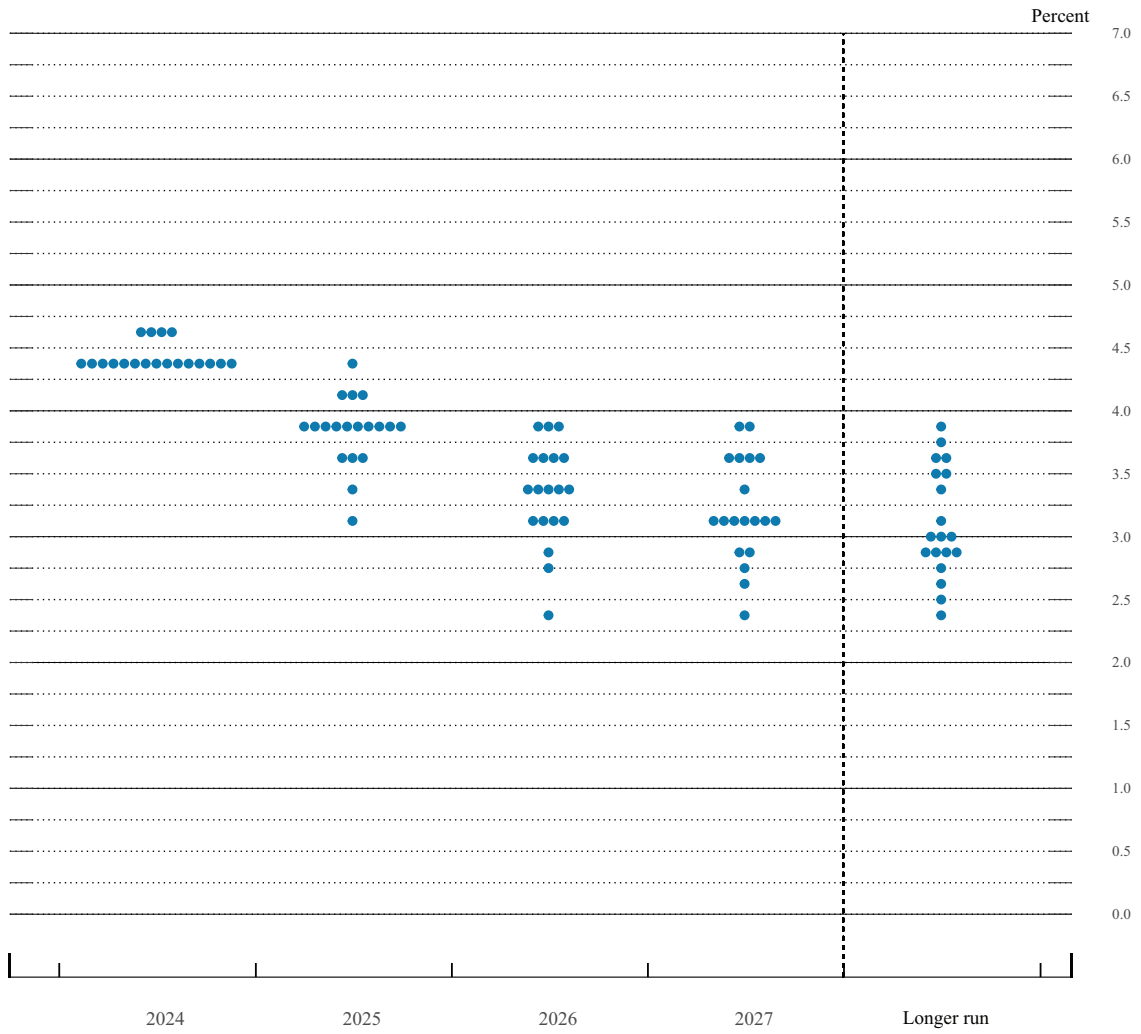
to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. “Appropriate monetary policy” is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2024–27 and over the longer run



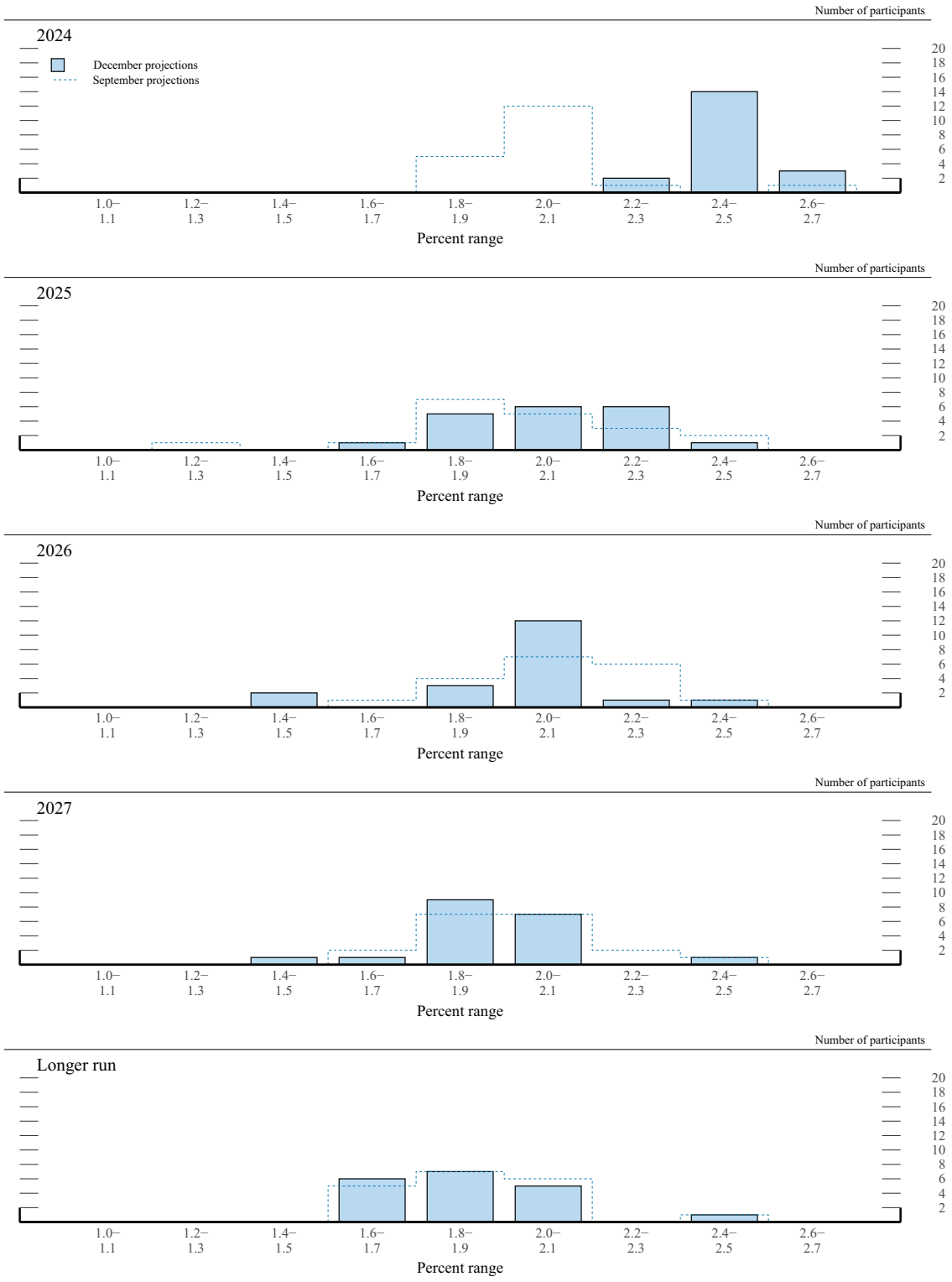
Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



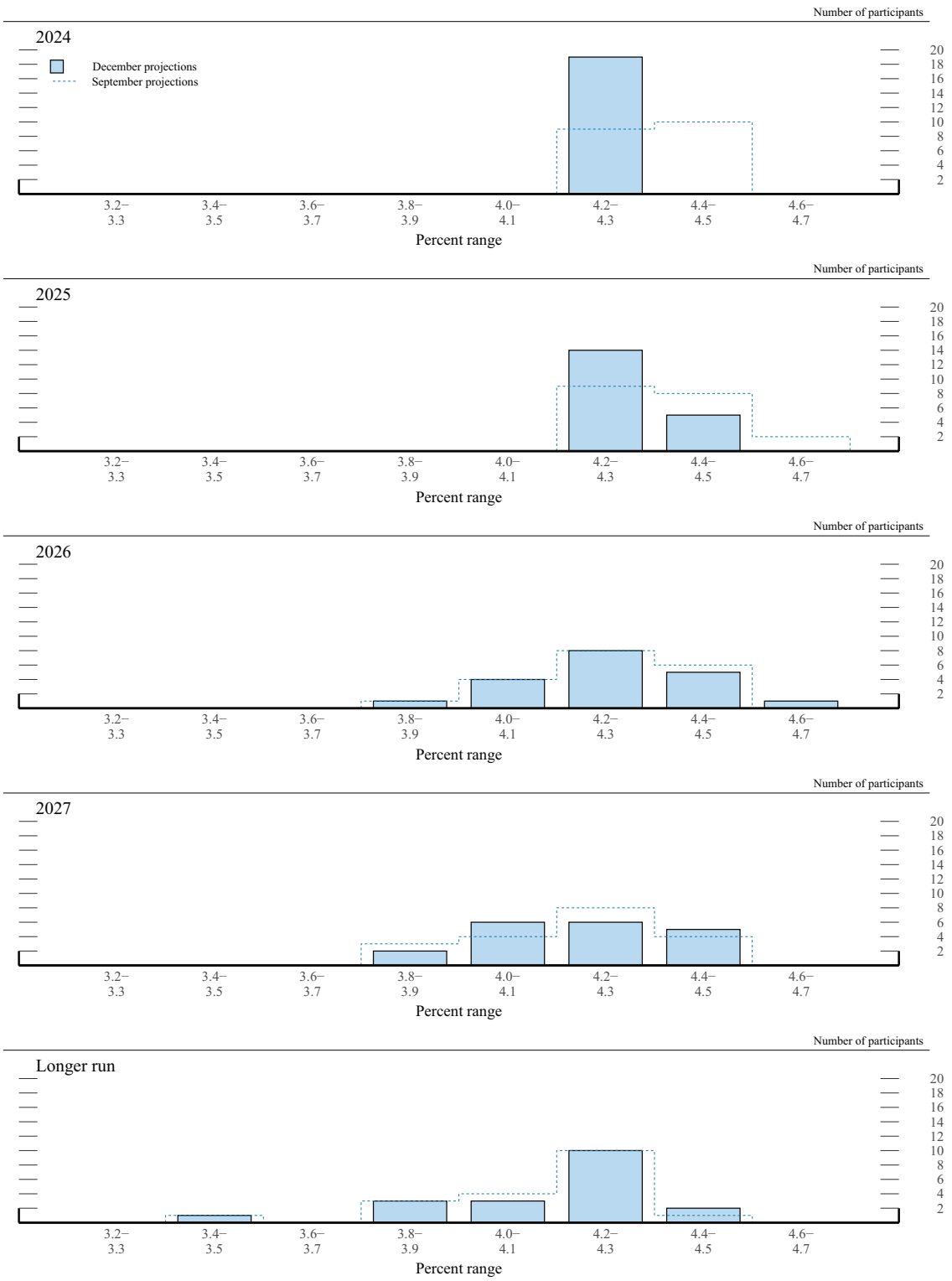
Note: Each shaded circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2024–27 and over the longer run



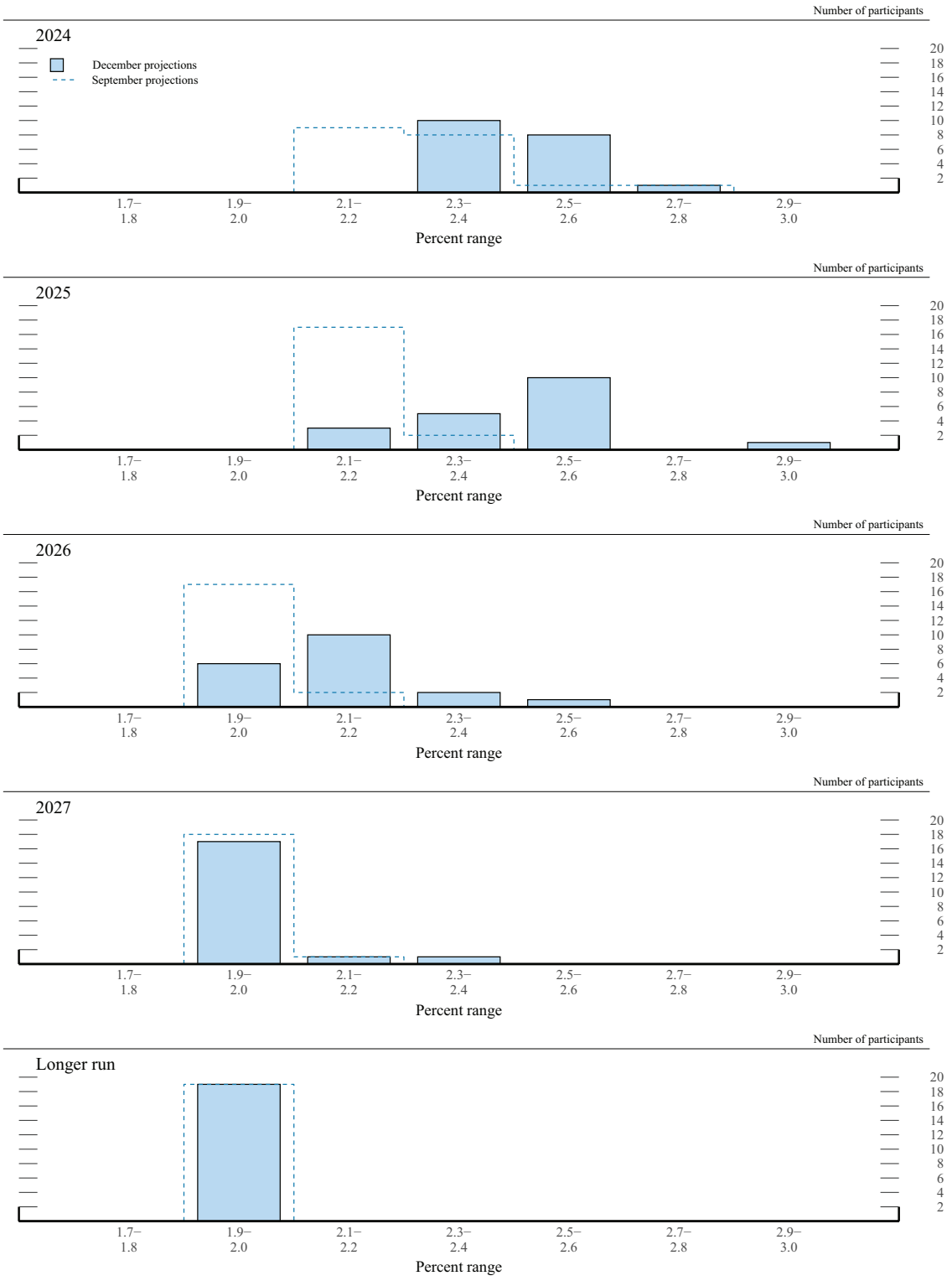
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2024–27 and over the longer run



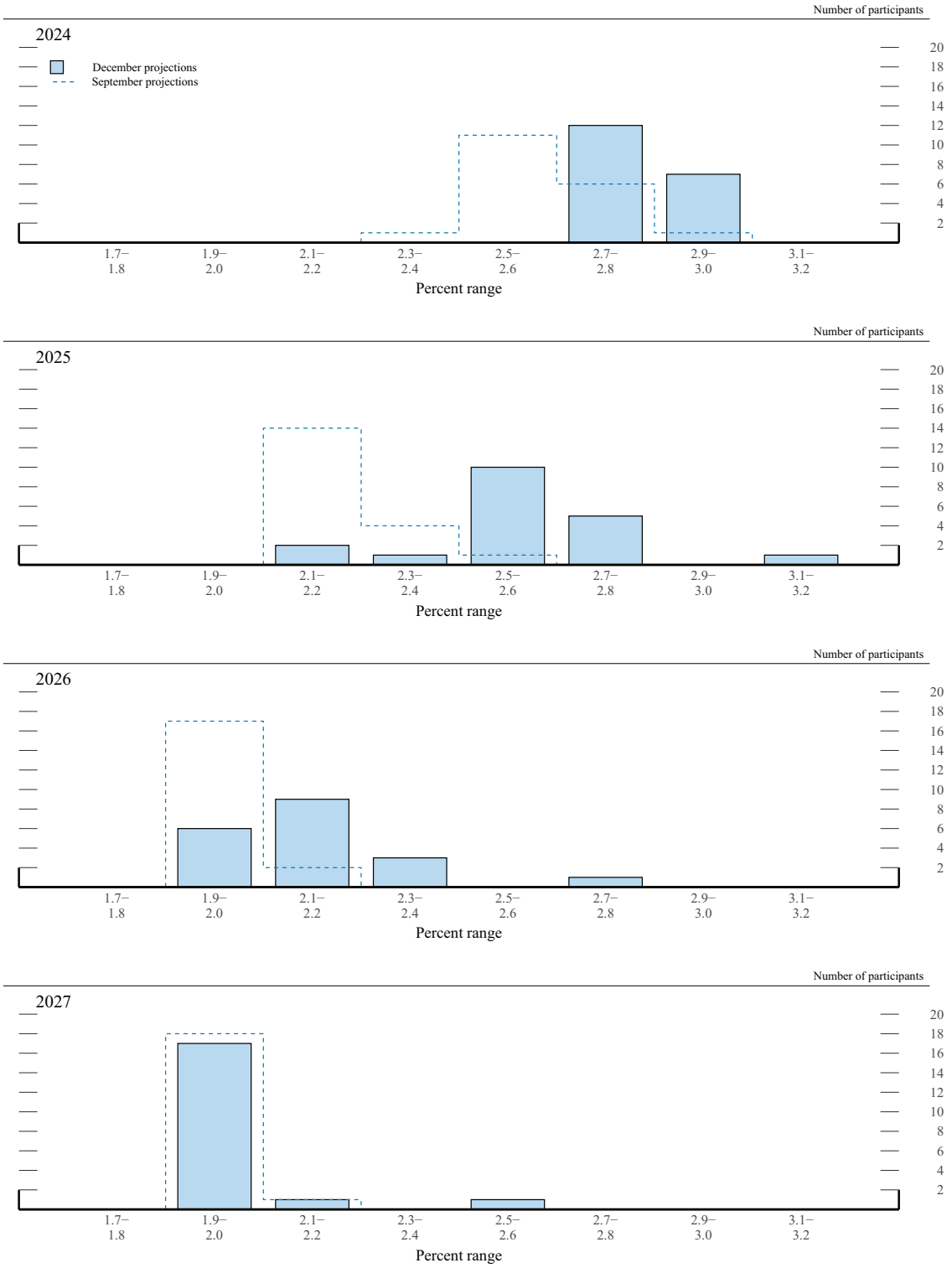
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2024–27 and over the longer run



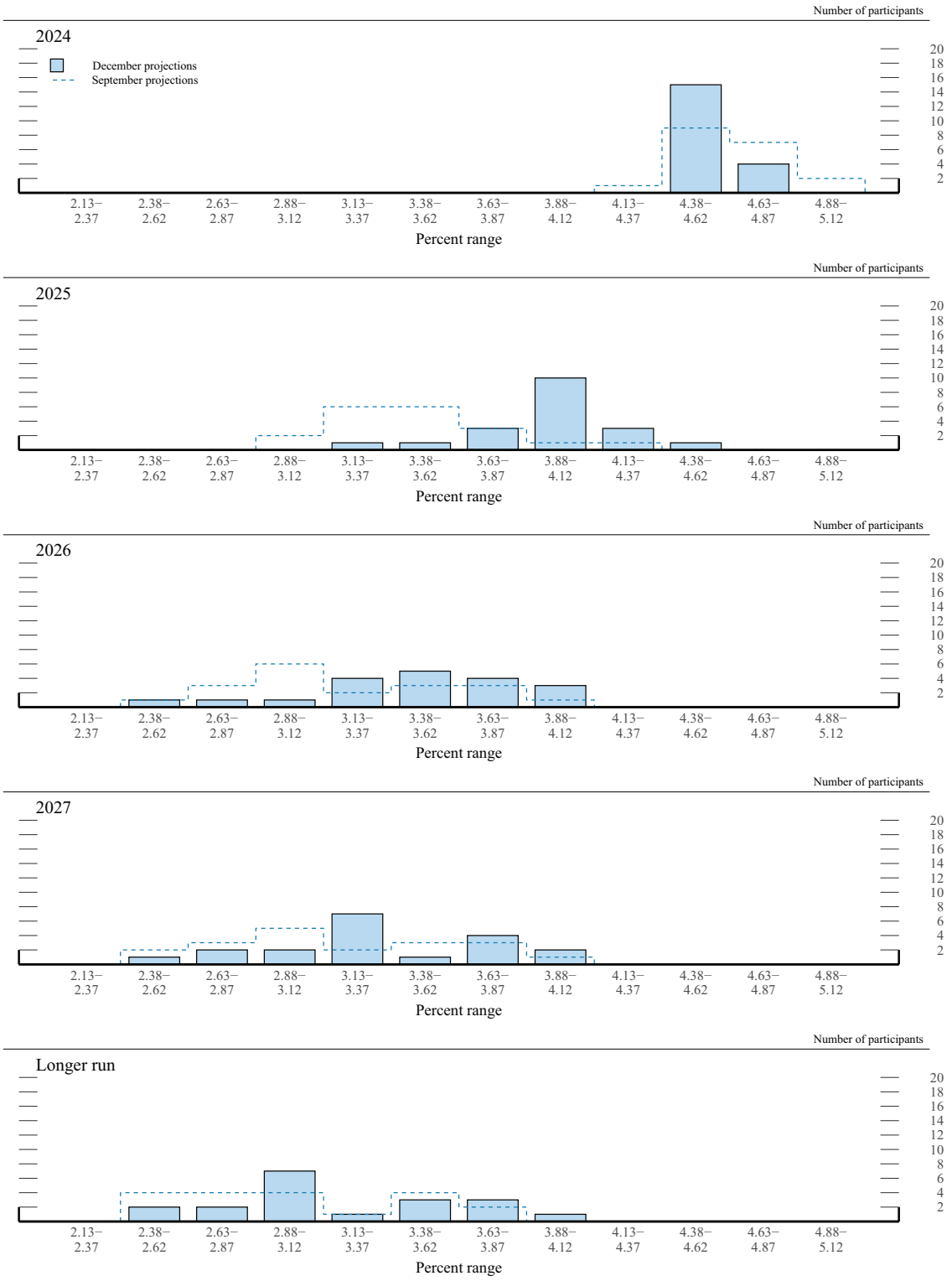
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2024–27



Note: Definitions of variables and other explanations are in the notes to table 1.

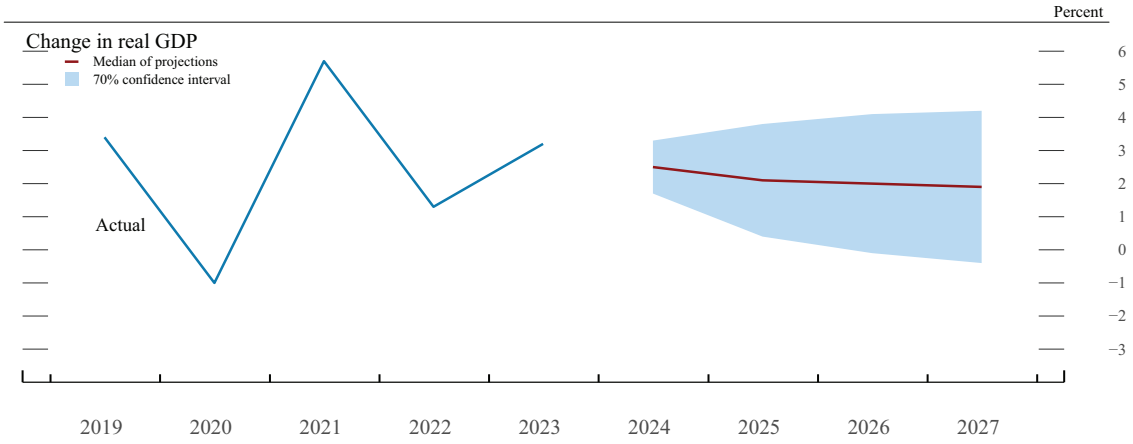
Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2024–27 and over the longer run



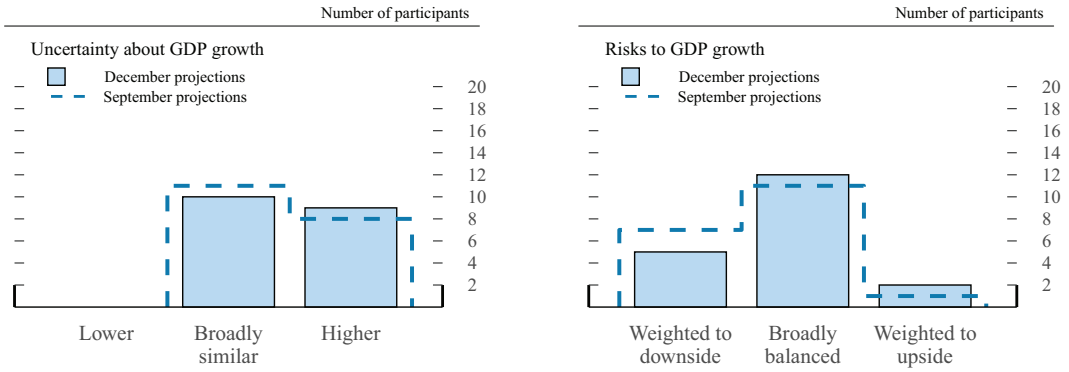
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 4.A. Uncertainty and risks in projections of GDP growth

Median projection and confidence interval based on historical forecast errors



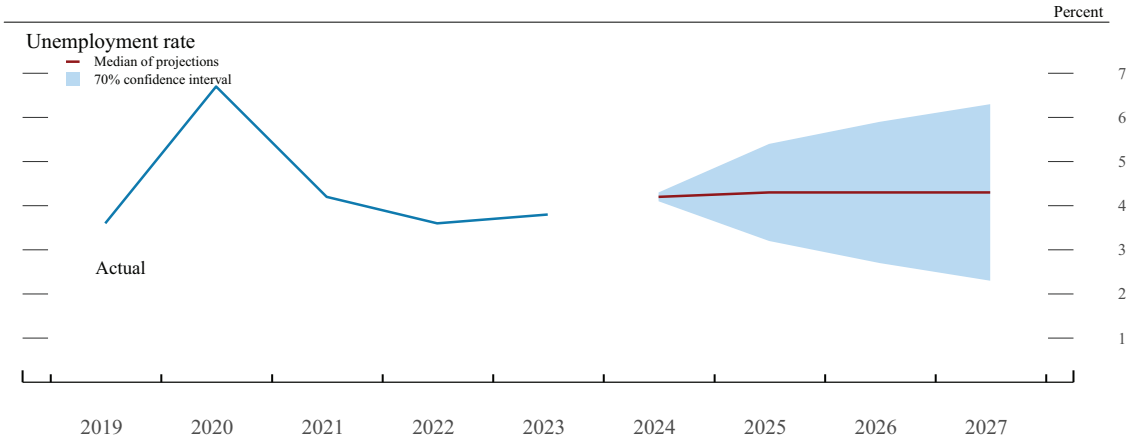
FOMC participants' assessments of uncertainty and risks around their economic projections



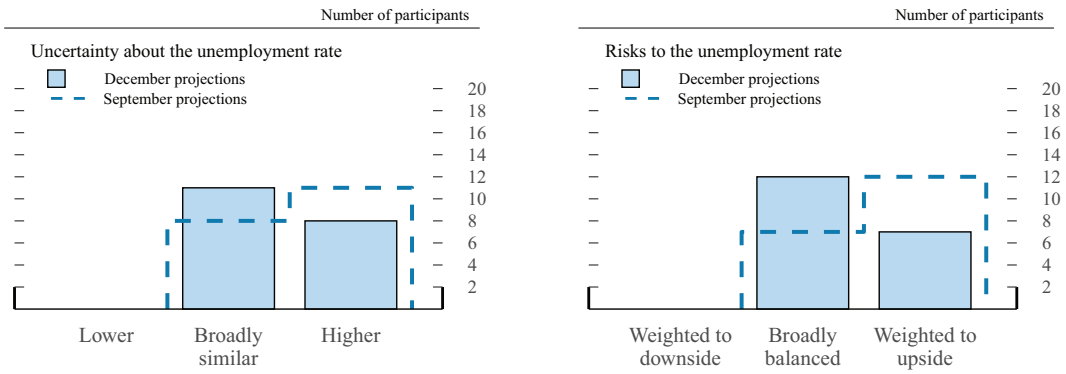
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.B. Uncertainty and risks in projections of the unemployment rate

Median projection and confidence interval based on historical forecast errors



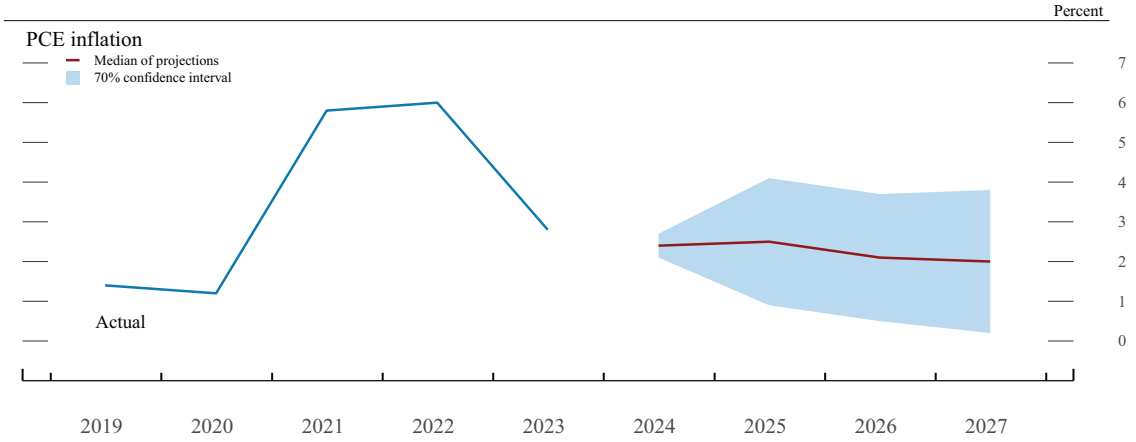
FOMC participants' assessments of uncertainty and risks around their economic projections



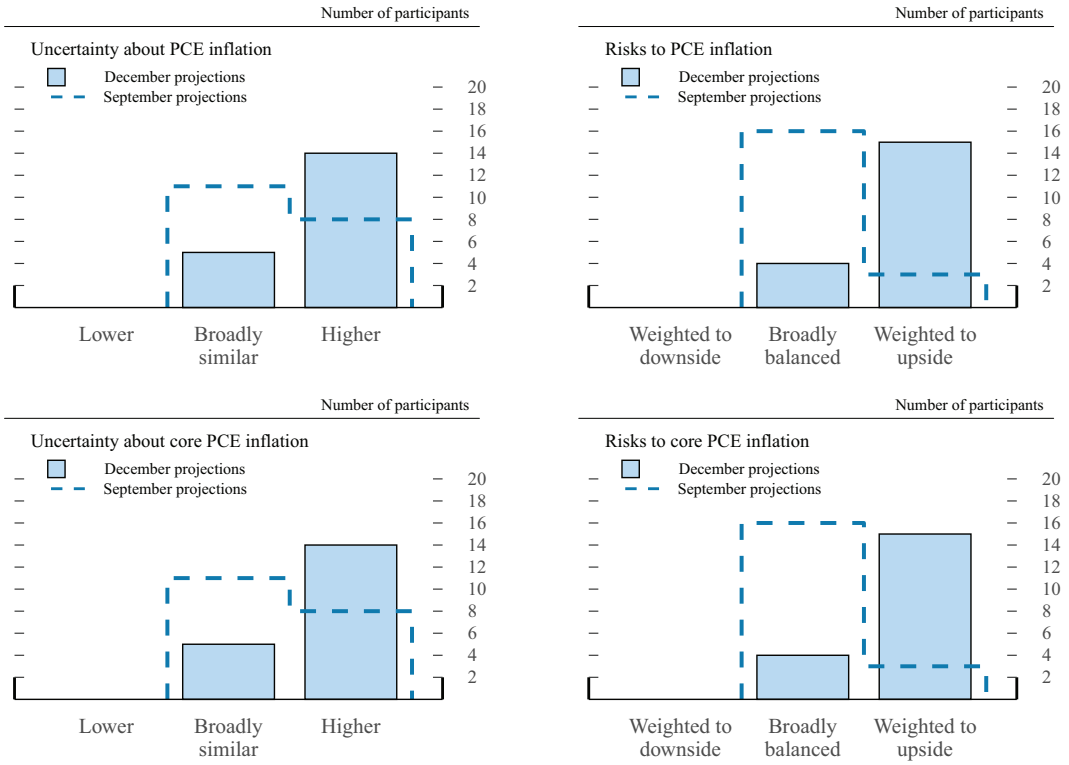
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.C. Uncertainty and risks in projections of PCE inflation

Median projection and confidence interval based on historical forecast errors

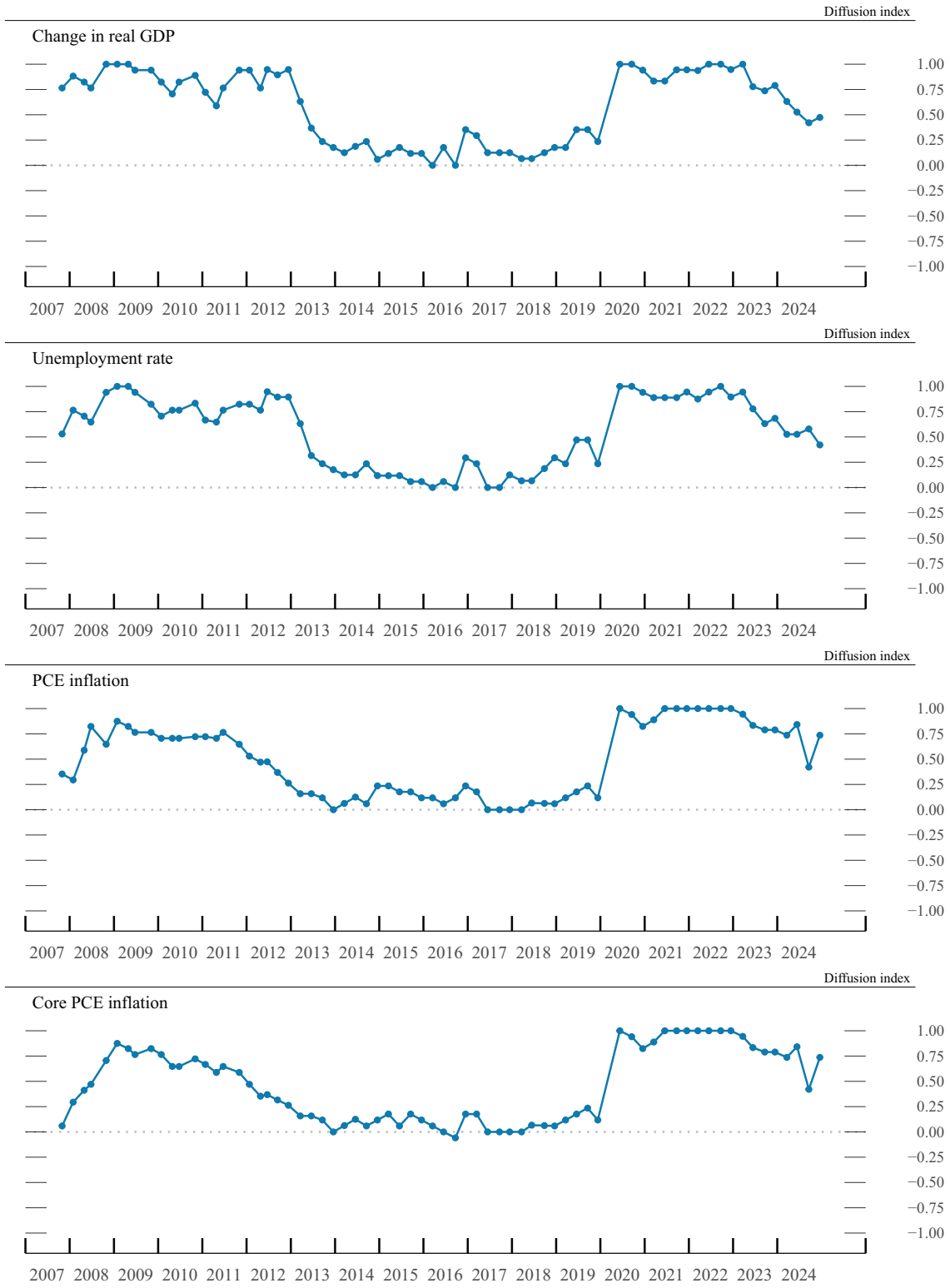


FOMC participants' assessments of uncertainty and risks around their economic projections



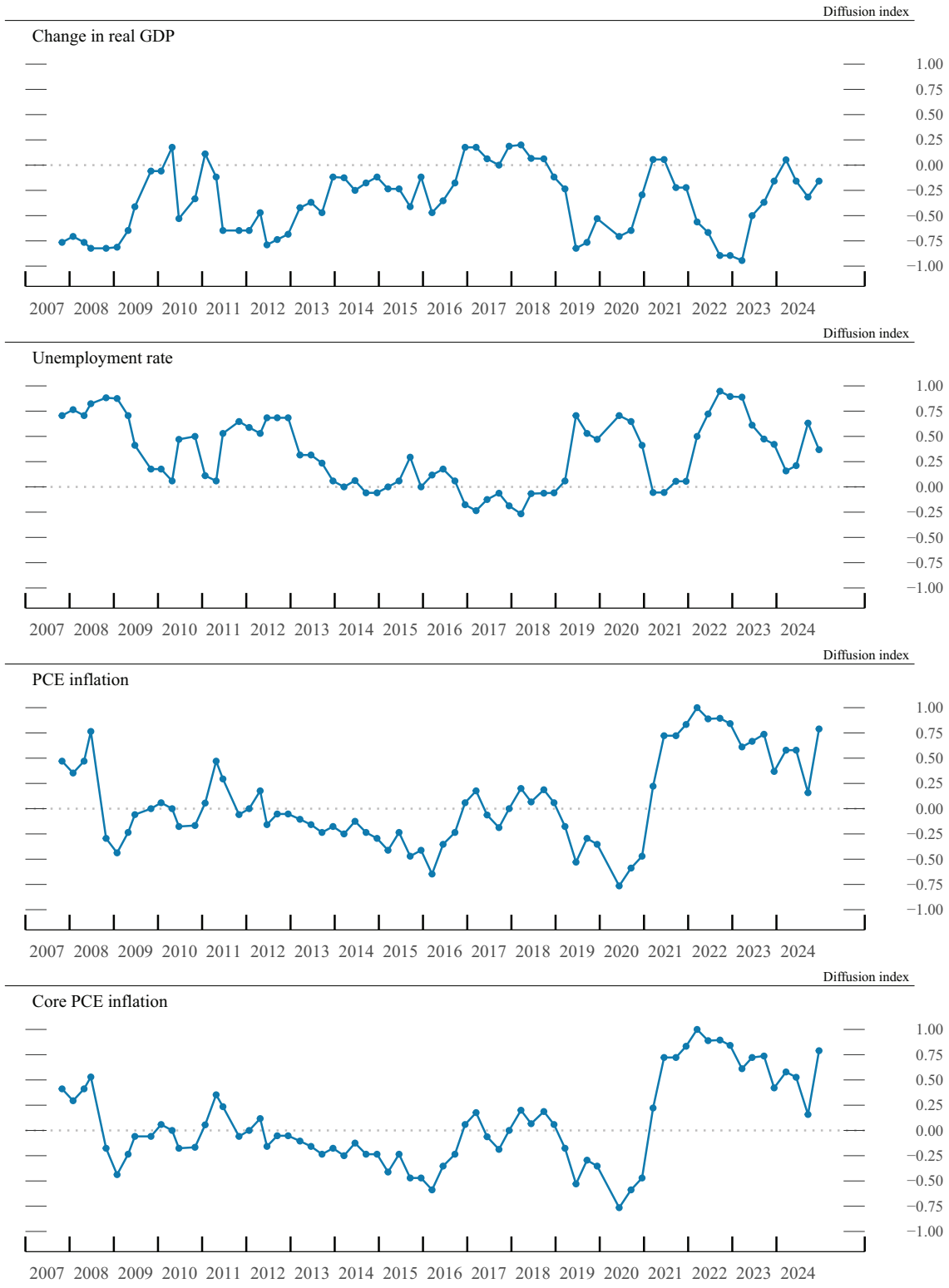
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.D. Diffusion indexes of participants' uncertainty assessments



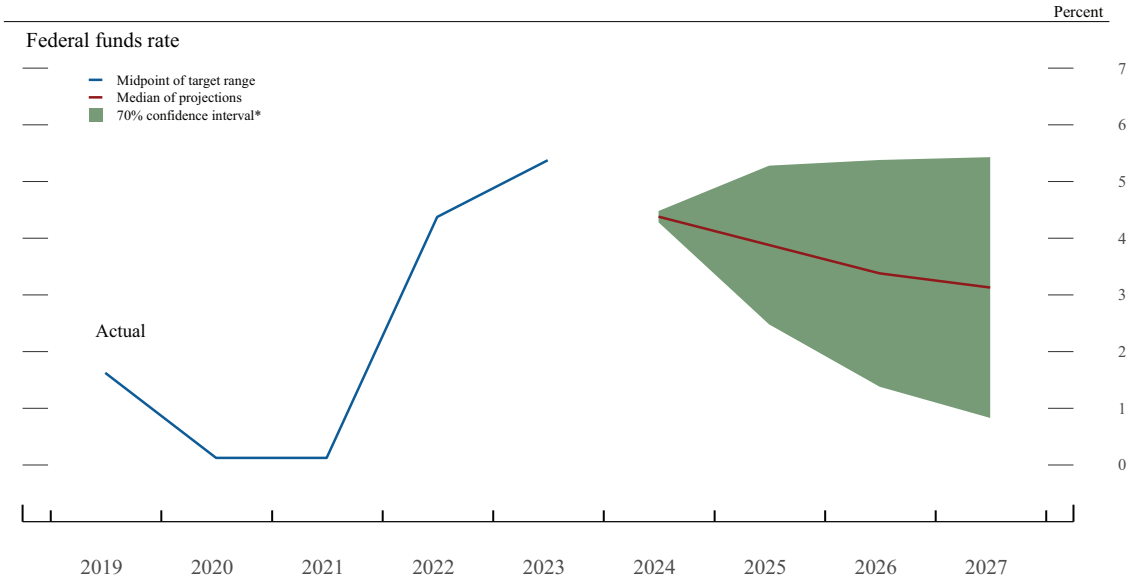
Note: For each SEP, participants provided responses to the question "Please indicate your judgment of the uncertainty attached to your projections relative to the levels of uncertainty over the past 20 years." Each point in the diffusion indexes represents the number of participants who responded "Higher" minus the number who responded "Lower," divided by the total number of participants. Figure excludes March 2020 when no projections were submitted.

Figure 4.E. Diffusion indexes of participants' risk weightings



Note: For each SEP, participants provided responses to the question "Please indicate your judgment of the risk weighting around your projections." Each point in the diffusion indexes represents the number of participants who responded "Weighted to the Upside" minus the number who responded "Weighted to the Downside," divided by the total number of participants. Figure excludes March 2020 when no projections were submitted.

Figure 5. Uncertainty and risks in projections of the federal funds rate



Note: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero - the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Table 2. Average Historical Projection Error Ranges

Percentage points

Variable	2024	2025	2026	2027
Change in real GDP[1]	± 0.8	± 1.7	± 2.1	± 2.3
Unemployment rate[1]	± 0.1	± 1.1	± 1.6	± 2.0
Total consumer prices[2]	± 0.3	± 1.6	± 1.6	± 1.8
Short-term interest rates[3]	± 0.1	± 1.4	± 2.0	± 2.3

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 2004 through 2023 that were released in the winter by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), "Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve's Approach," Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), https://dx.doi.org/10.17016/FEDS.2017.020.

[1] Definitions of variables are in the general note to table 1.

[2] Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

[3] For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

Box 7. Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Report*s and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 2.2 to 3.8 percent in the current year, 1.3 to 4.7 percent in the second year, 0.9 to 5.1 percent in the third year, and 0.7 to 5.3 percent in the fourth year. The corresponding 70 percent confidence intervals for overall inflation would be 1.7 to 2.3 percent in the current year, 0.4 to 3.6 percent in the second and third years, and 0.2 to 3.8 percent in the fourth year. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' current assessments of the

(continued)

Box 7—*continued*

uncertainty surrounding their projections are summarized in the bottom-left panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

Appendix: Source Notes

Figure 1. Personal consumption expenditures price indexes

For trimmed mean, Federal Reserve Bank of Dallas; for all else, Bureau of Economic Analysis; all via Haver Analytics.

Figure 2. Price indexes for subcomponents of personal consumption expenditures

Bureau of Economic Analysis via Haver Analytics.

Figure 3. Spot and futures prices for crude oil

ICE Brent Futures via Bloomberg.

Figure 4. Spot prices for commodities

For industrial metals, S&P GSCI Industrial Metals Spot Index; for agriculture and livestock, S&P GSCI Agriculture & Livestock Spot Index; both via Haver Analytics.

Figure 5. Reasons for operating below full capacity

U.S. Census Bureau: Quarterly Survey of Plant Capacity Utilization.

Figure 6. Nonfuel import price index

Bureau of Labor Statistics.

Figure 7. Measures of rental price inflation

Bureau of Economic Analysis, PCE, via Haver Analytics; Apartment List, Inc., via Haver Analytics; Zillow, Inc.; RealPage, Inc.; CoreLogic, Inc.; Federal Reserve Board staff calculations.

Figure 8. Measures of inflation expectations

University of Michigan Surveys of Consumers; Federal Reserve Bank of Philadelphia, SPF.

Figure 9. Inflation compensation implied by Treasury Inflation-Protected Securities

Federal Reserve Bank of New York; Federal Reserve Board staff calculations.

Figure 10. Civilian unemployment rate

Bureau of Labor Statistics via Haver Analytics.

Figure 11. Unemployment rate, by race and ethnicity

Bureau of Labor Statistics via Haver Analytics.

Box 1. Employment and Earnings across Demographic Groups

Figure A. Prime-age employment-to-population ratios compared with the 2019 average ratio, by group

Bureau of Labor Statistics; U.S. Census Bureau, Current Population Survey; Federal Reserve Board staff calculations.

Figure B. Prime-age employment-to-population ratios compared with the 2019 average ratio, by metropolitan status and education

Bureau of Labor Statistics via Haver Analytics; U.S. Census Bureau, Current Population Survey; Federal Reserve Board staff calculations.

Figure C. Median real wage growth, by group

Federal Reserve Bank of Atlanta, Wage Growth Tracker; Bureau of Labor Statistics; U.S. Census Bureau, Current Population Survey.

Figure 12. Nonfarm payroll employment

Bureau of Labor Statistics via Haver Analytics.

Figure 13. Indicators of layoffs

Bureau of Labor Statistics via Haver Analytics; U.S. Department of Labor, Employment and Training Administration.

Figure 14. Labor force participation rate

Bureau of Labor Statistics via Haver Analytics.

Figure 15. Available jobs versus available workers

Bureau of Labor Statistics via Haver Analytics; Federal Reserve Board staff calculations.

Figure 16. U.S. labor productivity

Bureau of Labor Statistics via Haver Analytics.

Box 2. Labor Productivity since the Start of the Pandemic

Figure A. Business-sector productivity

Bureau of Labor Statistics via Haver Analytics; Federal Reserve Board staff calculations.

Figure B. Establishment births and new business applications

Bureau of Labor Statistics, BED via Haver Analytics; Federal Reserve Board staff calculations and U.S. Census Bureau, Business Formation Statistics.

Figure C. Measures of worker reallocation

Federal Reserve Bank of Philadelphia, Fujita, Moscarini, and Postel-Vinay Employer-to-Employer Transition Probability; Bureau of Labor Statistics via Haver Analytics.

Figure 17. Measures of change in hourly compensation

Bureau of Labor Statistics; Federal Reserve Bank of Atlanta, Wage Growth Tracker; all via Haver Analytics.

Figure 18. Change in real gross domestic product and gross domestic income

Bureau of Economic Analysis via Haver Analytics.

Figure 19. Change in real personal consumption expenditures

Bureau of Economic Analysis via Haver Analytics.

Figure 20. Personal saving rate

Bureau of Economic Analysis via Haver Analytics.

Figure 21. Indexes of consumer sentiment

University of Michigan Surveys of Consumers; Conference Board.

Figure 22. Consumer credit flows

Federal Reserve Board, Statistical Release G.19, "Consumer Credit."

Figure 23. Mortgage interest rates

Freddie Mac Primary Mortgage Market Survey via Haver Analytics.

Figure 24. New and existing home sales

For new home sales, U.S. Census Bureau; for existing home sales, National Association of Realtors; all via Haver Analytics.

Figure 25. Distribution of interest rates on outstanding mortgages

ICE, McDash®.

Figure 26. Private housing starts

U.S. Census Bureau via Haver Analytics.

Figure 27. Growth rate in house prices

CoreLogic, Inc., Home Price Index; Zillow, Inc., Real Estate Data; S&P/Case-Shiller U.S. National Home Price Index. The S&P/Case-Shiller index is a product of S&P Dow Jones Indices LLC and/or its affiliates. (For Dow Jones Indices licensing information, see the Data Notes page.)

Figure 28. Change in real business fixed investment

Bureau of Economic Analysis via Haver Analytics.

Figure 29. Change in real imports and exports of goods and services

Bureau of Economic Analysis via Haver Analytics.

Figure 30. Federal receipts and expenditures

Department of the Treasury, Financial Management Service; Office of Management and Budget and Bureau of Economic Analysis via Haver Analytics.

Figure 31. Federal government debt and net interest outlays

For GDP, Bureau of Economic Analysis via Haver Analytics; for federal debt, Congressional Budget Office and Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

Figure 32. State and local tax receipts

U.S. Census Bureau, Quarterly Summary of State and Local Government Tax Revenue.

Figure 33. State and local government payroll employment

Bureau of Labor Statistics via Haver Analytics.

Figure 34. Market-implied federal funds rate path

Bloomberg; Federal Reserve Board staff estimates.

Figure 35. Yields on nominal Treasury securities

Department of the Treasury via Haver Analytics.

Figure 36. Corporate bond yields, by securities rating, and municipal bond yield

ICE Data Indices, LLC, used with permission.

Figure 37. Yield and spread on agency mortgage-backed securities

Department of the Treasury; J.P. Morgan. Courtesy of J.P. Morgan Chase & Co., Copyright 2025.

Figure 38. Equity prices

S&P Dow Jones Indices LLC via Bloomberg. (For Dow Jones Indices licensing information, see the Data Notes page.)

Figure 39. S&P 500 volatility

Cboe Volatility Index® (VIX®) via Bloomberg; Refinitiv DataScope; Federal Reserve Board staff estimates.

Box 3. Developments Related to Financial Stability

Figure A. Private nonfinancial-sector credit-to-GDP ratio

Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Bureau of Economic Analysis, national income and product accounts; Federal Reserve Board staff calculations.

Figure B. Nonfinancial business and household debt-to-GDP ratios

Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Bureau of Economic Analysis, national income and product accounts; Federal Reserve Board staff calculations.

Figure 40. Ratio of total commercial bank credit to nominal gross domestic product

Federal Reserve Board, Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States"; Bureau of Economic Analysis via Haver Analytics.

Figure 41. Profitability of bank holding companies

Federal Reserve Board, Form FR Y-9C, Consolidated Financial Statements for Holding Companies.

Figure 42. Consumer price inflation in foreign economies

Federal Reserve Board staff calculations; Haver Analytics.

Figure 43. Components of foreign consumer price inflation

Federal Reserve Board staff calculations; Haver Analytics.

Figure 44. Nominal 10-year government bond yields in selected advanced foreign economies

Bloomberg.

Figure 45. Emerging market mutual fund flows and spreads

For bond and equity fund flows, Federal Reserve Board staff calculations and EPFR Global; for EMBI+, J.P. Morgan Emerging Markets Bond Index Plus via Bloomberg.

Figure 46. U.S. dollar exchange rate index

Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."

Figure 47. Selected interest rates

Department of the Treasury; Federal Reserve Board.

Figure 48. Federal Reserve assets and liabilities

Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

Box 4. Developments in the Federal Reserve's Balance Sheet and Money Markets

Figure A. Federal Reserve assets

Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

Figure B. Federal Reserve liabilities

Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

Box 6. Monetary Policy Rules in the Current Environment

Figure A. Historical federal funds rate prescriptions from simple policy rules

Federal Reserve Bank of New York, Survey of Primary Dealers; Federal Reserve Bank of St. Louis, Federal Reserve Economic Data; Federal Reserve Board staff estimates.

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