Minutes of the Federal Open Market Committee
March 14–15, 2017

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, March 14, 2017, at 10:00 a.m. and continued on Wednesday, March 15, 2017, at 9:00 a.m.[1]

PRESENT:
Janet L. Yellen, Chair
William C. Dudley, Vice Chairman
Lael Brainard
Charles L. Evans
Stanley Fischer
Patrick Harker
Robert S. Kaplan
Neel Kashkari
Jerome H. Powell
Daniel K. Tarullo

Marie Gooding, Jeffrey M. Lacker, Loretta J. Mester, and John C. Williams, Alternate Members of the Federal Open Market Committee

James Bullard, Esther L. George, and Eric Rosengren, Presidents of the Federal Reserve Banks of St. Louis, Kansas City, and Boston, respectively

Brian F. Madigan, Secretary
Matthew M. Luecke, Deputy Secretary
David W. Skidmore, Assistant Secretary
Michelle A. Smith, Assistant Secretary
Scott G. Alvarez, General Counsel
Michael Held,[2] Deputy General Counsel
Steven B. Kamin, Economist
Thomas Laubach, Economist
David W. Wilcox, Economist

James A. Clouse, Michael Dotsey, Evan F. Koenig, Daniel G. Sullivan, and William Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

Lorie K. Logan, Deputy Manager, System Open Market Account

Robert deV. Frierson, Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner,[3] Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors; Michael S. Gibson, Director, Division of Supervision and Regulation, Board of Governors; Andreas Lehnert, Director, Division of Financial Stability, Board of Governors

Daniel M. Covitz, Deputy Director, Division of Research and Statistics, Board of Governors; Michael T. Kiley, Deputy Director, Division of Financial Stability, Board of Governors; Stephen A. Meyer, Deputy Director, Division of Monetary Affairs, Board of Governors

Trevor A. Reeve, Senior Special Adviser to the Chair, Office of Board Members, Board of Governors

David Bowman, Andrew Figura, Joseph W. Gruber, and David Reifschneider, Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson, Assistant to the Board, Office of Board Members, Board of Governors

David E. Lebow and Michael G. Palumbo, Senior Associate Directors, Division of Research and Statistics, Board of Governors

Antulio N. Bomfim and Ellen E. Meade, Senior Advisers, Division of Monetary Affairs, Board of Governors

Brian M. Doyle, Associate Director, Division of International Finance, Board of Governors; Jane E. Ihrig and David López-Salido, Associate Directors, Division of Monetary Affairs, Board of Governors;

[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.
[2] Attended Tuesday session only.
[3] Attended through the discussion of System Open Market Account reinvestment policy.

Stacey Tevlin, Associate Director, Division of Research and Statistics, Board of Governors

Min Wei, Deputy Associate Director, Division of Monetary Affairs, Board of Governors

Christopher J. Gust and Jason Wu, Assistant Directors, Division of Monetary Affairs, Board of Governors; Paul R. Wood, Assistant Director, Division of International Finance, Board of Governors

Penelope A. Beattie,[3] Assistant to the Secretary, Office of the Secretary, Board of Governors

Michele Cavallo and Jeffrey Huther, Section Chiefs, Division of Monetary Affairs, Board of Governors

David H. Small, Project Manager, Division of Monetary Affairs, Board of Governors

Andrea Ajello, Principal Economist, Division of Monetary Affairs, Board of Governors

Randall A. Williams, Information Manager, Division of Monetary Affairs, Board of Governors

James M. Lyon and Mark L. Mullinix, First Vice Presidents, Federal Reserve Banks of Minneapolis and Richmond, respectively

David Altig, Jeff Fuhrer, and Glenn D. Rudebusch, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Boston, and San Francisco, respectively

Paolo A. Pesenti, Julie Ann Remache, and Ellis W. Tallman, Senior Vice Presidents, Federal Reserve Banks of New York, New York, and Cleveland, respectively

George A. Kahn, Vice President, Federal Reserve Bank of Kansas City

William Dupor, Assistant Vice President, Federal Reserve Bank of St. Louis

Roy H. Webb, Senior Economist, Federal Reserve Bank of Richmond

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in U.S. and global financial markets during the period since the Committee met on January 31 and February 1, 2017. Global equity prices generally increased further, credit spreads on corporate debt and emerging market bonds narrowed, and yields on Treasury securities rose somewhat. In survey responses, market participants again reported elevated uncertainty about the outlook for U.S. economic policies and about financial asset prices, but various measures of implied volatility nonetheless declined further. The monetary policies of other advanced-economy central banks remained quite accommodative, and some signs of progress on central banks' inflation mandates were evident. Late in the intermeeting period, market participants came to interpret U.S. monetary policy communications as implying high odds of a firming of monetary policy at this meeting, and changes in market prices suggested a slightly steeper path for the federal funds rate over the next few years than was previously anticipated. Survey results indicated that market participants saw a change in the FOMC's policy of reinvesting principal payments on its securities holdings as most likely to be announced in late 2017 or the first half of 2018. Most market participants anticipated that, once a change to reinvestment policy was announced, reinvestments would most likely be phased out rather than stopped all at once.

The deputy manager followed with a briefing on developments in money markets and open market operations. Over the intermeeting period, federal funds continued to trade near the center of the Committee's ½ to ¾ percent target range except on month-ends. Spreads of rates on market repurchase agreements (repos) over the rate at the System's overnight reverse repurchase agreement (ON RRP) facility remained relatively low. Market participants attributed some of the recent decline in market repo rates to a reduction in the supply of Treasury bills in advance of the reinstatement of the statutory debt limit on March 16. The lower market repo rates had led to moderately higher take-up at the ON RRP facility in recent weeks.

By unanimous vote, the Committee ratified the Open Market Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

System Open Market Account Reinvestment Policy

The staff provided several briefings that summarized issues related to potential changes to the Committee's policy of reinvesting principal payments from securities held in the SOMA. These briefings discussed the macroeconomic implications of alternative strategies the

Committee could employ with respect to reinvestments, including making the timing of an end to reinvestments either date dependent or dependent on economic conditions. The briefings also considered the advantages and disadvantages of phasing out reinvestments or ending them all at once as well as whether using the same approach would be appropriate for both Treasury securities and agency mortgage-backed securities (MBS).

In their discussion, policymakers reaffirmed the approach to balance sheet normalization articulated in the Committee's Policy Normalization Principles and Plans announced in September 2014. In particular, participants agreed that reductions in the Federal Reserve's securities holdings should be gradual and predictable, and accomplished primarily by phasing out reinvestments of principal received from those holdings. Most participants expressed the view that changes in the target range for the federal funds rate should be the primary means for adjusting the stance of monetary policy when the federal funds rate was above its effective lower bound. A number of participants indicated that the Committee should resume asset purchases only if substantially adverse economic circumstances warranted greater monetary policy accommodation than could be provided by lowering the federal funds rate to the effective lower bound. Moreover, it was noted that the Committee's policy of maintaining reinvestments until normalization of the level of the federal funds rate was well under way had supported the smooth and effective conduct of monetary policy and had helped maintain accommodative financial conditions.

Consistent with the Policy Normalization Principles and Plans, nearly all participants preferred that the timing of a change in reinvestment policy depend on an assessment of economic and financial conditions. Several participants indicated that the timing should be based on a quantitative threshold or trigger tied to the target range for the federal funds rate. Some other participants expressed the view that the timing should depend on a qualitative judgment about economic and financial conditions. Such a judgment would importantly encompass an assessment by the Committee of the risks to the outlook, including the degree of confidence that evolving circumstances would not soon require a reversal in the direction of policy. Taking these considerations into account, policymakers discussed the likely level of the federal funds rate when a change in the Committee's reinvestment policy would be appropriate. Provided that the economy continued to perform about as expected, most participants anticipated that gradual increases in the federal funds rate would continue and judged that a change to the Committee's reinvestment policy would likely be appropriate later this year. Many participants emphasized that reducing the size of the balance sheet should be conducted in a passive and predictable manner. Some participants expressed the view that it might be appropriate for the Committee to restart reinvestments if the economy encountered significant adverse shocks that required a reduction in the target range for the federal funds rate.

When the time comes to implement a change to reinvestment policy, participants generally preferred to phase out or cease reinvestments of both Treasury securities and agency MBS. Policymakers also discussed the potential benefits and costs of approaches that would either phase out or cease all at once reinvestments of principal from these securities. An approach that phased out reinvestments was seen as reducing the risks of triggering financial market volatility or of potentially sending misleading signals about the Committee's policy intentions while only modestly slowing reductions in the Committee's securities holdings. An approach that ended reinvestments all at once, however, was generally viewed as easier to communicate while allowing for somewhat swifter normalization of the size of the balance sheet. To promote rapid normalization of the size and composition of the balance sheet, one participant preferred to set a minimum pace for reductions in MBS holdings and, if and when necessary, to sell MBS to maintain such a pace.

Nearly all participants agreed that the Committee's intentions regarding reinvestment policy should be communicated to the public well in advance of an actual change. It was noted that the Committee would continue its deliberations on reinvestment policy during upcoming meetings and would release additional information as it becomes available. In that context, several participants indicated that, when the Committee announces its plans for a change to its reinvestment policy, it would be desirable to also provide more information to the public about the Committee's expectations for the size and composition of the Federal Reserve's assets and liabilities in the longer run.

Staff Review of the Economic Situation

The information reviewed for the March 14–15 meeting suggested that the labor market strengthened further in January and February and that real gross domestic product (GDP) was continuing to expand in the first quarter, albeit at a slower pace than in the fourth quarter, with some of the slowing likely reflecting transitory factors. The 12-month change in consumer prices moved up in recent months and was close to the Committee's longer-run objective of 2 percent; excluding food and energy prices, inflation was little changed and continued to run somewhat below 2 percent.

Total nonfarm payroll employment increased at a brisk pace in January and February. The unemployment rate edged back down to 4.7 percent in February, and the labor force participation rate rose over the first two months of the year. The share of workers employed part time for economic reasons was little changed on net. The rate of private-sector job openings was unchanged at a high level in December, while the rate of hiring edged up and the rate of quits edged down. The four-week moving average of initial claims for unemployment insurance benefits was at a very low level in early March. Measures of labor compensation continued to rise at a moderate rate. Compensation per hour in the nonfarm business sector increased 3¼ percent over the four quarters of 2016, and average hourly earnings for all employees increased 2¾ percent over the 12 months ending in February. The unemployment rates for African Americans, for Hispanics, and for whites were close to the levels seen just before the most recent recession, but the unemployment rates for African Americans and for Hispanics remained above the rate for whites. Over the past year or so, the jobless rate for African Americans moved lower, while the rates for Hispanics and for whites moved roughly sideways.

Total industrial production declined in January, as unseasonably warm weather reduced the demand for heating, which held down the output of utilities. Mining output expanded further following a large gain in the fourth quarter, and manufacturing production continued to rise at a modest pace. Automakers' assembly schedules suggested that motor vehicle production would remain near its January pace, on average, over the next few months, while broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed to further modest gains in factory output over the near term.

Real personal consumption expenditures (PCE) appeared to be rising at a slower pace in the first quarter than in the fourth quarter. Motor vehicle sales stepped down in January and February from their brisk year-end pace, and unseasonably warm weather prompted a further decline in consumer spending for energy services. Taken together, the components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE were unchanged in February after a robust gain in January. Recent readings on some key factors that influence consumer spending—including further gains in employment, real disposable personal income, and households' net worth—were consistent with moderate increases in real PCE in early 2017. In addition, consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained at an elevated level in February.

Recent information on housing activity suggested that residential investment increased at a solid pace early in the year. Starts for both new single-family homes and multifamily units strengthened in the fourth quarter and remained near those levels in January. Issuance of building permits for new single-family homes—which tends to be a reliable indicator of the underlying trend in construction—also moved up in the fourth quarter and remained near that level in January. Sales of existing homes rose in January, while new home sales maintained their fourth-quarter pace.

Real private expenditures for business equipment and intellectual property appeared to be rising in the first quarter after a moderate gain in the fourth quarter. Nominal new orders of nondefense capital goods excluding aircraft recorded a solid net gain over the three months ending in January, and indicators of business sentiment were upbeat. Firms' nominal spending for nonresidential structures excluding drilling and mining was fairly flat in recent months, but the number of crude oil and natural gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, continued to increase through early March. The limited available data suggested that inventory investment was likely to make a smaller contribution to real GDP growth in the early part of the year than it did in the fourth quarter.

Total real government purchases appeared to be moving sideways in the first quarter after having been little changed in the fourth quarter. Nominal outlays for defense in January and February pointed to an increase in real federal purchases. Although state and local government payrolls expanded in January and February, nominal construction spending by these governments fell sharply in January.

Net exports exerted a significant drag on real GDP growth in the fourth quarter of 2016, and the January trade data suggested that net exports would continue to weigh on growth in the first quarter of this year. The U.S. international trade deficit widened in January in nominal terms, with imports—led by consumer goods—rising more than exports. Over the past six months, nominal imports grew at a much faster pace than nominal exports.

Total U.S. consumer prices, as measured by the PCE price index, increased a little less than 2 percent over the 12 months ending in January. Core PCE price inflation, which excludes changes in food and energy prices, was 1¾ percent over those same 12 months, held down in part by decreases in the prices of non-energy imports over part of this period. Over the 12 months ending in February, total consumer prices as measured by the consumer price index (CPI) rose 2¾ percent, while core CPI inflation was 2¼ percent. The medians of survey-based measures of longer-run inflation expectations—such as those from the Michigan survey, the Survey of Professional Forecasters, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed, on balance, in recent months.

Foreign real GDP growth slowed a bit in the fourth quarter from a relatively strong rate in the third quarter, but it was still somewhat higher than its average pace over the past two years. In much of the world, including Europe, Japan, and most of emerging Asia, economic activity continued to grow at a moderate pace. In Canada and Mexico—two important trading partners of the United States—growth stepped down from unusually strong third-quarter rates to a still-solid pace in the fourth quarter, and Brazil's recession deepened. Recently released purchasing managers indexes and confidence indicators from abroad were generally upbeat and pointed to continued moderate foreign growth in early 2017, although indicators from Mexico suggested a further slowing. Inflation in the advanced foreign economies (AFEs) continued to rise, largely reflecting increases in retail energy prices and currency depreciation. Among the emerging market economies (EMEs), inflation rose in Mexico, in part reflecting a substantial hike in fuel prices, but fell in China and parts of South America.

Staff Review of the Financial Situation

Financial markets were generally quiet over the intermeeting period. The Committee's decision to keep the target range for the federal funds rate unchanged at the January–February FOMC meeting was well anticipated. Broad equity price indexes rose further, leaving some standard measures of valuations above historical norms. Treasury yields rose late in the intermeeting period, following monetary policy communications by several Federal Reserve officials. The broad dollar index was about unchanged. Financing conditions for nonfinancial businesses, households, and state and local governments remained generally accommodative in recent months.

Federal Reserve communications over the intermeeting period contributed to increased expectations of a decision to raise the target range for the federal funds rate at the March meeting. The Chair's semiannual monetary policy testimony reportedly led market participants to price in a slightly higher probability of a monetary policy firming in the near term. Subsequently, investors took note of the mention in the minutes of the January–February FOMC meeting that many participants expressed the view that it might be appropriate to raise the federal funds rate again fairly soon if incoming information on the labor market and inflation was in line with or stronger than their current expectations or if the risks of overshooting the Committee's maximum-employment and inflation objectives increased. Late in the period, communications from several Federal Reserve officials led to an increase in market-based measures of the probability that the target range for the federal funds rate would rise at the March meeting.

Nominal Treasury yields increased over the intermeeting period, particularly for shorter maturities. Treasury yields reacted only modestly over most of the period to domestic economic data releases that were reportedly seen as a little stronger than expected on balance. Yields on longer-dated Treasury securities rose late in the period following comments by Federal Reserve officials. Measures of inflation compensation based on Treasury Inflation-Protected Securities were little changed, on net, since the February FOMC meeting.

Broad U.S. equity price indexes increased over the intermeeting period, and some measures of valuations, such as price-to-earnings ratios, rose further above historical norms. A standard measure of the equity risk premium edged lower, declining into the lower quartile of its historical distribution of the previous three decades. Stock prices rose across most industries, and equity prices for financial firms outperformed broader indexes. Meanwhile, spreads of yields on bonds issued by nonfinancial corporations over those on comparable-maturity Treasury securities were little changed.

Since the previous FOMC meeting, better-than-expected economic data and earnings releases abroad also supported risk sentiment: Foreign equity prices increased, flows to emerging market mutual funds picked up, and emerging market bond spreads narrowed. Consistent with improved sentiment toward the EMEs, the dollar depreciated against EME currencies. The Mexican peso appreciated substantially against the dollar, although it remained weaker than just before the U.S. elections. In contrast, the dollar appreciated against the

AFE currencies, reflecting continued divergence in monetary policy expectations for the United States and AFEs as well as political uncertainty in Europe. The broad dollar index was little changed over the period. Sovereign yields in AFEs generally increased slightly. In the United Kingdom, however, gilt yields declined and the pound weakened against the dollar in response to weaker-than-expected inflation data and to an upward revision by the Bank of England, at its early February policy meeting, of its assessment of the degree of slack in the labor market. As expected by market participants, the European Central Bank, at its meeting in early March, kept its policy rate and the pace of its asset purchases unchanged.

In U.S. financial markets, credit flows to large firms remained solid in recent months, with strong bond issuance by investment-grade corporations and brisk originations of leveraged loans. Bank loans continued to be largely available for small businesses, although small business credit demand reportedly remained subdued.

In the municipal bond market, issuance was strong in January but decreased somewhat in February. Yields increased a little, about in line with the rise in Treasury yields. The number of ratings upgrades notably outpaced the number of downgrades in January and February.

Commercial real estate loans on banks' books continued to grow in January and February. Spreads on highly rated commercial mortgage-backed securities (CMBS) over Treasury securities were little changed. However, the volumes of CMBS issuance and of deals in the pipeline were lower in the first two months of the year than in each of the previous two years. Market commentators attributed some of the slowdown to the response of issuers to risk retention rules that took effect in late 2016. The delinquency rate on loans in CMBS pools had risen since the spring of 2016, reflecting increased delinquencies on loans originated before the financial crisis.

Mortgage credit continued to be readily available for households with strong credit scores and documented incomes. Despite the increase in Treasury yields, the interest rate on 30-year fixed-rate mortgages was little changed over the intermeeting period. Closed-end residential mortgage loans on banks' books were about flat in January and February, while banks' holdings of home equity lines of credit continued their long contraction. Financing conditions in the market for asset-backed securities remained favorable. Consumer credit continued to increase at a steady pace, with similar growth rates across credit card, automobile, and student loans. The growth of consumer lending at banks continued in January and February, albeit at a slower pace than in the fourth quarter of 2016. Financing conditions for consumers remained accommodative except in the market for subprime credit card loans.

Staff Economic Outlook

In the U.S. economic projection prepared by the staff for the March FOMC meeting, the near-term forecast for real GDP growth was a little weaker, on net, than in the previous projection. Real GDP was expected to expand at a slower rate in the first quarter than in the fourth quarter, reflecting some data for January that were judged to be transitorily weak, but growth was projected to move back up in the second quarter. The staff maintained its assumption—provisionally included starting with the December 2016 forecast—of a more expansionary fiscal policy in the coming years, but it pushed back the timing of when those policy changes were anticipated to take effect. The negative effect of this timing change on projected real GDP growth through 2019 was offset by a higher assumed path for equity prices and by a lower assumed path for the exchange value of the dollar. All told, the staff's forecast for the level of real GDP at the end of 2019 was essentially unrevised from the previous forecast, and the staff continued to project that real GDP would expand at a modestly faster pace than potential output in 2017 through 2019. The unemployment rate was forecast to edge down gradually through the end of 2019 and to run below the staff's estimate of its longer-run natural rate; the path for the unemployment rate was little changed from the previous projection.

The staff's forecast for consumer price inflation, as measured by changes in the PCE price index, was unchanged for 2017 as a whole and over the next couple of years. The staff continued to project that inflation would increase gradually over this period, as food and energy prices, along with the prices of non-energy imports, were expected to begin steadily rising this year. However, inflation was projected to be slightly below the Committee's longer-run objective of 2 percent in 2019.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, primarily reflecting the staff's assessment that monetary policy appeared to be better positioned to respond to large positive shocks to the economic outlook than substantial adverse ones. However, the staff viewed the risks to the forecast as less pronounced than in the recent past, reflecting both somewhat diminished risks to the foreign outlook and an increase in U.S. consumer and business confidence over recent months. Consistent with the downside risks to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as tilted to the upside. The risks to the projection for inflation were seen as roughly balanced. The downside risks from the possibility that longer-term inflation expectations may have edged down or that the dollar could appreciate substantially further were seen as roughly counterbalanced by the upside risk that inflation could increase more than expected in an economy that was projected to continue operating above its longer-run potential.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real output growth, the unemployment rate, and inflation for each year from 2017 through 2019 and over the longer run, based on their individual assessments of the appropriate path for the federal funds rate.[4] The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[5] These projections and policy assessments are described in the Summary of Economic Projections (SEP), which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, meeting participants agreed that information received over the intermeeting period indicated that the labor market had continued to strengthen and that economic activity had continued to expand at a moderate pace. Job gains had remained solid and the unemployment rate was little changed in recent months. Household spending had continued to rise moderately while business fixed investment appeared to have firmed somewhat. Inflation had increased in recent quarters and moved close to the Committee's 2 percent longer-run objective; excluding energy and food prices, inflation was little changed and had continued to run somewhat below 2 percent. Market-based measures of inflation compensation had remained low; survey-based measures of inflation compensation were little changed on balance.

Participants generally saw the incoming economic information as consistent, overall, with their expectations and indicated that their views about the economic outlook had changed little since the January–February FOMC meeting. Although GDP appeared to be expanding relatively slowly in the current quarter, that development seemed primarily to reflect temporary factors, possibly including residual seasonality. Participants continued to anticipate that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace, labor market conditions would strengthen somewhat further, and inflation would stabilize around 2 percent over the medium term.

Participants generally judged that risks to the economic outlook remained roughly balanced overall, although they saw some of the considerations underlying that assessment as having changed modestly. Participants continued to underscore the considerable uncertainty about the timing and nature of potential changes to fiscal policies as well as the size of the effects of such changes on economic activity. However, several participants now anticipated that meaningful fiscal stimulus would likely not begin until 2018. In view of the substantial uncertainty, about half of the participants did not incorporate explicit assumptions about fiscal policy in their projections. Nonetheless, most participants continued to view the prospect of more expansionary fiscal policies as an upside risk to their economic forecasts. At the same time, some participants and their business contacts saw downside risks to labor force and economic growth from possible changes to other government policies, such as those affecting immigration and trade. Participants generally viewed the downside risks associated with the global economic outlook, particularly those related to the economic situation in China and Europe, as having diminished over recent months. At the same time, several participants cautioned that upcoming elections in EU countries posed both near-term and longer-term risks.

Regarding the outlook for inflation, several participants noted that the apparently modest response of inflation to measures of resource slack in recent years, along with

[4] The office of the president of the Federal Reserve Bank of Atlanta was vacant at the time of this FOMC meeting; the incoming president of the Federal Reserve Bank of Atlanta is scheduled to assume office on June 5, 2017. Marie Gooding, First Vice President of the Federal Reserve Bank of Atlanta, submitted economic projections.

[5] One participant did not submit longer-run projections for real output growth, the unemployment rate, or the federal funds rate.

inflation expectations that appeared to have remained well anchored, limited the risk of a marked pickup in inflation as the labor market tightened further. In contrast, some other participants continued to express concern that a substantial undershooting of the longer-run normal rate of unemployment, if it was to occur, posed a significant upside risk to inflation, in part because of the possibility that the behavior of inflation could differ from that in recent decades. Participants generally agreed that it would be appropriate to continue to closely monitor inflation indicators and global economic and financial developments.

In their discussion of developments in the household sector, participants agreed that consumer spending was likely to contribute significantly to economic growth this year. Although motor vehicle sales had fallen early in the year and some other components of PCE had also declined, many participants suggested that the slowdown in consumer spending in January would likely be temporary. The slowing appeared to mainly reflect transitory factors like lower energy consumption induced by warm weather or delays in processing income tax refunds. In addition, conditions conducive to growth in consumer spending, such as a strong labor market or higher levels of household wealth, were expected to persist. A number of participants also cited buoyant consumer confidence as potentially supporting household expenditures, although some also mentioned that improved sentiment did not appear to have appreciably altered the trajectory of consumer spending so far. In the housing market, access to mortgage credit that was still restricted for some borrowers, constraints on buildable land in some regions, and rising interest rates were cited as having continued to restrain the recovery in housing.

Participants generally agreed that recent momentum in the business sector had been sustained over the intermeeting period. Many reported that manufacturing activity in their Districts had strengthened further, and reports from the service sector were positive. Business optimism remained elevated in a number of Districts. A few participants reported increased capital expenditures by businesses in their Districts, but business contacts in several other Districts said they were waiting for more clarity about government policy initiatives before implementing capital expansion plans. Investment in oil drilling, and particularly extraction from shale, was described as increasing in a couple of Districts, and demand for related production inputs was also said to be expanding. Nonetheless, slower economic growth, ample existing capacity, and modest returns in the energy sector were noted as factors that were continuing to restrain overall capital spending.

Labor market conditions had continued to improve. Monthly increases in nonfarm payroll employment averaged nearly 210,000 over the three months ending in February, the unemployment rate edged down, and the labor force participation rate ticked up. Some participants cited anecdotal evidence of a tightening of labor markets. Business contacts in many Districts reported difficulty recruiting qualified workers and indicated that they had to either offer higher wages or hire workers with lower qualifications than desired. A couple of participants reported that the ongoing mismatch between the skill requirements of available jobs and the qualifications of job applicants was a factor boosting the number of unfilled positions. Tight labor markets were said to increasingly be a factor in businesses' planning. More employers reportedly were addressing the scarcity of labor by expanding vocational programs, but contacts emphasized that, to be effective, such efforts needed to be complemented by other programs such as assistance with child care and transportation. Shortages of production crews were said to have restricted oil drilling in a couple of Districts. In contrast, several other participants cited evidence that some slack remained in the labor market, such as still-modest aggregate wage growth and the unevenness of wage gains across industries, an elevated share of employees working part time for economic reasons, or other broad measures of labor underutilization. Participants noted the continued stability of the labor force participation rate in the face of its demographically driven downward trend. A few participants interpreted that development as suggesting that slack in the labor market was minimal. A few others saw it as an indication that labor force participation could increase a bit more relative to trend and thus that some further reduction in labor market slack could occur. Most participants still expected that if economic growth stayed moderate, as they projected, the unemployment rate would remain only modestly below their estimates of the longer-run normal rate of unemployment over the next few years. Some other participants, however, anticipated a more substantial undershoot.

Participants generally viewed the information received over the intermeeting period as reinforcing their expectation that inflation would stabilize around the Committee's 2 percent objective over the medium term. The 12-month change in headline PCE prices increased from 1.7 percent in December to 1.9 percent in January, as the effects of firmer consumer energy prices were registered. Core PCE prices rose at a relatively quick pace of

0.3 percent for the month of January, although it was noted that residual seasonality might have exaggerated the increase. The Federal Reserve Bank of Dallas's 12-month trimmed mean PCE inflation rate had gradually increased over the past couple of years, reaching 1.9 percent in January. Although market-based measures of inflation compensation had remained low, they were somewhat above the levels seen last year. In addition, longer-term inflation expectations in the Michigan survey had been relatively stable since the beginning of the year, while other survey measures of inflation expectations, such as the three-year-ahead measure from the Federal Reserve Bank of New York's Survey of Consumer Expectations, had increased in recent months. Notwithstanding these developments, some participants cautioned that progress toward the Committee's inflation objective should not be overstated; they noted that inflation had been persistently below 2 percent during the current economic expansion and that core inflation on a 12-month basis was little changed in recent months at a level below 2 percent. In contrast, a few other participants commented that recent inflation data were stronger than they had expected and that they anticipated that inflation would reach the Committee's objective of 2 percent this year.

In their discussion of recent developments in financial markets, participants noted that financial conditions remained accommodative despite the rise in longer-term interest rates in recent months and continued to support the expansion of economic activity. Many participants discussed the implications of the rise in equity prices over the past few months, with several of them citing it as contributing to an easing of financial conditions. A few participants attributed the recent equity price appreciation to expectations for corporate tax cuts or to increased risk tolerance among investors rather than to expectations of stronger economic growth. Some participants viewed equity prices as quite high relative to standard valuation measures. It was observed that prices of other risk assets, such as emerging market stocks, high-yield corporate bonds, and commercial real estate, had also risen significantly in recent months. In contrast, prices of farmland reportedly had edged lower, in part because low commodity prices continued to weigh on farm income. Still, farmland valuations were said to remain quite high as gauged by standard benchmarks such as rent-to-price ratios.

In their consideration of monetary policy, participants generally agreed that the data over the intermeeting period were broadly in line with their expectations, providing evidence of further strengthening of labor market conditions and ongoing progress toward the Committee's objective of 2 percent inflation. Participants noted that their views of the economic outlook were essentially unchanged from those of the past couple of meetings. Almost all participants saw the incoming data as consistent with an increase of 25 basis points in the target range for the federal funds rate at this meeting. They judged that, even after an increase in the target range, the stance of monetary policy would remain accommodative, supporting some additional strengthening in labor market conditions and a sustained return to 2 percent inflation.

With their views of the outlook for the economy little changed, participants generally continued to judge that a gradual pace of rate increases was likely to be appropriate to promote the Committee's objectives of maximum employment and 2 percent inflation. Participants pointed to several reasons for their assessment that a gradual removal of policy accommodation likely would be appropriate. A few noted that it could take some time for inflation to rise to 2 percent on a sustained basis, and thus monetary policy would likely need to remain accommodative for a while longer in order to support the economic conditions that would foster such an increase. Several participants remarked that risk-management considerations still argued for a gradual removal of accommodation because the proximity of the federal funds rate to the effective lower bound placed constraints on the ability of monetary policy to respond to adverse shocks. Moreover, the neutral real rate—defined as the real interest rate that is neither expansionary nor contractionary when the economy is operating at or near its potential—still appeared to be low by historical standards. Furthermore, uncertainty about current and prospective values of the neutral real rate reinforced the argument for a gradual approach to removing monetary policy accommodation over the next few years.

Participants emphasized that they stood ready to change their assessments of, and communications about, the appropriate path for the federal funds rate in response to unanticipated developments. They pointed to several risks that, if realized, could lead them to reassess their views of the appropriate policy path. These risks included the possibility of stronger spending by businesses and households as a result of improved sentiment, appreciably more expansionary fiscal policy, or a more rapid buildup of inflationary pressures than anticipated. In addition, a number of participants remarked that recent and prospective changes in financial conditions posed upside risks to their economic projections, to the extent that financial developments provided greater stimulus to spending than currently anticipated, as well as downside risks to their economic projections if, for example, financial markets were to experience a significant correction. Participants also mentioned potential developments abroad that could have adverse implications for the U.S. economy.

Nearly all participants judged that the U.S. economy was operating at or near maximum employment. In contrast, participants held different views regarding prospects for the attainment of the Committee's inflation goal. A number of participants noted that core inflation was a useful indicator of future headline inflation, and the latest reading on 12-month core inflation suggested that it could still be some time before headline inflation reached 2 percent on a sustained basis. Moreover, several participants remarked that even though inflation was currently not that far below the Committee's 2 percent objective, it was important for the Committee to remove accommodation gradually to help ensure that inflation would stabilize around that objective over the medium term. These participants emphasized that a sustained return to 2 percent inflation was particularly important in light of the persistent shortfall of inflation from its objective over the past several years. However, several other participants judged that—with the headline PCE price index rising nearly 2 percent and the core PCE index increasing close to 1¾ percent over the 12-month period ending in January—the Committee essentially had met its inflation goal or was poised to meet it later this year. In the view of these participants, such circumstances could warrant a faster pace of scaling back accommodation than implied by the medians of participants' assessments in the SEP.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that the information received since the Committee's previous meeting indicated that the labor market had continued to strengthen and that economic activity had continued to expand at a moderate pace. Job gains had remained solid, and the unemployment rate had changed little in recent months. Household spending had continued to rise moderately, while business fixed investment appeared to have firmed somewhat.

Inflation had increased in recent quarters, with the 12-month change in the headline PCE price index rising to nearly 2 percent in January, close to the Committee's longer-run objective. However, nearly all members judged that the Committee had not yet achieved its objective for headline inflation on a sustained basis. Members generally viewed it as important to highlight that core inflation—which excludes volatile energy and food prices and historically has tended to be a good indicator of future headline inflation—was little changed and continued to run somewhat below 2 percent. Moreover, market-based measures of inflation compensation had remained low.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would strengthen somewhat further. It was noted that recent increases in consumer energy prices could cause inflation to temporarily reach or even rise a bit above 2 percent in the near term. Members anticipated that inflation would stabilize around 2 percent over the medium term and commented that transitory deviations above and below 2 percent were to be expected. Members continued to judge that there was significant uncertainty about the effects of possible changes in fiscal and other government policies but that near-term risks to the economic outlook appeared roughly balanced. A few members noted that domestic upside risks may have increased somewhat in recent months, partly reflecting potential changes in fiscal policy, while some downside risks from abroad appeared to have diminished. Members agreed that they would continue to closely monitor inflation indicators and global economic and financial developments.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, all but one member agreed to raise the target range for the federal funds rate to ¾ to 1 percent. This increase was viewed as appropriate in light of the further progress that had been made toward the Committee's objectives of maximum employment and 2 percent inflation. Members generally noted that the increase in the target range did not reflect changes in their assessments of the economic outlook or the appropriate path of the federal funds rate, adding that the increase was consistent with the gradual pace of removal of accommodation that was anticipated in December, when the Committee last raised the target range.

In the view of one member, it was premature to raise the target range for the federal funds rate at this meeting. That member preferred to await additional information on the amount of slack remaining in the labor market and increased evidence that inflation would stabilize at the Committee's objective before taking another step to remove monetary policy accommodation.

Members agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. Partly in light of the likelihood that the recent higher readings on headline inflation had mostly reflected the temporary effect of increases in consumer energy prices, members agreed that the Committee would continue to carefully monitor actual and expected inflation developments relative to its inflation goal. A few members expressed the view that the Committee should avoid policy actions or communications that might be interpreted as suggesting that the Committee's 2 percent inflation objective was actually a ceiling. Several members observed that an explicit recognition in the statement that the Committee's inflation goal was symmetric could help support inflation expectations at a level consistent with that goal, and it was noted that a symmetric inflation objective implied that the Committee would adjust the stance of monetary policy in response to inflation that was either persistently above or persistently below 2 percent. Members also reiterated that they expected that economic conditions would evolve in a manner that would warrant gradual increases in the federal funds rate. They agreed that the federal funds rate was likely to remain, for some time, below levels expected to prevail in the longer run. However, they noted that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data.

The Committee decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. Members anticipated doing so until normalization of the level of the federal funds rate was well under way. They noted that this policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective March 16, 2017, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¾ to 1 percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.75 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in February indicates that the labor market has continued to strengthen and that economic activity has continued to expand at a moderate pace. Job gains remained solid and the unemployment rate was little changed in recent months. Household spending has continued to rise moderately while business fixed investment appears to have firmed somewhat. Inflation has increased in recent quarters, moving close to the Committee's 2 percent longer-run objective; excluding energy and food prices, inflation was little changed and continued to run somewhat below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that,

with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will stabilize around 2 percent over the medium term. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to ¾ to 1 percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, Charles L. Evans, Stanley Fischer, Patrick Harker, Robert S. Kaplan, Jerome H. Powell, and Daniel K. Tarullo.

Voting against this action: Neel Kashkari.

Mr. Kashkari dissented because he preferred to maintain the existing target range for the federal funds rate at this meeting. In his view, recent data had not pointed to further progress on the Committee's dual objectives and thus had not provided a compelling case to firm monetary policy at this meeting. He preferred to await additional information on the amount of slack remaining in the labor market and increased evidence that inflation would stabilize at the Committee's symmetric 2 percent inflation objective before taking another step to remove monetary policy accommodation. Mr. Kashkari also preferred that when data do support a removal of monetary policy accommodation, the FOMC first publish a detailed plan to normalize its balance sheet before proceeding with further increases in the federal funds rate.

To support the Committee's decision to raise the target range for the federal funds rate, the Board of Governors voted unanimously to raise the interest rates on required and excess reserve balances ¼ percentage point, to 1 percent, effective March 16, 2017. The Board of Governors also voted unanimously to approve a ¼ percentage point increase in the primary credit rate (discount rate) to 1½ percent, effective March 16, 2017.[6]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, May 2–3, 2017. The meeting adjourned at 10:40 a.m. on March 15, 2017.

[6] In taking this action, the Board approved requests submitted by the boards of directors of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, Kansas City, Dallas, and San Francisco. This vote also encompassed approval by the Board of Governors of the establishment of a 1½ percent primary credit rate by the remaining Federal Reserve Banks, effective on the later of March 16, 2017, and the date such Reserve Banks informed the Secretary of the Board of such a request. (Secretary's note: Subsequently, the Federal Reserve Banks of New York, St. Louis, and Minneapolis were informed by the Secretary of the Board of the Board's approval of their establishment of a primary credit rate of 1½ percent, effective March 16, 2017.) The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Notation Vote

By notation vote completed on February 21, 2017, the Committee unanimously approved the minutes of the Committee meeting held on January 31–February 1, 2017.

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Brian F. Madigan
Secretary

Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on March 14–15, 2017, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, and inflation for each year from 2017 to 2019 and over the longer run.[1] Each participant's projection was based on information available at the time of the meeting, together with his or her 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 to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[2] "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 Federal Reserve's objectives of maximum employment and stable prices.

Most FOMC participants expected that, under appropriate monetary policy, growth in real gross domestic product (GDP) would run somewhat above their individual estimates of its longer-run rate this year and in 2018, while about half of the participants projected that economic growth would slow in 2019 and run at or slightly below their individual longer-run estimates. A substantial majority of participants projected that the unemployment rate would run below their estimates of its longer-run normal level in 2017 and remain below that level through 2019. A large majority of participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase over the next two years; a majority of participants projected that inflation would be at the Committee's 2 percent objective in 2019, and all participants projected that inflation would be within a couple of tenths of a percentage point of the objective in that year. Participants' economic projections were generally quite similar to those submitted in December. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, all but one participant expected that the evolution of economic conditions would likely warrant gradual increases in the federal funds rate to achieve and sustain maximum employment and 2 percent inflation. The medians of projections for the federal funds rate in 2017, 2018, and 2019 were essentially the same as those in the December Summary of Economic Projections (SEP). The median for 2019 was equal to the median of the longer-run projections. However, the economic outlook is uncertain, and participants noted that their economic projections and assessments of appropriate monetary policy could change in response to incoming information.

Most participants viewed the uncertainty attached to their projections as broadly similar to the average of the past 20 years, although some participants saw the uncertainty associated with their forecasts as higher than average. Most participants also judged the risks around their projections for economic growth, the unemployment rate, and inflation as broadly balanced, while several participants saw the risks to their forecasts of real GDP growth and inflation as weighted to the upside and several participants viewed the risks to their unemployment rate forecasts as tilted to the downside.

Figures 4.A, 4.B, and 4.C for real GDP growth, the unemployment rate, and inflation, respectively, present for the first time "fan charts" as well as charts of participants' current qualitative assessments of the uncertainty and risks surrounding their economic projections. The fan charts (the panels at the top of these three figures) show the medians of participants' projections surrounded by confidence intervals that are computed from the forecast errors of various private and government projections made over the past 20 years. The width of the confidence interval for each variable at a given point provides a measure of forecast uncertainty at that horizon. For all three macroeconomic variables, these charts illustrate that forecast uncertainty is substantial and generally increases as the forecast horizon lengthens. Reflecting in part the uncertainty about the future evolution of GDP growth, the unemployment rate, and inflation, participants' assessments of appropriate monetary policy are also subject to considerable uncertainty. To illustrate

[1] The office of the president of the Federal Reserve Bank of Atlanta was vacant at the time of this FOMC meeting; the incoming president is scheduled to assume office on June 5, 2017. Marie Gooding, First Vice President of the Federal Reserve Bank of Atlanta, submitted economic projections.

[2] One participant did not submit longer-run projections for real output growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, March 2017

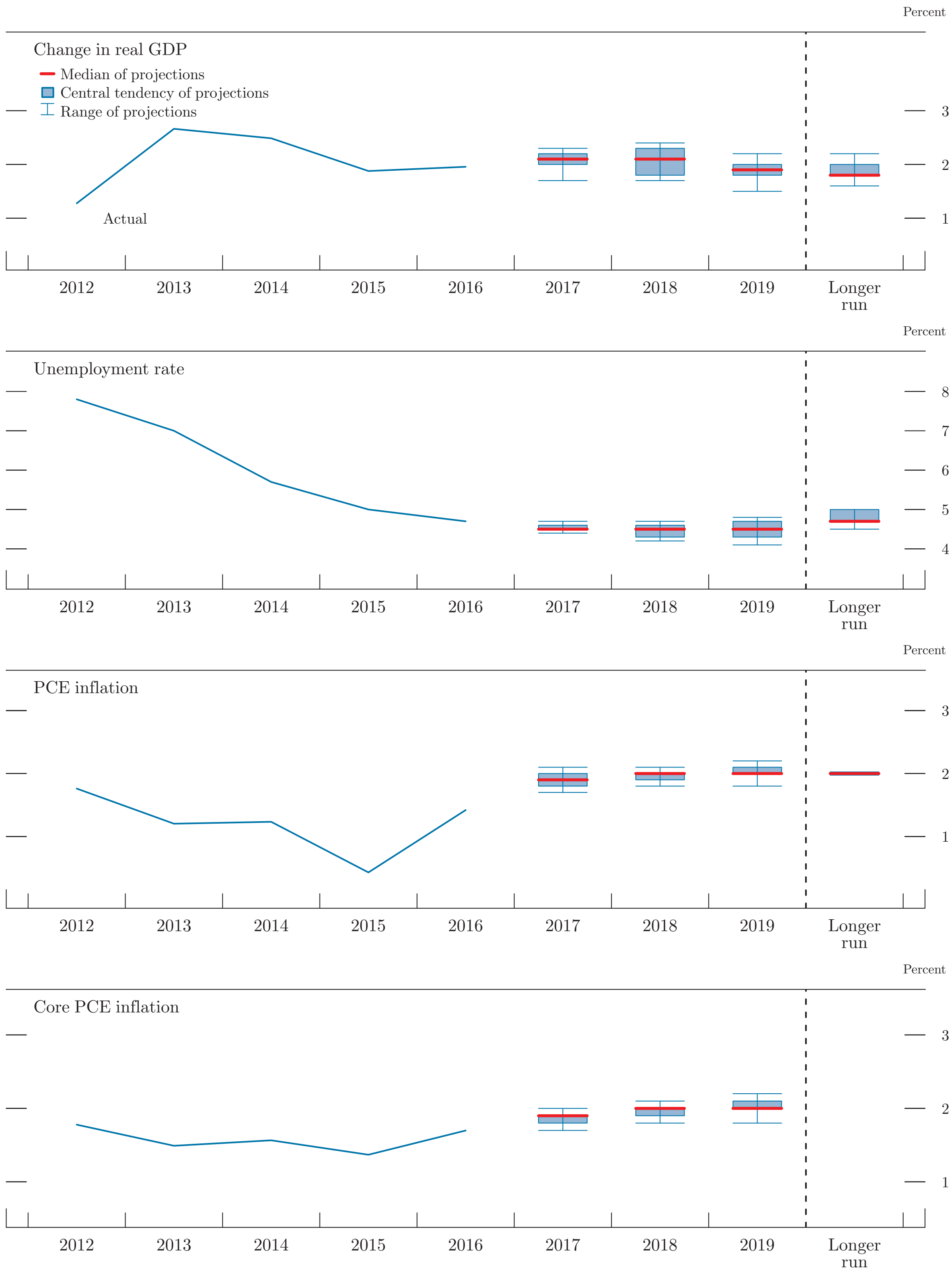
Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2017	2018	2019	Longer run	2017	2018	2019	Longer run	2017	2018	2019	Longer run
Change in real GDP	2.1	2.1	1.9	1.8	2.0 – 2.2	1.8 – 2.3	1.8 – 2.0	1.8 – 2.0	1.7 – 2.3	1.7 – 2.4	1.5 – 2.2	1.6 – 2.2
December projection	2.1	2.0	1.9	1.8	1.9 – 2.3	1.8 – 2.2	1.8 – 2.0	1.8 – 2.0	1.7 – 2.4	1.7 – 2.3	1.5 – 2.2	1.6 – 2.2
Unemployment rate	4.5	4.5	4.5	4.7	4.5 – 4.6	4.3 – 4.6	4.3 – 4.7	4.7 – 5.0	4.4 – 4.7	4.2 – 4.7	4.1 – 4.8	4.5 – 5.0
December projection	4.5	4.5	4.5	4.8	4.5 – 4.6	4.3 – 4.7	4.3 – 4.8	4.7 – 5.0	4.4 – 4.7	4.2 – 4.7	4.1 – 4.8	4.5 – 5.0
PCE inflation	1.9	2.0	2.0	2.0	1.8 – 2.0	1.9 – 2.0	2.0 – 2.1	2.0	1.7 – 2.1	1.8 – 2.1	1.8 – 2.2	2.0
December projection	1.9	2.0	2.0	2.0	1.7 – 2.0	1.9 – 2.0	2.0 – 2.1	2.0	1.7 – 2.0	1.8 – 2.2	1.8 – 2.2	2.0
Core PCE inflation[4]	1.9	2.0	2.0		1.8 – 1.9	1.9 – 2.0	2.0 – 2.1		1.7 – 2.0	1.8 – 2.1	1.8 – 2.2	
December projection	1.8	2.0	2.0		1.8 – 1.9	1.9 – 2.0	2.0		1.7 – 2.0	1.8 – 2.2	1.8 – 2.2	
Memo: Projected appropriate policy path												
Federal funds rate	1.4	2.1	3.0	3.0	1.4 – 1.6	2.1 – 2.9	2.6 – 3.3	2.8 – 3.0	0.9 – 2.1	0.9 – 3.4	0.9 – 3.9	2.5 – 3.8
December projection	1.4	2.1	2.9	3.0	1.1 – 1.6	1.9 – 2.6	2.4 – 3.3	2.8 – 3.0	0.9 – 2.1	0.9 – 3.4	0.9 – 3.9	2.5 – 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 December projections were made in conjunction with the meeting of the Federal Open Market Committee on December 13–14, 2016. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the December 13–14, 2016, meeting, and one participant did not submit such projections in conjunction with the March 14–15, 2017, meeting.

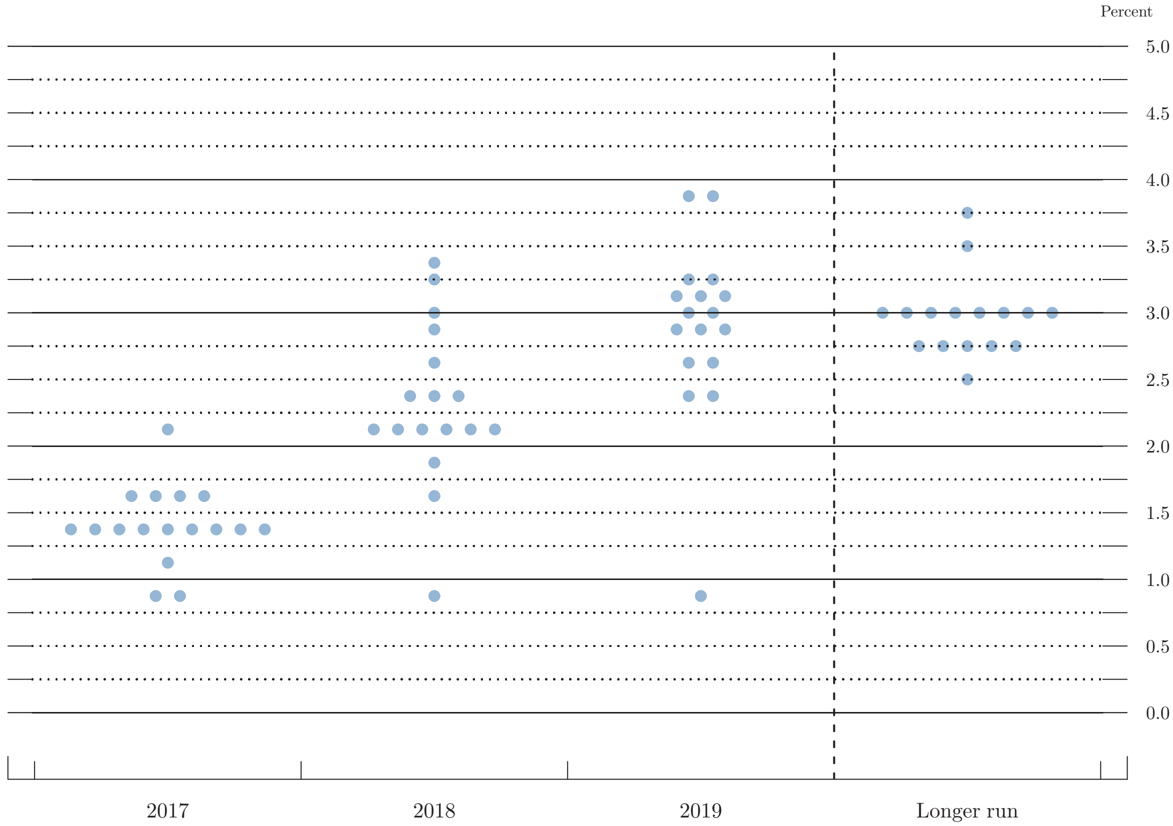
1. For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.
2. The central tendency excludes the three highest and three lowest projections for each variable 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.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2017–19 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. One participant did not submit longer-run projections for the federal funds rate.

the uncertainty regarding the appropriate path for monetary policy, figure 5 shows a comparable fan chart around the medians of participants' assessments for the federal funds rate.[3] As with the macroeconomic variables, forecast uncertainty for short-term interest rates is substantial and increases as the horizon lengthens.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP, conditional on their individual assumptions about appropriate monetary policy, was 2.1 percent in 2017 and 2018 and 1.9 percent in 2019; the median of projections for the longer-run normal rate of real GDP growth was 1.8 percent. Compared with the December SEP, the medians of the forecasts for real GDP growth over the period from 2017 to 2019, as well as the median assessment of the longer-run growth rate, were mostly unchanged. As in December, about half of the participants incorporated expectations of fiscal stimulus into their projections; almost all in this group projected slightly higher real GDP growth next year relative to their December projections.

The median of projections for the unemployment rate in the fourth quarter of 2017 was 4.5 percent, unchanged from December and 0.2 percentage point below the median assessment of its longer-run normal level. Almost all participants projected that the unemployment rate would not change much over the subsequent two years. Based on the median projections, the anticipated path of the unemployment rate for coming years was also unchanged from the previous forecast. The median estimate of the longer-run normal rate of unemployment was 4.7 percent, slightly lower than in December.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2017 to 2019 and in the longer run. The distribution of individual projections of real GDP growth for this year was less dispersed relative to the distribution of the December projections, while the distribution for 2018 shifted up slightly. The distributions of projections for the unemployment rate were unchanged for 2017 and 2018, while they shifted slightly lower for 2019 and for the longer-run normal rate.

The Outlook for Inflation

The medians of projections for headline PCE price inflation were 1.9 percent in 2017 and 2.0 percent in 2018 and 2019; these medians were unchanged from December. Only a few participants saw inflation continuing to run below 2 percent in 2019, while several participants projected that inflation would run modestly above the Committee's objective in that year. The medians of projections for core inflation were 1.9 percent in 2017 and 2.0 percent in 2018 and 2019, very similar to the contour in December.

Figures 3.C and 3.D provide information on the distributions of participants' views about the outlook for inflation. The distributions of projections for headline PCE price inflation were largely unchanged from December, while the distributions for core PCE price inflation shifted up slightly. Some participants attributed the upward shift in their projections for core inflation to recent data that were somewhat above expectations.

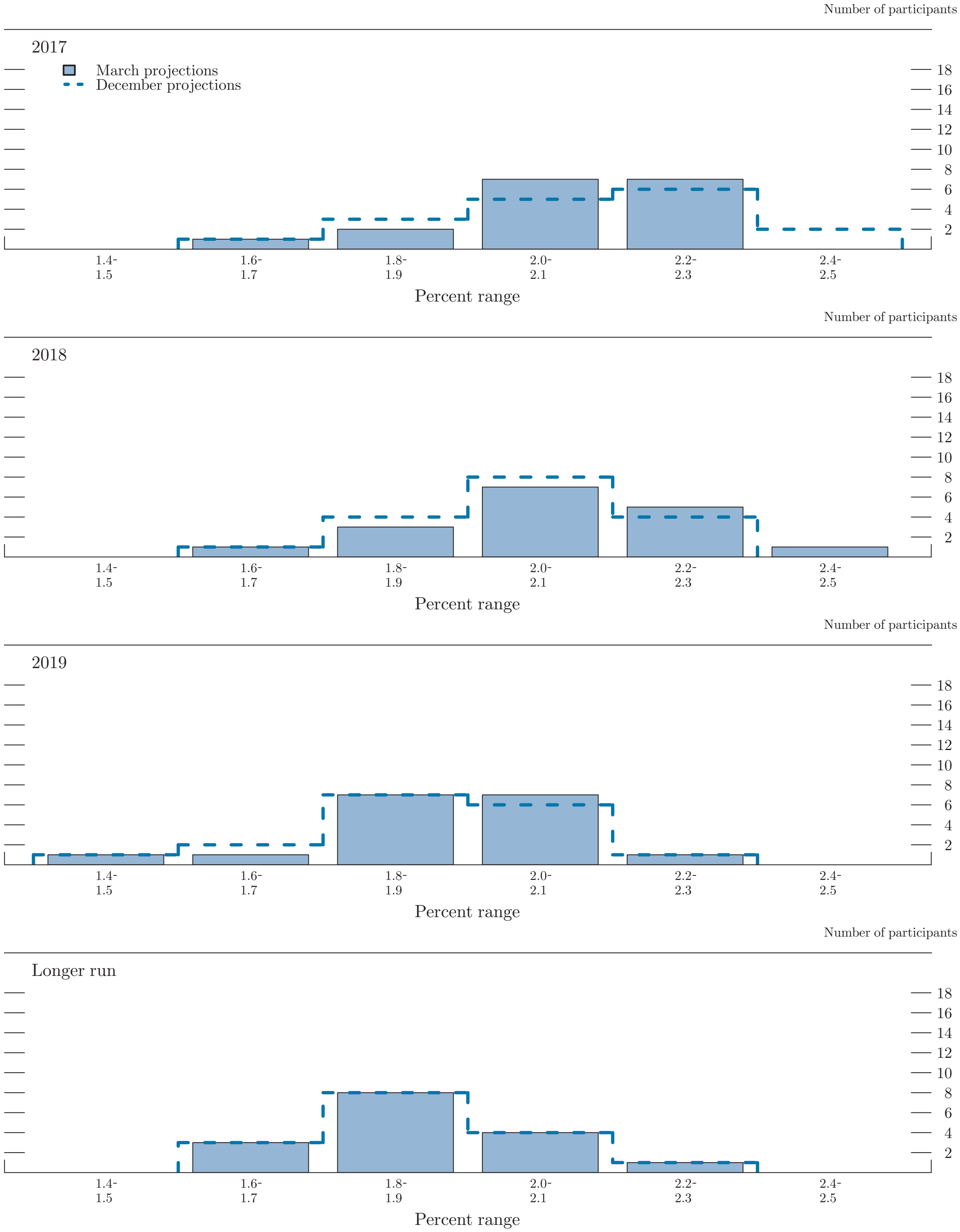
Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate target or midpoint of the target range for the federal funds rate at the end of each year from 2017 to 2019 and over the longer run.[4] The distributions for 2017 through 2019 shifted up modestly. The median projections of the federal funds rate continued to show gradual increases, with the median assessment for 2017 standing at 1.38 percent, consistent with three 25 basis point rate increases this year. Thereafter, the medians of the projections were 2.13 percent at the end of 2018 and 3.00 percent at the end of 2019; the median of the longer-run projections of the federal funds rate was 3.00 percent. Compared with the December SEP, the median of the projections for the federal funds rate rose only for 2019, and in that case just slightly.

[3] The fan chart for the federal funds rate provides a depiction of the uncertainty around the median assessment of the future path of appropriate monetary policy and is closely connected with the uncertainty about the future value of economic variables. In contrast, the dot plot shown in figure 2 displays the dispersion of views across individual participants about the appropriate level of the federal funds rate.

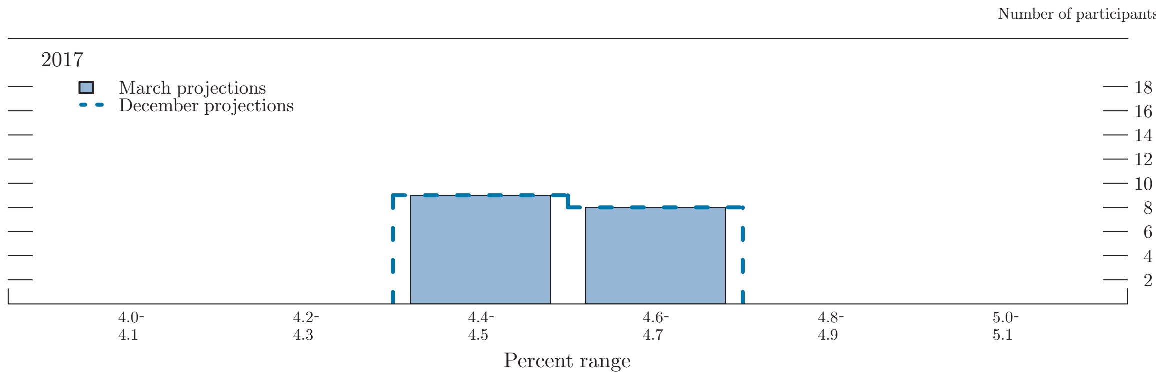
[4] One participant's projections for the federal funds rate, real GDP growth, the unemployment rate, and inflation were informed by the view that there are multiple possible medium-term regimes for the U.S. economy, that these regimes are persistent, and that the economy shifts between regimes in a way that cannot be forecast. Under this view, the economy currently is in a regime characterized by expansion of economic activity with low productivity growth and a low short-term real interest rate, but longer-term outcomes for variables other than inflation cannot be usefully projected.

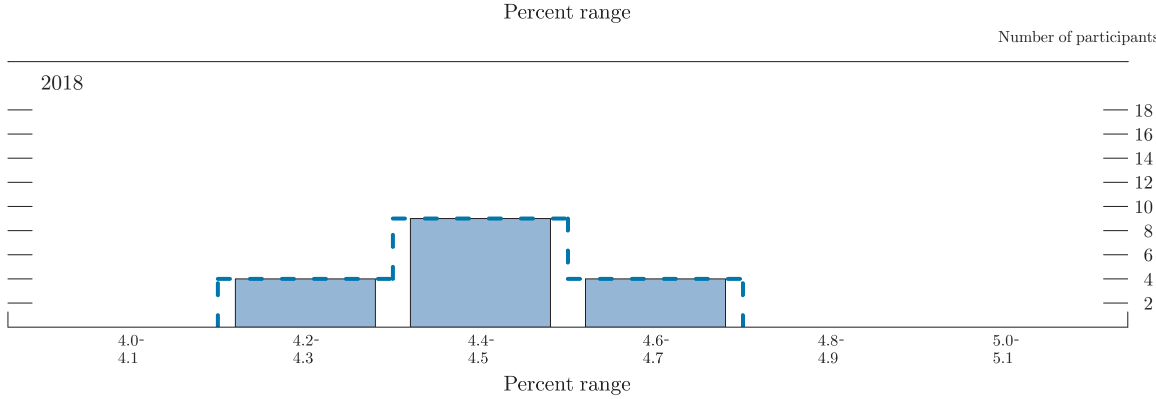
Figure 3.A. Distribution of participants' projections for the change in real GDP, 2017–19 and over the longer run

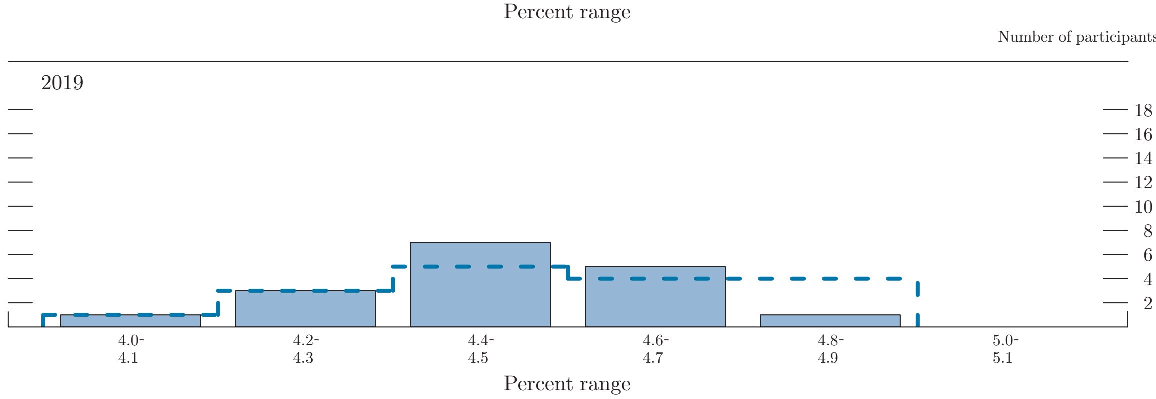


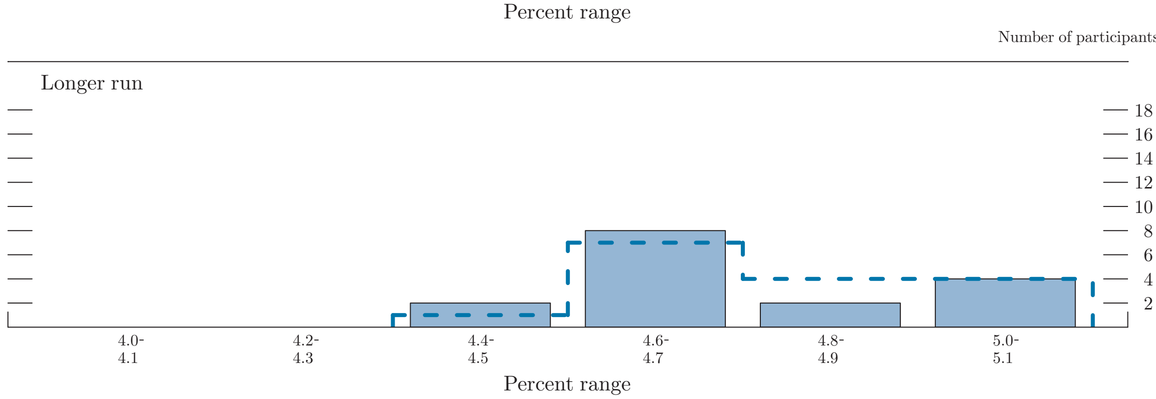
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2017–19 and over the longer run



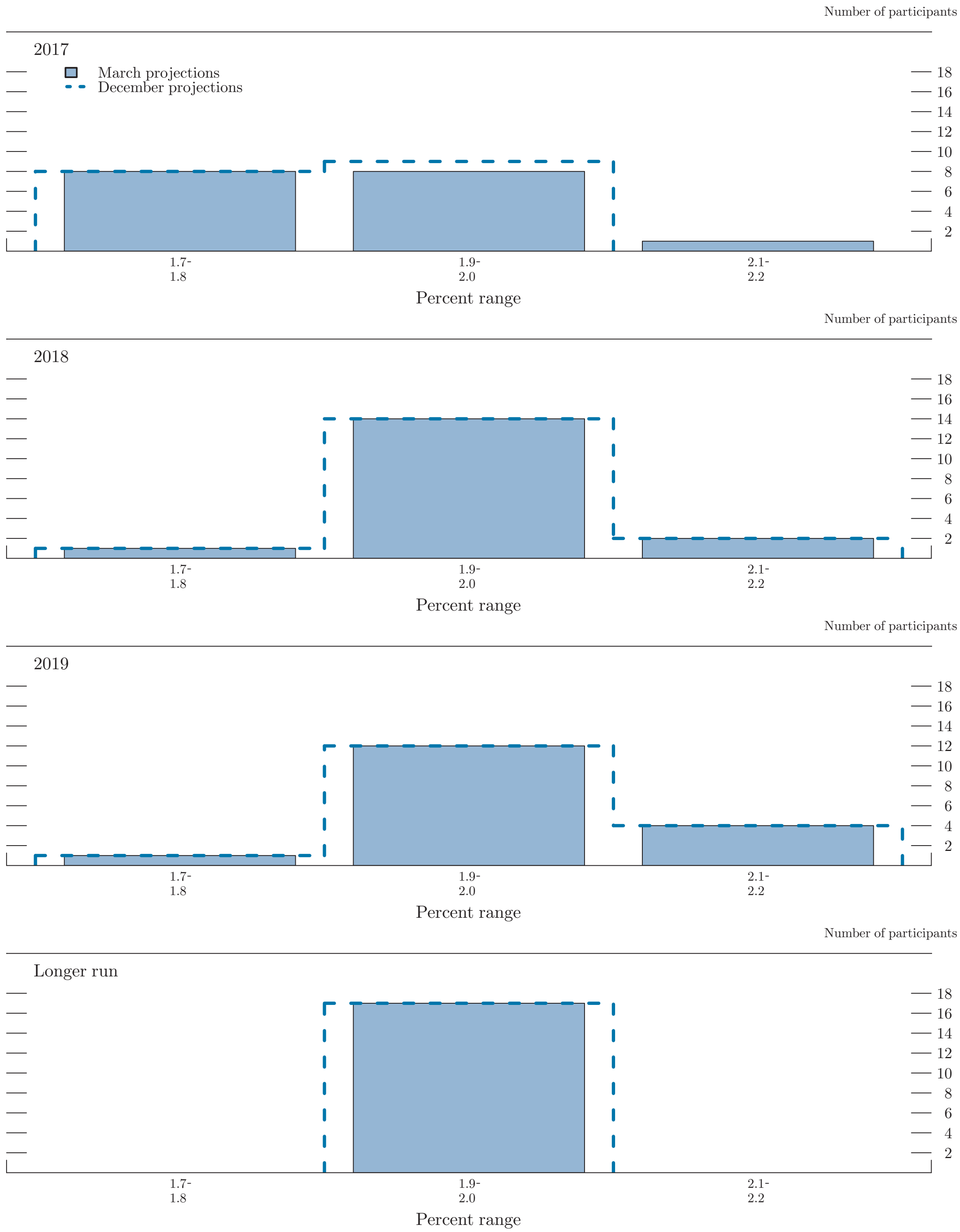






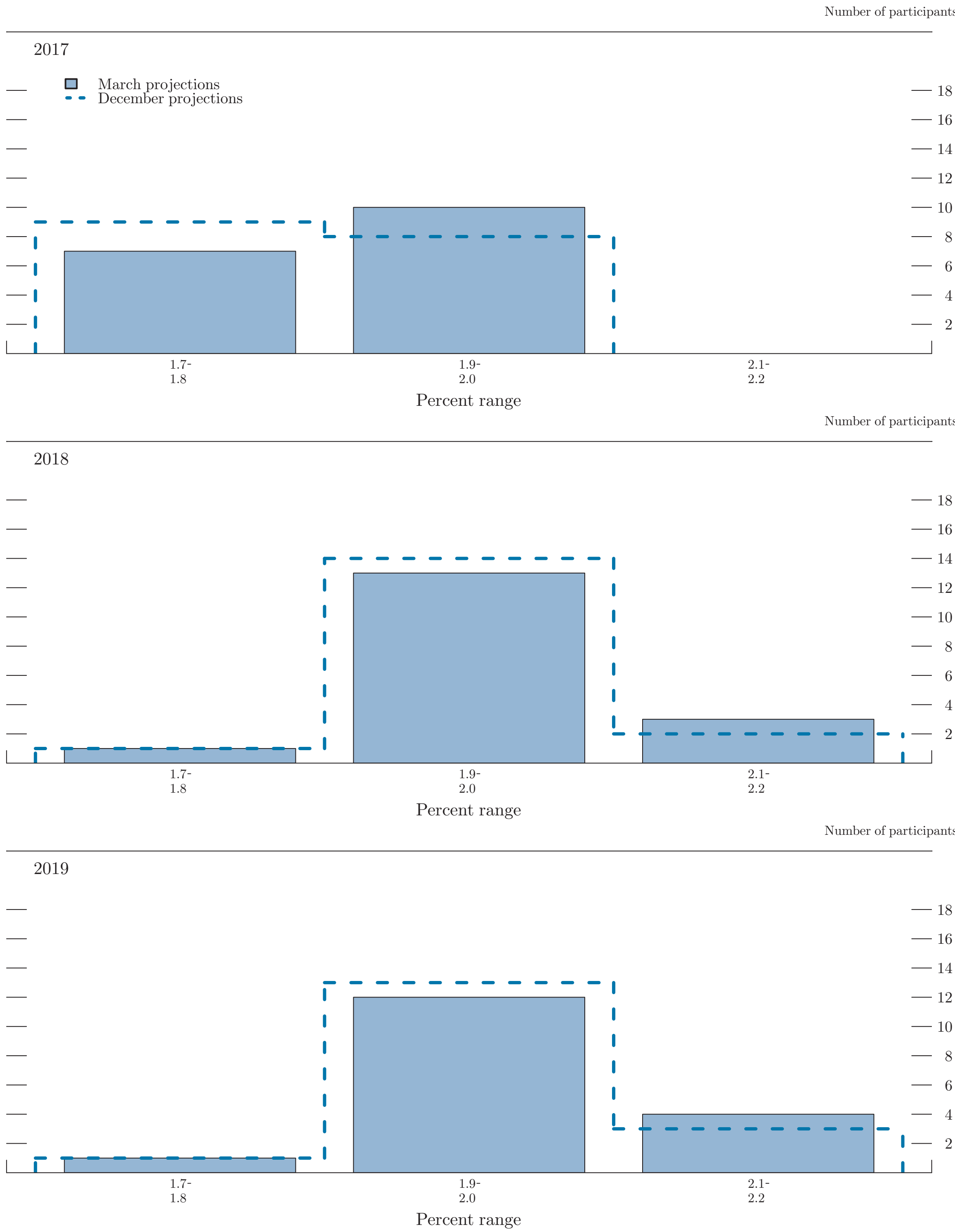
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2017–19 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, 2017–19



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, 2017–19 and over the longer run

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

Table 2. Average historical projection error ranges
Percentage points

Variable	2017	2018	2019
Change in real GDP[1]	±1.6	±2.1	±2.1
Unemployment rate[1]	±0.5	±1.3	±1.8
Total consumer prices[2]	±0.9	±1.1	±1.1
Short-term interest rates[3]	±0.9	±2.0	±2.4

NOTE: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1997 through 2016 that were released in the spring 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), available at www.federalreserve.gov/econresdata/feds/2017/files/2017020pap.pdf.

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. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

3. For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Historical projections are the average level, in percent, in the fourth quarter of the year indicated.

In discussing their March forecasts, many participants continued to express the view that the appropriate upward trajectory of the federal funds rate over the next few years would likely be gradual. That anticipated pace reflected a few factors, such as a short-term neutral real interest rate that was currently low and was expected to move up only slowly as well as a gradual return of inflation to the Committee's 2 percent objective. A few participants indicated that positive news on inflation and the continued strengthening of labor market conditions in recent months had increased their confidence that inflation would move toward or to the 2 percent objective. Some participants judged that a slightly firmer path of monetary policy than in their previous projections would likely be appropriate. Most of the participants who commented on the Committee's reinvestment policy anticipated that a change in that policy would be appropriate before the end of this year if the economic outlook evolved as projected.

Uncertainty and Risks

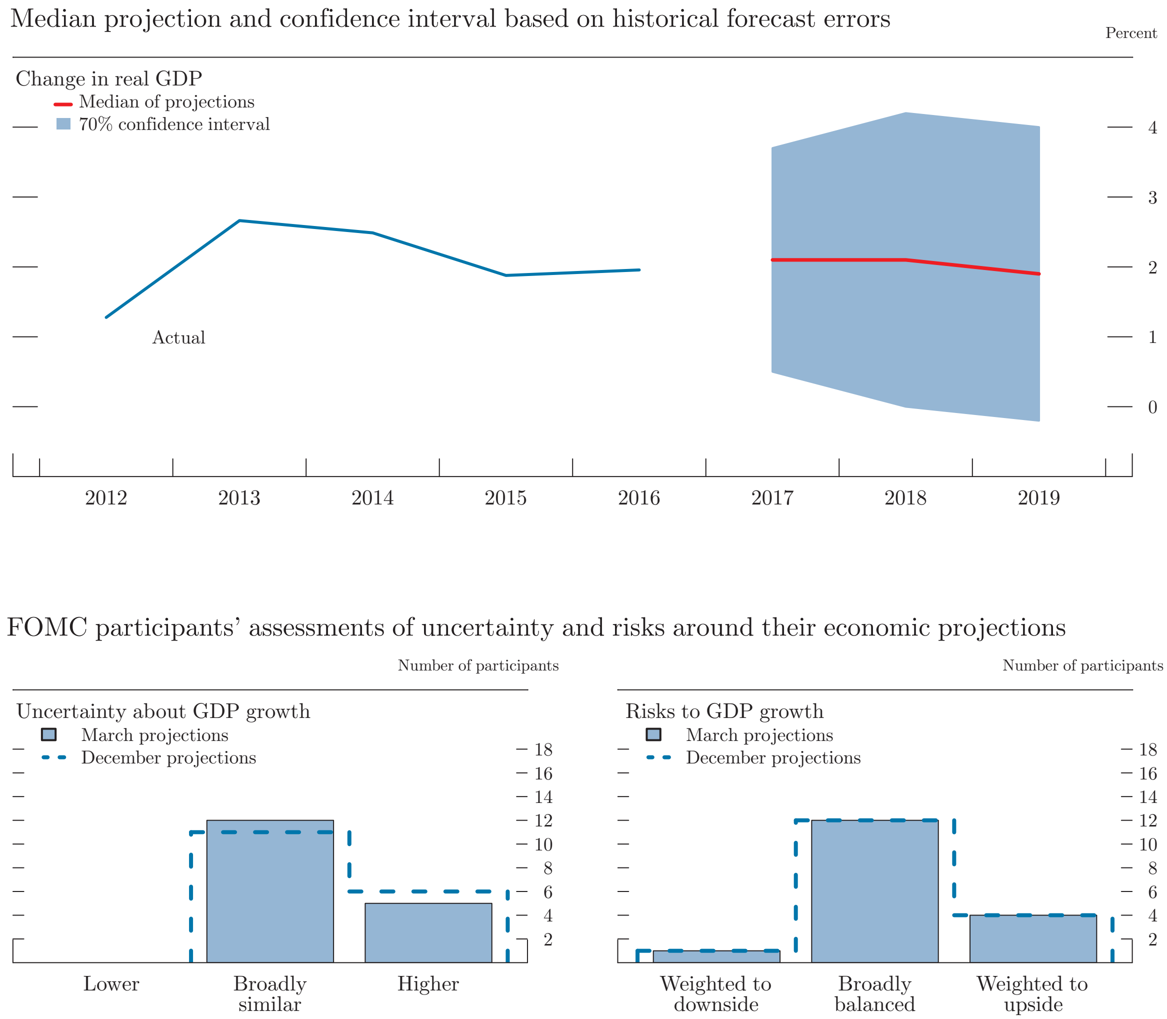
The economic projections of FOMC participants are generally subject to considerable uncertainty and risks, and, in assessing the path of appropriate monetary policy, FOMC participants take account of the range of possible outcomes, the likelihood of their occurring, and the potential benefits and costs to the economy should they occur. Table 2 provides one measure of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation—the root mean squared error (RMSE) for forecasts made over the past 20 years. This measure of forecast uncertainty is incorporated graphically in the top panels of figures 4.A, 4.B, and 4.C, which display fan charts plotting the medians of participants' projections for real GDP growth, the unemployment rate, and PCE price inflation surrounded by symmetric confidence intervals derived from the RMSEs presented in table 2. If the degree of uncertainty attending these projections is similar to the typical magnitude of past forecast errors and if the risks around the projections are broadly balanced, then future outcomes of these variables would have about a 70 percent probability of occurring within these confidence intervals. For all three variables, this measure of forecast uncertainty is substantial and generally increases as the forecast horizon lengthens.

FOMC participants may judge that the widths of the confidence intervals in the historical fan charts shown in figures 4.A through 4.C do not adequately capture their current assessments of the degree of uncertainty that surrounds their economic projections. Participants' assessments of the current level of uncertainty surrounding their economic projections are shown in the bottom-left panels of figures 4.A, 4.B, and 4.C. Most participants continued to view the uncertainty attached to their economic projections as broadly similar to the average of the past 20 years, with one fewer participant than in December seeing uncertainty about GDP growth, the unemployment rate, and headline inflation as higher than its historical average.[5] In their discussion of the uncertainty attached to their current projections relative to levels of uncertainty over the past 20 years, as in December, about half of the participants expressed the view that, at this point, uncertainty surrounding prospective changes in fiscal and other policies is very large or that there is not yet enough information to make reasonable assumptions about the timing, nature, and magnitude of the changes.

The fan charts—which are symmetric around the median projections by assumption—also do not necessarily

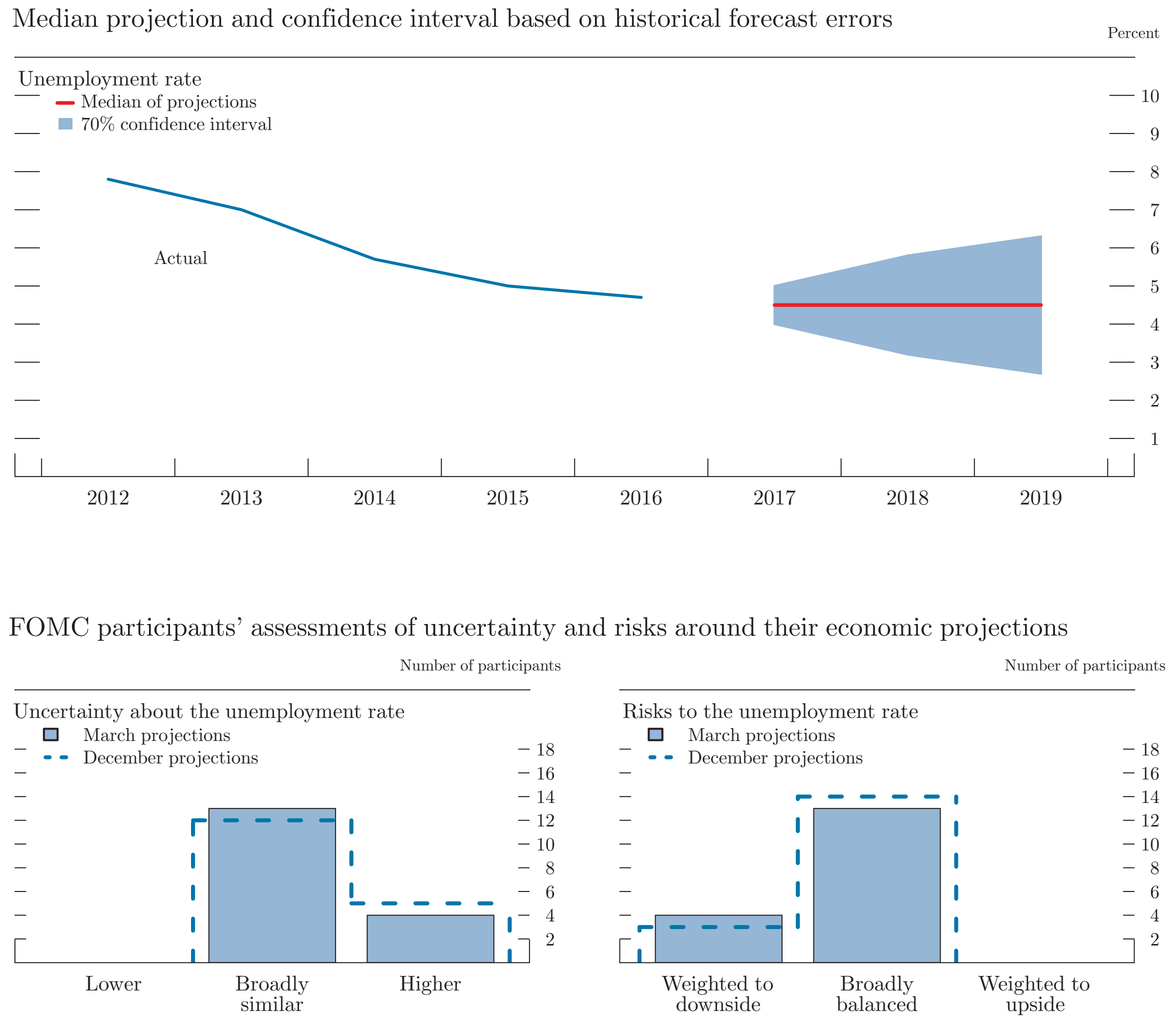
[5] At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

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



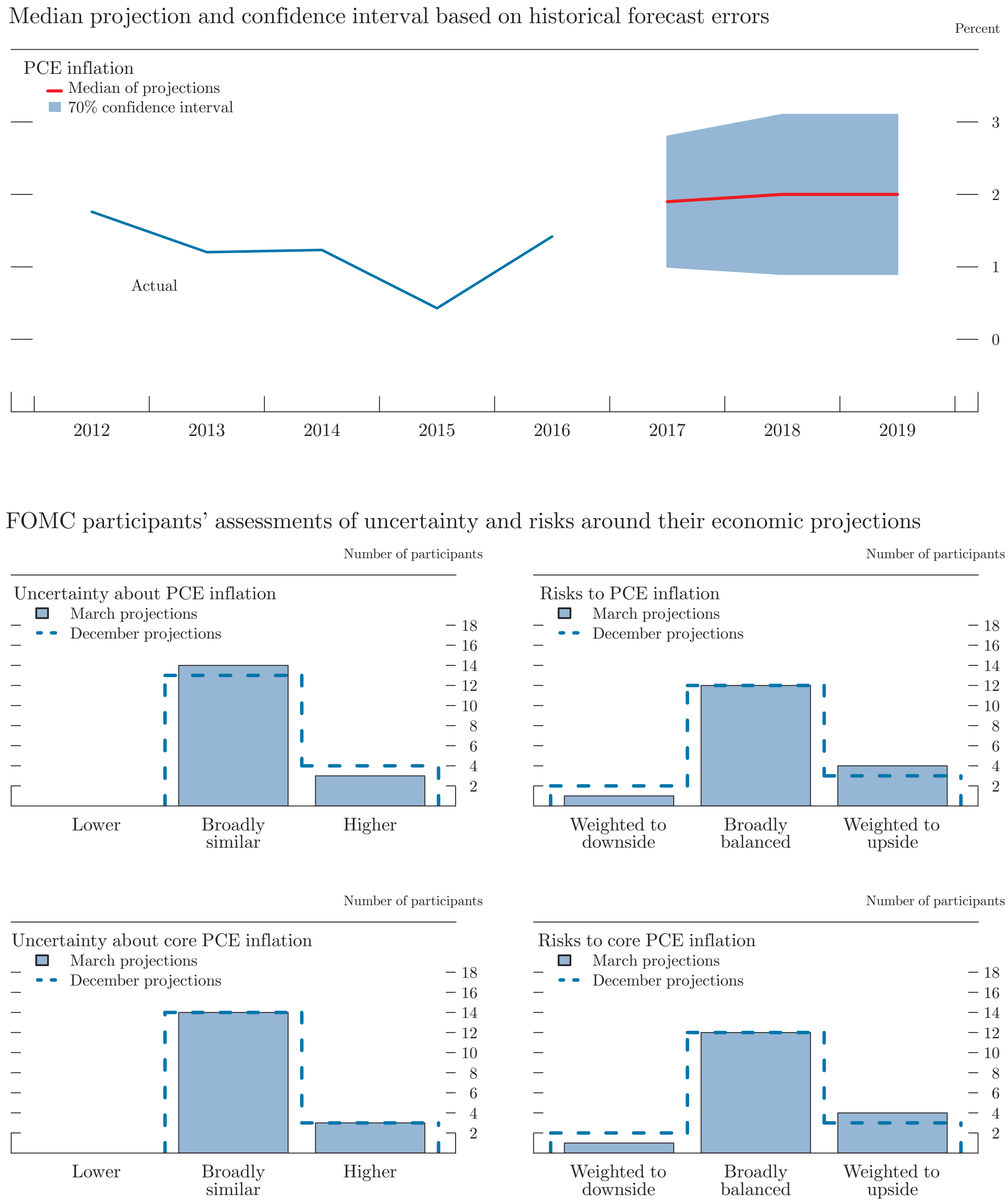
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected 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



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



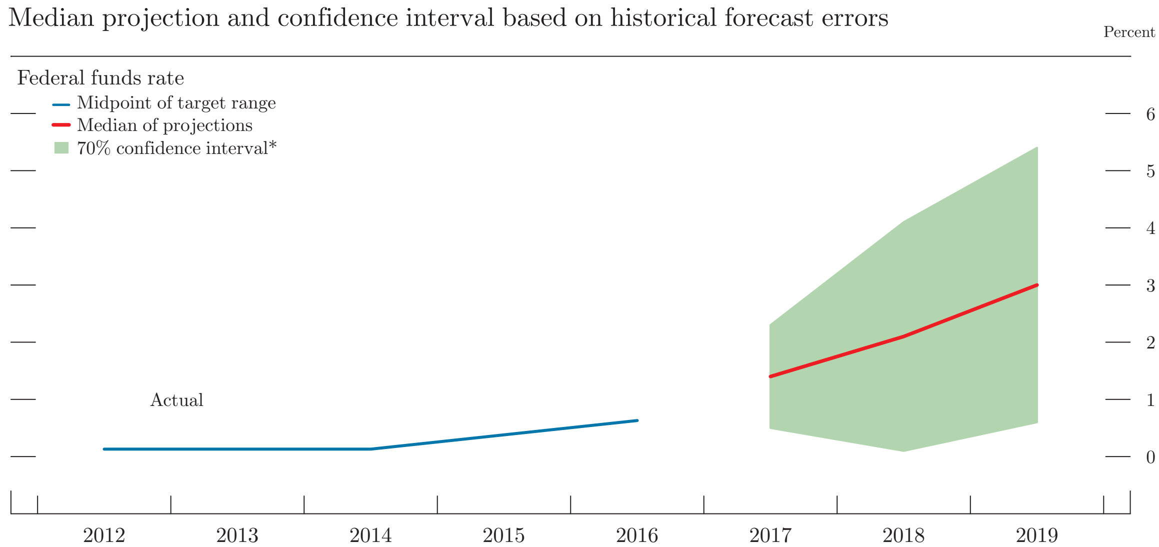
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval 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."

reflect participants' assessments of the balance of risks to their economic projections. Participants' assessments of the balance of risks to their economic projections are shown in the bottom-right panels of figures 4.A, 4.B, and 4.C. As in December, most participants judged the risks to their projections of real GDP growth, the unemployment rate, headline inflation, and core inflation as broadly balanced—in other words, as broadly consistent with a symmetric fan chart. One more participant saw the risks to unemployment as weighted to the downside than in December (the bottom-right panel of figure 4.B). The balance of risks to the inflation projection shifted up slightly relative to December, as one fewer participant judged the risks to both headline and core inflation as weighted to the downside and one more participant viewed the risks as weighted to the upside (the lower-right panels of figure 4.C). In discussing the balance of risks around their projections, some participants mentioned improvements in recent readings of household and business confidence as well as somewhat reduced risks from abroad. Moreover, a number of participants noted that the possibility of a more expansionary U.S. fiscal policy might present upside risks to real GDP growth and inflation and downside risks to unemployment.

Participants' assessments of the future path of the federal funds rate consistent with appropriate policy are generally subject to considerable uncertainty, reflecting in part uncertainty about the evolution of GDP growth, the unemployment rate, and inflation over time. The final line in table 2 shows the RMSEs for forecasts of short-term interest rates. These RMSEs are not strictly consistent with participants' projections of the federal funds rate, in part because these assessments are not forecasts of the likeliest outcomes but rather reflect each participant's individual judgment of appropriate monetary policy. However, the associated confidence intervals may provide a sense of the likely 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.

Figure 5 shows a fan chart plotting the medians of participants' assessments of the appropriate path of the federal funds rate surrounded by confidence intervals derived from the results presented in table 2. As with the macroeconomic variables, forecast uncertainty is substantial and increases at longer horizons. 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 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 and would not have any implication for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate.

Figure 5. Uncertainty 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.

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 Reports* 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 1.4 to 4.6 percent in the current year, and 0.9 to 5.1 percent in the second and third years. The corresponding 70 percent confidence intervals for overall inflation would be 1.1 to 2.9 percent in the current year, and 0.9 to 3.1 percent in the second and third years. 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 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.