Minutes of the Federal Open Market Committee
June 14–15, 2016

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, June 14, 2016, at 1:00 p.m. and continued on Wednesday, June 15, 2016, at 9:00 a.m.[1]

PRESENT:

Janet L. Yellen, Chair
William C. Dudley, Vice Chairman
Lael Brainard
James Bullard
Stanley Fischer
Esther L. George
Loretta J. Mester
Jerome H. Powell
Eric Rosengren
Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, and Neel Kashkari, Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams, Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, 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
Steven B. Kamin, Economist
Thomas Laubach, Economist
David W. Wilcox, Economist

Thomas A. Connors, Michael P. Leahy, David E. Lebow, Jonathan P. McCarthy, Stephen A. Meyer, Ellis W. Tallman, Christopher J. Waller, 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 of the Board, Office of the Secretary, Board of Governors

Michael S. Gibson, Director, Division of Banking Supervision and Regulation, Board of Governors

James A. Clouse, Deputy Director, Division of Monetary Affairs, Board of Governors; Andreas Lehnert, Deputy Director, Division of Financial Stability, Board of Governors

David Bowman, Andrew Figura, Ann McKeehan, David Reifschneider, and Stacey Tevlin, Special Advisers to the Board, Office of Board Members, Board of Governors

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

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

Fabio M. Natalucci, Senior Associate Director, Division of Monetary Affairs, Board of Governors; Beth Anne Wilson, Senior Associate Director, Division of International Finance, Board of Governors

Michael T. Kiley, Senior Adviser, Division of Research and Statistics, and Senior Associate Director, Division of Financial Stability, Board of Governors

Antulio N. Bomfim, Ellen E. Meade, and Joyce K. Zickler, Senior Advisers, Division of Monetary Affairs, Board of Governors; Jeremy B. Rudd, Senior Adviser, Division of Research and Statistics, Board of Governors

Shaghil Ahmed, Deputy Associate Director, Division of International Finance, Board of Governors

[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

Christopher J. Gust[2] and Jason Wu, Assistant Directors, Division of Monetary Affairs, Board of Governors; Paul A. Smith, Assistant Director, Division of Research and Statistics, Board of Governors

Eric C. Engstrom and Patrick E. McCabe, Advisers, Division of Research and Statistics, Board of Governors

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

Brett Berger, Senior Economic Project Manager, Division of International Finance, Board of Governors

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

Wendy E. Dunn, Principal Economist, Division of Research and Statistics, Board of Governors; Marcelo Rezende, Principal Economist, Division of Monetary Affairs, Board of Governors

Edward Herbst and Hiroatsu Tanaka, Senior Economists, Division of Monetary Affairs, Board of Governors

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

David Sapenaro, First Vice President, Federal Reserve Bank of St. Louis

David Altig, Kartik B. Athreya, and Jeff Fuhrer, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, and Boston, respectively

Stephanie Heller, Evan F. Koenig, and Spencer Krane, Senior Vice Presidents, Federal Reserve Banks of New York, Dallas, and Chicago, respectively

Roc Armenter, Sarah K. Bell, Òscar Jordà, and George A. Kahn, Vice Presidents, Federal Reserve Banks of Philadelphia, New York, San Francisco, and Kansas City, respectively

Cristina Arellano, Senior Research Economist, Federal Reserve Bank of Minneapolis

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in domestic and foreign financial markets during the period since the Committee met on April 26–27, 2016. Market participants' expectations for a firming of monetary policy at the June FOMC meeting rose considerably in the middle of the period, largely in response to monetary policy communications, but those expectations subsequently fell sharply following the release of labor market data for May. Nominal yields on Treasury securities declined over the period. Forward measures of inflation compensation derived from yields on nominal and inflation-indexed Treasury securities fell despite an appreciable increase in crude oil prices, a development that contrasted with the positive correlation between these variables that had been evident for some time. The manager also noted that bond yields globally had declined to very low levels and discussed some of the possible reasons for the drop. Actions by investors to shift their portfolios away from very low-yielding foreign sovereign debt were cited as adding to the downward pressure on U.S. yields. The manager also reviewed the apparent effects on financial markets of changes in the perceived odds that the United Kingdom would vote in a referendum on June 23 to leave the European Union.

In domestic money markets, the effective federal funds rate once again stayed close to the middle of the FOMC's ¼ to ½ percent target range over the intermeeting period except on month-ends. Usage of the System's overnight reverse repurchase agreement facility remained low. Market participants anticipated that changes to the regulation of money market mutual funds that will take effect later in the year could lead to some increase in usage of the facility. Finally, the manager briefed the Committee on various efforts, including small-value tests of System facilities, to enhance operational readiness.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period.

[2] Attended Wednesday session only.
[3] Attended Tuesday session only.

There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the June 14–15 meeting indicated that the pace of improvement in labor market conditions slowed in April and May but that real gross domestic product (GDP) appeared to be rising faster than in the first quarter. Consumer price inflation continued to run below the Committee's longer-run objective of 2 percent, restrained in part by earlier decreases in energy prices and in prices of non-energy imports. Survey-based measures of longer-run inflation expectations were mixed in recent months, while market-based measures of inflation compensation declined from levels that were already low.

Total nonfarm payroll employment gains slowed in April and May, even after adjusting for the effects of a strike at a large telecommunications company. The unemployment rate dropped to 4.7 percent in May, partly reflecting an unusually large number of unemployed persons exiting the labor force. Over the first two months of the second quarter, both the labor force participation rate and the employment-to-population ratio moved down on net. The share of workers employed part time for economic reasons rose noticeably in May. Although the rate of private-sector job openings remained elevated, the rate of hires declined in both March and April and the rate of quits was unchanged. The four-week moving average of initial claims for unemployment insurance benefits moved up a little, on net, from late April to early June but was still at a low level. Labor productivity growth remained slow over the four quarters ending in the first quarter of 2016. Measures of labor compensation continued to rise at a moderate pace on balance: Compensation per hour in the nonfarm business sector increased 3¾ percent over the four quarters ending in the first quarter, the employment cost index for private workers rose 1¾ percent over the 12 months ending in March, and average hourly earnings for all employees increased 2½ percent over the 12 months ending in May.

The unemployment rates for African Americans and for Hispanics stayed above the rate for whites, although the differentials in jobless rates across the different groups were similar to those before the most recent recession. The share of African American and Hispanic workers employed part time for economic reasons remained higher than for whites, and the gap in these rates was wider than in the years just before the most recent recession.

Total industrial production (IP) rose in April, principally reflecting a rebound in the output of utilities following a couple of unseasonably warm winter months as well as a moderate increase in manufacturing production. Meanwhile, mining output continued to contract as a result of further declines in drilling activity, a slower pace of crude oil extraction, and a continued pullback in coal production. A variety of indicators—including manufacturing production worker hours, motor vehicle assemblies, and oil and gas extraction and drilling activity—suggested that IP likely declined in May. Automakers' assembly schedules and mixed readings on other indicators of manufacturing production, such as new orders from national and regional manufacturing surveys, pointed to only subdued gains in factory output over the next few months.

Growth in real personal consumption expenditures (PCE) appeared to be picking up in the second quarter. The components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE rose at a solid pace in April and May, and sales of light motor vehicles rebounded after dipping in March. The apparent pickup in real PCE growth was consistent with recent readings on key factors that influence consumer spending. Gains in real disposable personal income continued to be solid in March and April, and households' net worth was boosted by further strong increases in home values through April. Also, consumer sentiment as measured by the University of Michigan Surveys of Consumers remained upbeat in early June.

Recent information on housing activity was broadly consistent with a continued gradual recovery in this sector. Starts for new single-family homes increased in April but were below the average pace in the first quarter, and building permit issuance remained essentially flat at the level that prevailed since late last year. The pace of starts for multifamily units moved up in April and was faster than in the first quarter. Sales of both new and existing homes rose in April.

Real private expenditures for business equipment and intellectual property appeared to be relatively flat early in the second quarter after declining sharply in the previous quarter. Nominal shipments of nondefense capital goods excluding aircraft edged up in April, and forward-looking indicators, such as new orders for these capital goods and recent readings from national and regional surveys of business conditions, suggested little change in business equipment spending in the near term. Firms'

nominal spending for nonresidential structures excluding drilling and mining was little changed, on net, in March and April. The number of oil and gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, fell through late May but edged up in early June.

Total real government purchases rose modestly in the first quarter and appeared to be increasing at about the same pace in the second quarter. Nominal outlays for defense in April and May pointed to an increase in real federal purchases in the second quarter, after such purchases had declined in the first quarter. In contrast, real state and local government purchases seemed to be edging down in the second quarter; the payrolls of these governments were little changed, on net, in April and May, and their nominal spending for construction declined in April.

The U.S. international trade deficit narrowed substantially in March, with a sharp decline in imports more than offsetting a fall in exports. The March data, together with revised estimates for earlier months, suggested that real exports were about flat in the first quarter while imports fell slightly. In April, the deficit widened as imports recovered somewhat, but it remained narrower than its first-quarter average.

Total U.S. consumer prices, as measured by the PCE price index, increased about 1 percent over the 12 months ending in April, partly restrained by earlier declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was a little above 1½ percent over the same 12-month period, held down in part by decreases in the prices of non-energy imports over much of this period and the pass-through of the declines in energy prices to prices of other goods and services. Over the 12 months ending in April, total consumer prices as measured by the consumer price index (CPI) also rose about 1 percent, while core CPI inflation was a little above 2 percent. The Michigan survey measure of longer-run inflation expectations fell to its lowest level on record in early June, but other measures of such expectations—including those from the Survey of Professional Forecasters and from the Desk's Survey of Primary Dealers and Survey of Market Participants—were generally little changed, on balance, in recent months.

Foreign real GDP growth picked up in the first quarter, supported by relatively robust increases in Canada, the euro area, Japan, and Mexico. However, the pace of growth appeared to slow in many foreign economies in the second quarter, although in some cases as a result of what were likely to be temporary disruptions, including wildfires in Canada and an earthquake in Japan. In the United Kingdom, uncertainty about the outcome of the referendum on exit from the European Union seemed to be holding down investment. In contrast, indicators for emerging Asia, including China, suggested that economic growth picked up in the second quarter. Inflation remained low in the advanced foreign economies (AFEs), in part reflecting previous declines in energy prices. Inflation also continued to be subdued in most emerging market economies (EMEs).

Staff Review of the Financial Situation

Domestic financial market conditions remained accommodative over the intermeeting period. Equity price indexes and corporate bond spreads were little changed, on net, and, in aggregate, corporations continued to tap credit markets at a solid pace. Credit also remained broadly available to households, except for higher-risk borrowers in some markets. The expected near-term path of the federal funds rate implied by market quotes varied notably over the intermeeting period. On balance, it flattened, largely in response to the disappointing May employment report and growing concerns among investors about the British referendum on membership in the European Union. The flatter expected path of the federal funds rate, along with an apparent decline in global risk sentiment early in the period, contributed to an appreciable reduction in longer-term Treasury yields.

Market-based estimates of the probability of a hike in the federal funds rate at the June FOMC meeting were variable during the intermeeting period. The probability of an increase in June fell to near zero in early May in response to incoming economic data, jumped to about 30 percent after the release of the April FOMC minutes and other Federal Reserve communications, and dropped again to near zero after the May employment report. The expected path of the federal funds rate for the medium term implied by market quotes declined somewhat on net. The average probability assigned by respondents to the Desk's June Survey of Primary Dealers and Survey of Market Participants was near zero for a rate hike in June and around 20 percent for a rate increase in July. The median respondent in each survey indicated that the most likely outcome was only one hike in 2016, down from two in the April surveys.

The nominal Treasury yield curve flattened, on net, over the intermeeting period, mainly reflecting declines in longer-term rates; the flattening left the spread between yields on 2- and 10-year Treasury securities near its lowest level since 2007. Although a significant portion of

the declines in yields occurred following the release of the May employment report, yields at longer maturities had begun drifting down earlier in the period, consistent with an apparent deterioration in global risk sentiment. Yields moved lower late in the period amid growing concerns about the upcoming British referendum. Some market participants attributed the decline in Treasury yields in part to heavy demand from foreign investors faced with extraordinarily low yields on foreign sovereign securities. Inflation compensation based on Treasury Inflation-Protected Securities (TIPS) decreased, particularly at longer tenors. Measures of inflation compensation based on inflation swaps also declined, but less than TIPS-based measures, consistent with anecdotal reports suggesting that a portion of the declines in TIPS-based measures might have been driven by elevated demand for longer-term nominal Treasury securities.

Broad stock price indexes moved within narrow ranges but were modestly lower, on net, over the intermeeting period. However, one-month-ahead option-implied volatility on the S&P 500 index—the VIX—rose notably from fairly low levels and ended the period close to its historical median level. Spreads of 10-year triple-B-rated corporate bond yields over those on comparable-maturity Treasury securities were little changed on balance. High-yield spreads widened, mainly for firms outside of the energy sector; spreads on bonds for firms in the energy sector narrowed, likely in response to rising oil prices.

Overall financing conditions for nonfinancial firms improved a bit over the intermeeting period, remaining accommodative. Amid still-low yields, bond issuance by investment-grade corporations rose to a robust pace in May, and speculative-grade issuance also picked up. Growth of commercial and industrial (C&I) loans on banks' books remained strong in April and May, particularly at large banks. Following significant declines in the first quarter of 2016, gross issuance of leveraged loans increased slightly in April and May, as refinancing was reportedly boosted by lower loan spreads. Equity issuance by nonfinancial firms through initial public offerings remained subdued over the intermeeting period. Meanwhile, nonfinancial firms continued to repurchase their shares at a brisk pace in the first quarter, and dividends stayed near record levels.

Recent developments pointed to some decline in the credit quality of nonfinancial firms. The percentage of C&I loans entering delinquency or being charged off increased further in the first quarter, the default rate of corporate bonds moved up in April, and downgrades of nonfinancial bonds significantly outpaced upgrades in May. Expected year-ahead default rates for nonfinancial firms remained moderately elevated relative to previous expansions, while those for oil companies continued to be high.

Financing conditions for commercial real estate remained fairly accommodative. All major categories of commercial real estate loans on banks' books increased briskly during April and May. However, spreads on commercial mortgage-backed securities (CMBS) stayed elevated, continuing to depress CMBS issuance.

On balance, credit conditions in municipal bond markets continued to be stable. Yield spreads on general obligation municipal bonds were little changed, and gross issuance remained solid. The default by Puerto Rico's Government Development Bank on debt payments due in early May was widely expected and elicited limited reaction in broader municipal bond markets.

Conditions in consumer credit markets were little changed and generally remained accommodative. Consumer loan balances continued to increase at a robust pace in recent months, with year-over-year growth in credit card balances outstanding continuing to trend upward. Credit in mortgage markets stayed tight for borrowers with low credit scores, hard-to-document income, or high debt-to-income ratios. Interest rates on 30-year fixed-rate mortgages declined and continued to be low by historical standards.

Over the intermeeting period, developments in global financial markets were driven in large part by shifting views on the expected path of U.S. monetary policy and by fluctuating expectations about the outcome of the U.K. vote on membership in the European Union. The exchange value of the U.S. dollar rose in the middle of the intermeeting period along with expectations for less accommodative Federal Reserve monetary policy. However, the dollar partially retraced these increases following the much weaker-than-expected U.S. employment report for May, finishing the period a bit stronger against the currencies of the AFEs and about 3 percent higher against EME currencies. In contrast to its changes against most currencies, the dollar depreciated against the Japanese yen, in large part because of the unexpected decision by the Bank of Japan not to ease policy further at its April meeting. AFE sovereign yields declined, with U.K. yields in particular being weighed down following polls showing an increase in support for the "leave" vote in the upcoming referendum. Decreases in equity indexes in the AFEs, particularly in Europe, also report-

edly reflected concerns about the possibility of a successful "leave" vote. Most EME equity markets also edged lower.

Staff Economic Outlook

In the U.S. economic forecast prepared by the staff for the June FOMC meeting, real GDP growth was estimated to have been faster in the first quarter than in the April forecast, and the incoming information was consistent with a moderate pickup in GDP growth in the second quarter. Real GDP was projected to rise a little slower in the second half of this year than in the previous forecast and to increase at about the same pace thereafter; the small boosts to real GDP growth implied by a lower assumed path for interest rates and by a slightly stronger trajectory for home values were essentially offset by restraint from higher projected paths for the foreign exchange value of the dollar and for oil prices. The staff continued to forecast that real GDP would expand at a modestly faster pace than potential output in 2016 through 2018, supported primarily by increases in consumer spending. The unemployment rate was expected to remain relatively flat over the second half of the year and then to gradually decline further; over this period, the unemployment rate was projected to run somewhat below the staff's estimate of its longer-run natural rate.

The staff's forecast for inflation was little changed from the previous projection. The staff continued to project that inflation would increase over the next several years, as energy prices and the prices of non-energy imports were expected to begin steadily rising this year. However, inflation was still projected to be slightly below the Committee's longer-run objective of 2 percent in 2018.

The staff viewed the uncertainty around its April 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, reflecting the staff's assessment that neither monetary nor fiscal policy was well positioned to help the economy withstand substantial adverse shocks. In addition, the staff continued to see the risks to the forecast from developments abroad as skewed to the downside. 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 still judged as weighted to the downside, reflecting the possibility that longer-term inflation expectations may have edged down.

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 GDP growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 through 2018 and over the longer run.[4] Each participant's projections were conditioned on his or her judgment of appropriate monetary policy. 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. These projections and policy assessments are described in the Summary of Economic Projections, 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 pace of improvement in the labor market had slowed while growth in economic activity appeared to have picked up. Although the unemployment rate had declined, job gains had diminished. Growth in household spending had strengthened. Since the beginning of the year, the housing sector had continued to improve and the drag from net exports appeared to have lessened, but business fixed investment had been soft. Inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined; most survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

Participants generally expected that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would strengthen. Inflation was expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. Participants generally agreed that the Committee should continue to closely

[4] One participant did not submit longer-run projections in conjunction with the June 2016 FOMC meeting.

monitor inflation indicators and global economic and financial developments.

Growth of consumer spending appeared to have picked up from its slow pace in the first quarter. Retail sales posted strong gains in April and May, and sales of light motor vehicles moved back up. At the time of the April meeting, most participants had anticipated a rebound in consumer spending in light of the still-solid fundamental determinants of household spending. Some participants indicated that consumption was likely to continue being supported by these factors, which included ongoing gains in income, robust household balance sheets, and the positive assessment of current economic conditions that was evident in recent surveys of consumers. However, a few participants expressed caution about the outlook for consumer expenditures, noting that slower increases in employment and higher energy prices could restrain spending.

The housing sector continued to improve since the beginning of the year. Reports from a number of participants indicated that single-family construction was strengthening and house prices were rising in most parts of their Districts. However, some areas that were affected by the slowdown in the energy sector experienced house price declines or increases in mortgage delinquency rates.

Participants summarized survey readings and anecdotal reports on business conditions in their Districts. Those indicators were mixed regarding the pace of economic activity within the manufacturing sector. Some of the weakness in manufacturing activity was linked to the effects of earlier declines in oil prices on firms in the energy sector and to previous increases in the exchange value of the dollar, which had adversely affected exporters. But manufacturing activity was judged to have stabilized in a couple of Districts, and contacts there were optimistic about further improvement in the months ahead. It was noted that the recent increase in crude oil prices had improved the outlook for the energy sector. However, a couple of participants observed that financial strains caused by previous declines in energy prices had continued for firms or financial institutions in their Districts, and such difficulties were seen as likely to persist absent further increases in energy prices. Regarding the service sector, a few participants commented that activity and hiring continued to expand in their Districts. The near-term outlook for farm income remained weak despite recent increases in the futures prices of some agricultural commodities.

Available indicators suggested that the softness in business fixed investment since late last year persisted early in the second quarter. While weakness in the drilling and mining sector was attributable to the earlier declines in oil prices, participants identified a variety of potential causes of the broader weakness in investment spending, including a slowdown in corporate profits, concern about prospects for economic growth, heightened uncertainty regarding the future course of domestic regulatory and fiscal policies, and a persistent reluctance on the part of firms to undertake new projects in the wake of the financial crisis. Some participants mentioned that the sluggishness in business investment could portend a broader economic slowdown. A couple of participants also noted that elevated inventory levels could be a drag on economic growth in the near term. However, participants also cited factors that could lead to a pickup in business spending, including the recent turnaround in energy prices and the greater optimism on the part of firms indicated by surveys of businesses and anecdotal reports in some Districts.

The employment report for May showed considerably weaker growth in payrolls than had been expected, and gains in previous months were revised down. Although the unemployment rate fell in May, a drop in labor force participation accounted for the decline. Participants discussed a range of interpretations of these data. Many participants observed that, because of transitory factors, such as statistical noise and the effects of a strike in the telecommunications industry, the reported rate of payroll job growth likely understated its underlying pace; however, many participants thought that the underlying pace had slowed some from that of previous months. Some noted that other indicators did not corroborate a material weakening of labor market conditions. These indicators included a number of regional surveys of labor market conditions, relatively low levels of initial claims for unemployment insurance, surveys of business hiring plans, and positive views of labor market conditions in recent consumer surveys. In addition, a few participants commented that the movements in labor force participation in recent months were, on balance, consistent with its secular downtrend. In contrast, some noted that the lower rate of payroll gains could instead be indicative of a broader slowdown in growth of economic activity that was also evidenced by other downbeat labor market indicators, such as a decline in the diffusion indexes of industry payrolls, an increase in the number of workers reporting that they were working part time for economic reasons, or the recent sharp drop in labor force participation. Finally, a few participants

suggested that the weak employment growth may instead reflect supply constraints associated with a general tightening of labor market conditions. These participants saw the rising trend in wages, business reports of reduced worker availability, and high rate of job openings as supporting this interpretation. Others thought it unlikely that such constraints would have become evident so abruptly.

Almost all participants judged that the surprisingly weak May employment report increased their uncertainty about the outlook for the labor market. Even so, many remarked that they were reluctant to change their outlook materially based on one economic data release. Participants generally expected to see a resumption of monthly gains in payroll employment that would be sufficient to promote continued strengthening of the labor market. However, some noted that with labor market conditions at or near those consistent with maximum employment, it would be reasonable to anticipate that gains in payroll employment would soon moderate from the pace seen over the past few years.

Inflation continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Core PCE price inflation registered an increase of 1.6 percent for the 12 months ending in April, while recent readings on retail energy prices moved up notably. Most participants expected to see continued progress toward the Committee's 2 percent inflation objective. They viewed the firming in some measures of core inflation, the evidence that wage growth was picking up, the ongoing tightening of resource utilization, the recent firming in oil prices, and the stabilization of the foreign exchange value of the dollar this year as factors likely to boost inflation over time. However, other participants were less confident that inflation would return to its target level over the medium term. They thought that progress could be very slow, particularly in light of the likelihood that tighter resource utilization may impart only modest upward pressure on prices. They also saw important downside risks, including persistent disinflationary pressures from very low inflation and weak economic growth abroad as well as the softening in some survey-based measures of longer-term inflation expectations and market-based measures of inflation compensation.

Global financial conditions had improved since earlier in the year, and recent data on net exports suggested that the drag on domestic economic activity from the external sector had abated somewhat. Still, participants generally agreed that global economic and financial developments should continue to be monitored closely. Some participants indicated that prospects for economic activity in many foreign economies appeared to be subdued, that global inflation and interest rates remained very low by historical standards, and that recurring bouts of global financial market instability remained a risk. Most participants noted that the upcoming British referendum on membership in the European Union could generate financial market turbulence that could adversely affect domestic economic performance. Some also noted that continued uncertainty regarding the outlook for China's foreign exchange policy and the relatively high levels of debt in China and some other EMEs represented appreciable risks to global financial stability and economic performance.

In light of participants' updates to their economic projections, they discussed their current assessments of the appropriate trajectory of monetary policy over the medium term. Most still expected that the appropriate target range for the federal funds rate associated with their projections of further progress toward the Committee's statutory objectives would rise gradually in coming years. However, some noted that their forecasts were now consistent with a shallower path than they had expected at the time of the March meeting. Many participants commented that the level of the federal funds rate consistent with maintaining trend economic growth—the so-called neutral rate—appeared to be lower currently or was likely to be lower in the longer run than they had estimated earlier. While recognizing that the longer-run neutral rate was highly uncertain, many judged that it would likely remain low relative to historical standards, held down by factors such as slow productivity growth and demographic trends. Several noted that in the prevailing circumstances of considerable uncertainty about the neutral federal funds rate, the Committee could better gauge the effects of increases in the federal funds rate on the economy if it proceeded gradually in adjusting policy.

Participants weighed a number of considerations in assessing the conditions under which it would be appropriate to increase the target range for the federal funds rate. Most participants indicated that they made only small changes to their forecasts for achieving and maintaining the Committee's objectives of maximum employment and 2 percent inflation over the medium term. Several noted that the fundamentals underlying their forecasts remained solid, with several mentioning, in particular, that financial conditions were accommodative

and household balance sheets had improved. In evaluating recent economic information, participants generally agreed that it was advisable to avoid overreacting to one or two labor market reports; however, the implications of the recent data on labor market conditions for the economic outlook were uncertain. Most judged that they would need to accumulate additional information on the labor market, production, and spending to help clarify how the economy was evolving in order to evaluate whether the stance of monetary policy should be adjusted. In addition, participants generally thought that it would be prudent to wait for the outcome of the upcoming referendum in the United Kingdom on membership in the European Union in order to assess the consequences of the vote for global financial market conditions and the U.S. economic outlook.

Most participants judged that, in the absence of significant economic or financial shocks, raising the target range for the federal funds rate would be appropriate if incoming information confirmed that economic growth had picked up, that job gains were continuing at a pace sufficient to sustain progress toward the Committee's maximum-employment objective, and that inflation was likely to rise to 2 percent over the medium term. Some participants viewed a broad range of labor market indicators as well as the recent firming in wages as consistent with a high level of labor utilization. They also pointed out that core inflation had begun to move up and that the transitory factors that had been holding down headline inflation were receding. Several of these participants expressed concern that a delay in resuming further gradual increases in the federal funds rate would increase the risks to financial stability or would raise the potential for overshooting the Committee's objectives; such an overshooting might require a rapid removal of policy accommodation at some point in the future, which could entail significant risks for U.S. financial markets and the economy.

However, some other participants were uncertain whether economic conditions would soon warrant an increase in the target range for the federal funds rate. Several of them noted downside risks to the outlook for growth in economic activity and for further improvement in labor market conditions, including the possibility that the sharp slowdown in employment gains and the continued weakness in business fixed investment signaled a downshift in economic growth, as well as the potential for global economic or financial shocks. Moreover, several of them worried about the declines in measures of inflation compensation and in some survey-based measures of inflation expectations and suggested that monetary policy may need to remain accommodative for some time in order to move inflation closer to 2 percent on a sustained basis. A few pointed out that with inflation likely to remain low for some time and to rise only gradually, maintaining an accommodative stance of policy could extend the strengthening of the labor market. In addition, several participants observed that because short-term interest rates were still near zero, monetary policy could, if necessary, respond more effectively to surprisingly strong inflationary pressures in the future than to a weakening in the labor market and falling inflation.

A number of participants emphasized that the Committee's approach to policy-setting was necessarily data dependent given the uncertainties associated with medium-term forecasts of economic activity and, accordingly, with the appropriate policy path over the medium term. It was noted that their expectations for the federal funds rate did not represent a preset plan and could change as incoming information influenced their views of the economic outlook and the risks associated with it. Several participants expressed concern that the Committee's communications had not been fully effective in informing the public how incoming information affected the Committee's view of the economic outlook, its degree of confidence in the outlook, or the implications for the trajectory of monetary policy.

Committee Policy Action

In their consideration of monetary policy for the period ahead, members judged that the information received since the Committee met in April indicated that the pace of improvement in labor market conditions had slowed in recent months while growth in economic activity appeared to have picked up from the low rates recorded in the fourth quarter of 2015 and the first quarter of 2016. Although the unemployment rate had declined over the intermeeting period, job gains had diminished. After only a modest increase early in the year, growth in household spending had strengthened in recent months. Since the beginning of the year, the housing sector had continued to improve and the drag from net exports had lessened, but business fixed investment had been soft. Inflation continued to run below the Committee's 2 percent objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined over the intermeeting period; most survey-based measures of inflation expectations were little changed.

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 indicators would strengthen. Most members made only small changes to their forecasts for economic activity and the labor market. Most judged it appropriate to avoid overweighting one or two labor market reports in their consideration of the economic outlook, but they indicated that the recent slowing in payroll employment gains had increased their uncertainty about the likely pace of improvements in the labor market going forward. Many noted that the slowdown could be a temporary aberration and that other labor market indicators—such as new claims for unemployment insurance, the rate of job openings, and readings on consumers' perceptions of the labor market—remained positive. Some of them judged that labor market conditions were now at or close to the Committee's objectives and pointed out that some moderation in employment gains was to be expected when such conditions were near those consistent with maximum employment. However, other members observed that the recent soft readings on payroll jobs as well as the decline in the labor force participation rate and the absence of further reductions in the number of individuals who were working part time for economic reasons in recent months suggested a possible downshift in the pace of improvement in the labor market.

An additional factor in the Committee's policy deliberations was the upcoming U.K. referendum on membership in the European Union. Members noted the considerable uncertainty about the outcome of the vote and its potential economic and financial market consequences. They indicated that they would closely monitor developments associated with the referendum as well as other global economic and financial developments that could affect the U.S. outlook.

Members expected inflation to remain low in the near term, in part because of earlier declines in energy prices, but most anticipated that inflation would rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. Although headline inflation continued to run below the Committee's objective, some members observed that core inflation had risen, and one member noted that the annual rate of increase in core PCE inflation in the first quarter had exceeded 2 percent. However, several others continued to see downside risks to inflation, citing the decline in inflation expectations and the risk of adverse shocks to U.S. economic activity from developments abroad. In light of the current shortfall of inflation from 2 percent, the Committee agreed to continue carefully monitoring actual and expected progress toward its inflation goal.

After assessing the outlook for economic activity, the labor market, and inflation, and after weighing the uncertainties associated with the outlook, members agreed to leave the target range for the federal funds rate unchanged at ¼ to ½ percent at this meeting. Members generally agreed that, before assessing whether another step in removing monetary accommodation was warranted, it was prudent to wait for additional data regarding labor market conditions as well as information that would allow them to assess the consequences of the U.K. vote for global financial conditions and the U.S. economic outlook. They judged that their decisions about the appropriate level of the federal funds rate in coming months would depend importantly on whether incoming information corroborated the Committee's expectations for economic activity, the labor market, and inflation. Some of them emphasized that, with labor market conditions and inflation at or close to the Committee's objectives, taking another step in removing monetary accommodation should not be delayed too long. However, a couple of members underscored that they would need to accumulate sufficient evidence to increase their confidence that economic growth was strong enough to withstand a possible downward shock to demand and that inflation was moving closer to 2 percent on a sustained basis.

Members reiterated 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. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate, and the federal funds rate was likely to remain, for some time, below levels that were expected to prevail in the longer run. Members emphasized that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data. In that regard, they judged it appropriate to continue to leave their policy options open and maintain the flexibility to adjust the stance of policy based on how incoming information affected the Committee's assessment of the outlook for economic activity, the labor market, and inflation as well as the risks to the outlook.

The Committee also 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, and it anticipated doing so until normalization 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.

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 June 16, 2016, 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 ¼ to ½ 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 0.25 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 April indicates that the pace of improvement in the labor market has slowed while growth in economic activity appears to have picked up. Although the unemployment rate has declined, job gains have diminished. Growth in household spending has strengthened. Since the beginning of the year, the housing sector has continued to improve and the drag from net exports appears to have lessened, but business fixed investment has been soft. Inflation has continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined; most survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee currently expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market indicators will strengthen. Inflation is expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further. The Committee continues to closely monitor inflation indicators and global economic and financial developments.
>
> Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a 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. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The

Committee expects that economic conditions will evolve in a manner that will warrant only 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, James Bullard, Stanley Fischer, Esther L. George, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: None.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, July 26–27, 2016. The meeting adjourned at 10:30 a.m. on June 15, 2016.

Notation Vote
By notation vote completed on May 17, 2016, the Committee unanimously approved the minutes of the Committee meeting held on April 26–27, 2016.

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Brian F. Madigan
Secretary

Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on June 14–15, 2016, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 to 2018 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 and assumptions about the 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. "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.

FOMC participants generally expected that, under appropriate monetary policy, growth in real gross domestic product (GDP) this year, next year, and in 2018 would be at or quite close to their individual estimates of GDP growth over the longer run. All but a few participants projected that the unemployment rate at the end of this year will be at or below its longer-run normal rate and expected it to edge lower next year. For 2018, nearly all participants expected the unemployment rate to be at or a bit below its longer-run level. Almost all participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase this year and over the next two years, and most expected inflation to have converged to the Committee's objective of 2 percent by 2018. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, almost all participants expected that it would be appropriate for the target range for the federal funds rate to rise gradually as the economy steadily progresses toward the Committee's longer-run goals of maximum employment and 2 percent inflation. Indeed, participants generally judged that the federal funds rate in 2018 would still be below their estimates of its longer-run rate. However, because the economic outlook is inherently uncertain, participants' assessments of appropriate policy were also uncertain and likely would change in response to revisions to their economic outlooks and associated risks.

Participants generally viewed the level of uncertainty associated with their individual forecasts for economic growth, unemployment, and inflation as broadly similar to the norms of the previous 20 years. Most participants also judged the risks around their projections for economic activity and inflation as broadly balanced, although many participants saw the risks to their GDP growth and inflation forecasts as weighted to the downside. In addition, some participants viewed the risks to their forecasts of the unemployment rate as tilted to the upside.

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 percent for each year from 2016 through 2018, the same as the median of their projections of the longer-run GDP growth rate. However, a majority of participants expected that real GDP growth would pick up a bit in 2017 from this year's pace, and most expected it to remain at or above their estimates of its longer-run pace in 2018. Participants pointed to a number of factors that they expected would contribute to moderate output growth over the next few years, including a diminution of the drag on net exports from a strong dollar, the continued improvements in household and business balance sheets, accommodative financial conditions, and somewhat more supportive fiscal policy.

Participants' median projections for real GDP growth in 2016 and 2017 were slightly lower than the medians shown in the March 2016 Summary of Economic Projections (SEP). Participants who lowered their projections for near-term GDP growth generally attributed their revisions to weaker-than-expected growth in the first quarter and soft readings on economic activity in recent months, particularly those on business spending. Although several participants also reduced their forecasts for real GDP growth in 2018 and in the longer run,

[1] One participant did not submit longer-run projections in conjunction with the June 2016 FOMC meeting.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, June 2016

Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2016	2017	2018	Longer run	2016	2017	2018	Longer run	2016	2017	2018	Longer run
Change in real GDP	2.0	2.0	2.0	2.0	1.9 – 2.0	1.9 – 2.2	1.8 – 2.1	1.8 – 2.0	1.8 – 2.2	1.6 – 2.4	1.5 – 2.2	1.6 – 2.4
March projection	2.2	2.1	2.0	2.0	2.1 – 2.3	2.0 – 2.3	1.8 – 2.1	1.8 – 2.1	1.9 – 2.5	1.7 – 2.3	1.8 – 2.3	1.8 – 2.4
Unemployment rate	4.7	4.6	4.6	4.8	4.6 – 4.8	4.5 – 4.7	4.4 – 4.8	4.7 – 5.0	4.5 – 4.9	4.3 – 4.8	4.3 – 5.0	4.6 – 5.0
March projection	4.7	4.6	4.5	4.8	4.6 – 4.8	4.5 – 4.7	4.5 – 5.0	4.7 – 5.0	4.5 – 4.9	4.3 – 4.9	4.3 – 5.0	4.7 – 5.8
PCE inflation	1.4	1.9	2.0	2.0	1.3 – 1.7	1.7 – 2.0	1.9 – 2.0	2.0	1.3 – 2.0	1.6 – 2.0	1.8 – 2.1	2.0
March projection	1.2	1.9	2.0	2.0	1.0 – 1.6	1.7 – 2.0	1.9 – 2.0	2.0	1.0 – 1.6	1.6 – 2.0	1.8 – 2.0	2.0
Core PCE inflation[4]	1.7	1.9	2.0		1.6 – 1.8	1.7 – 2.0	1.9 – 2.0		1.3 – 2.0	1.6 – 2.0	1.8 – 2.1	
March projection	1.6	1.8	2.0		1.4 – 1.7	1.7 – 2.0	1.9 – 2.0		1.4 – 2.1	1.6 – 2.0	1.8 – 2.0	
Memo: Projected appropriate policy path												
Federal funds rate	0.9	1.6	2.4	3.0	0.6 – 0.9	1.4 – 1.9	2.1 – 2.9	3.0 – 3.3	0.6 – 1.4	0.6 – 2.4	0.6 – 3.4	2.8 – 3.8
March projection	0.9	1.9	3.0	3.3	0.9 – 1.4	1.6 – 2.4	2.5 – 3.3	3.0 – 3.5	0.6 – 1.4	1.6 – 2.8	2.1 – 3.9	3.0 – 4.0

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 March projections were made in conjunction with the meeting of the Federal Open Market Committee on March 15–16, 2016. One participant did not submit longer-run projections in conjunction with the June 14–15, 2016 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.

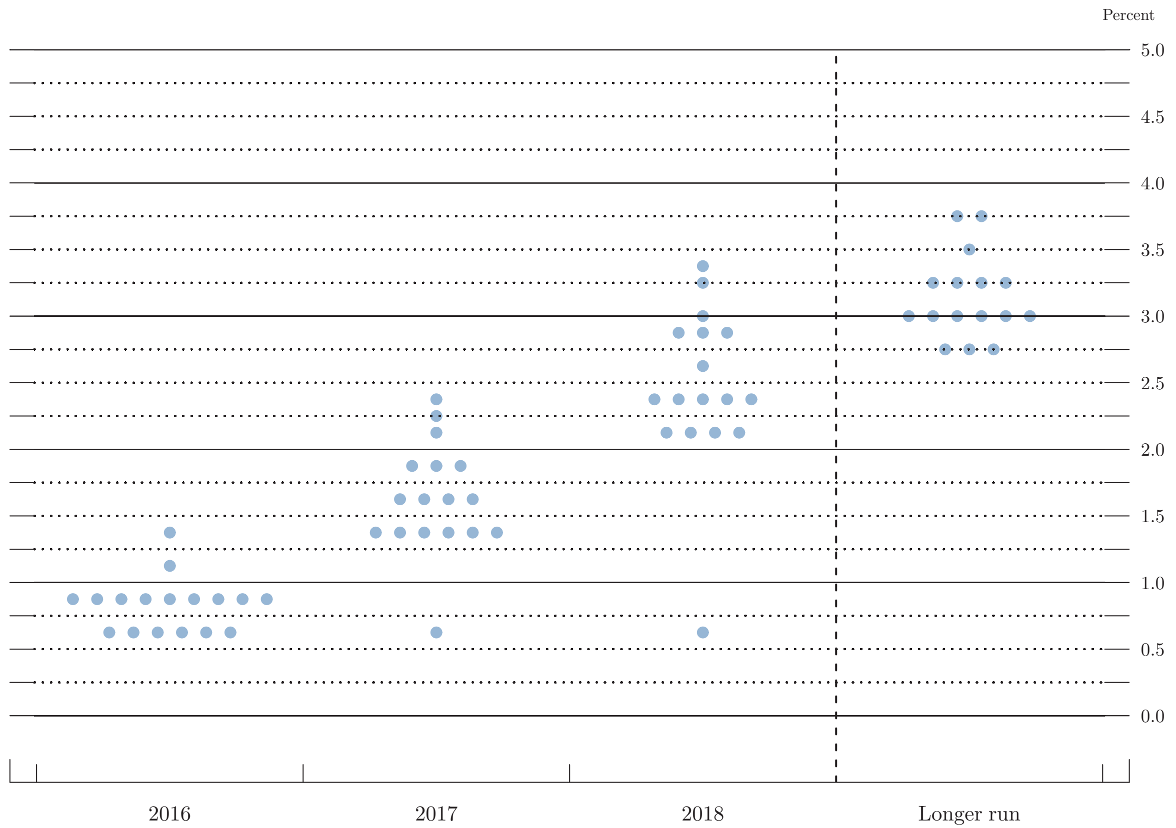
3. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

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

Figure 1. Medians, central tendencies, and ranges of economic projections, 2016–18 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.

those downward revisions did not alter the median forecasts.

The median of projections for the unemployment rate edged down from 4.7 percent at the end of 2016 to 4.6 percent in 2017 and remained at that level in 2018, modestly below the median assessment of the longer-run normal unemployment rate of 4.8 percent. The medians and ranges of the unemployment rate projections for 2016 to 2018 were nearly unchanged from March.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2016 through 2018 and in the longer run. The distribution of individual projections of GDP growth for 2016 shifted lower relative to the distribution of the March projections. The distributions of projections for GDP growth over the next two years and in the longer run also shifted down. For this year and next, the distributions of projections for the unemployment rate were little changed, while the distribution for 2018 became less dispersed.

The Outlook for Inflation

In the June SEP, the median of projections for headline PCE price inflation in 2016 was 1.4 percent, a bit higher than in March. Many participants pointed to stronger-than-expected readings on inflation early this year, as well as to the recent stabilization of oil prices, as factors contributing to the upward revision to their inflation projections. The projections for headline PCE price inflation over the next two years and in the longer run were little changed since March, with the median inflation projection still rising to 1.9 percent in 2017 and to the Committee's objective of 2 percent in 2018. Almost all participants projected that inflation will be within 0.1 percentage point of the Committee's objective by 2018. The median of individual projections for core PCE price inflation also increases gradually over the next two years.

Figures 3.C and 3.D provide information on the distribution of participants' views about the outlook for inflation. The distribution of projections for headline PCE price inflation for this year shifted up relative to projections for the March meeting. The distribution of projections for core PCE price inflation this year also moved to the right on balance. For 2017 and 2018, the distributions of projections for both total and core PCE price inflation were nearly unchanged.

Appropriate Monetary Policy

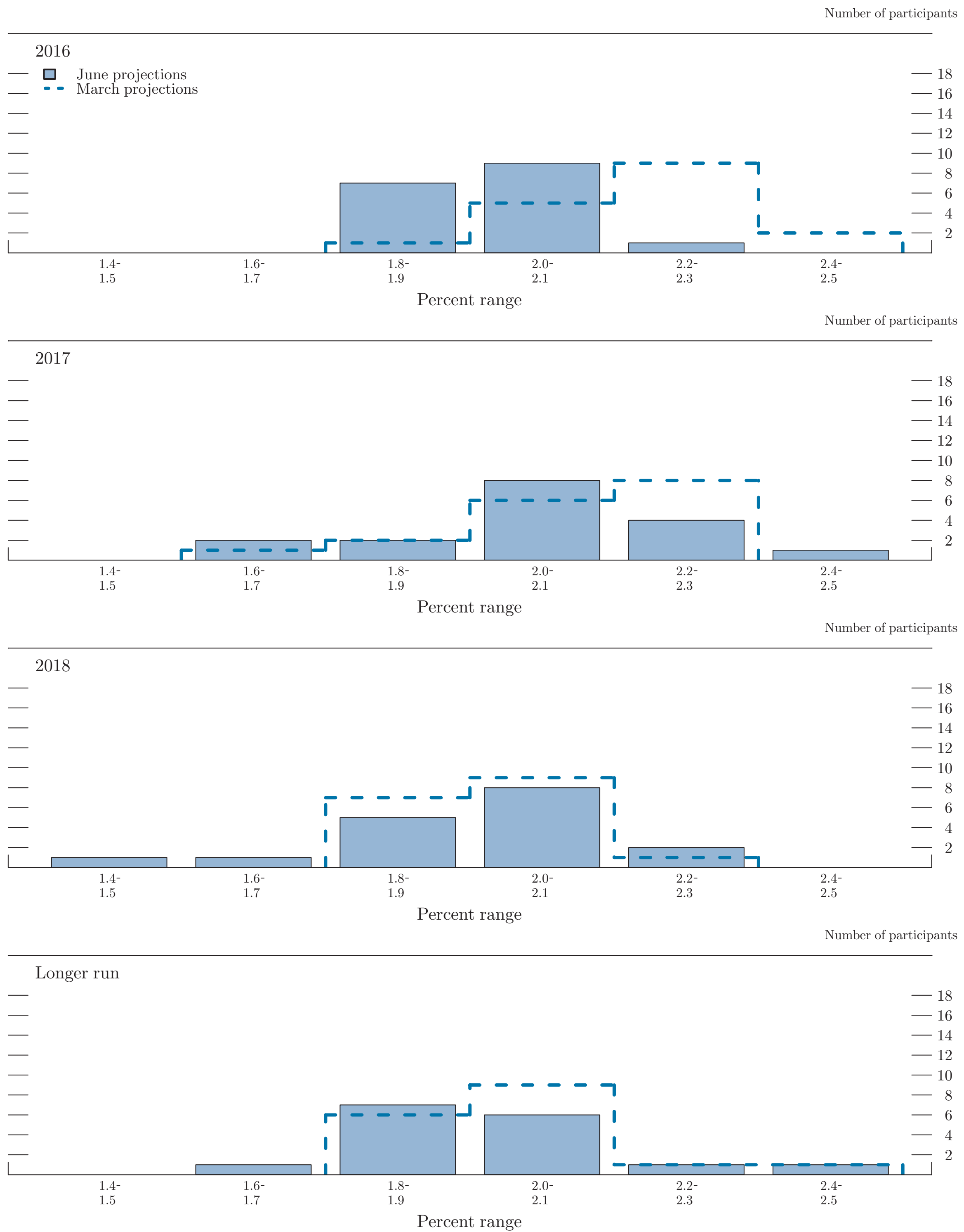
Figure 3.E provides the distribution of participants' judgments regarding the appropriate level of the target federal funds rate at the end of each year from 2016 to 2018 and over the longer run.[2] The distributions for 2016 to 2018 and for the longer run shifted to the left. The median projection for the federal funds rate rises gradually from 0.88 percent at the end of 2016 to 1.63 percent at the end of 2017 and 2.38 percent at the end of 2018; the median for the longer-run projections of the federal funds rate is 3 percent. Although the median federal funds rate at the end of 2016 was unchanged from the March projection, a majority of participants revised down their projections for that year, most by 0.25 percentage point. For 2017 and 2018, the median projections were 0.25 percentage point and 0.62 percentage point lower, respectively, than in March.

Compared with the March SEP, the median of participants' projections for the federal funds rate in the longer run moved down 0.25 percentage point. This change reflected downward revisions by about half of the participants.

Participants' projections for the path of the federal funds rate represented their individual assessments of appropriate monetary policy consistent with their projections of economic growth, employment, inflation, and other factors. In discussing their June forecasts, many participants expressed a view that increases in the federal funds rate over the next several years would need to be gradual in light of a short-term neutral interest rate that was currently low—a phenomenon that several participants attributed to the persistence of factors that restrained spending over recent years—and that was likely to rise only slowly as the effects of those factors faded over time. Some participants noted the proximity of short-term nominal interest rates to the effective lower bound as limiting the Committee's ability to increase monetary accommodation to counter adverse shocks to the economy should they occur. They judged that, as a result, the Committee should take a cautious approach to monetary

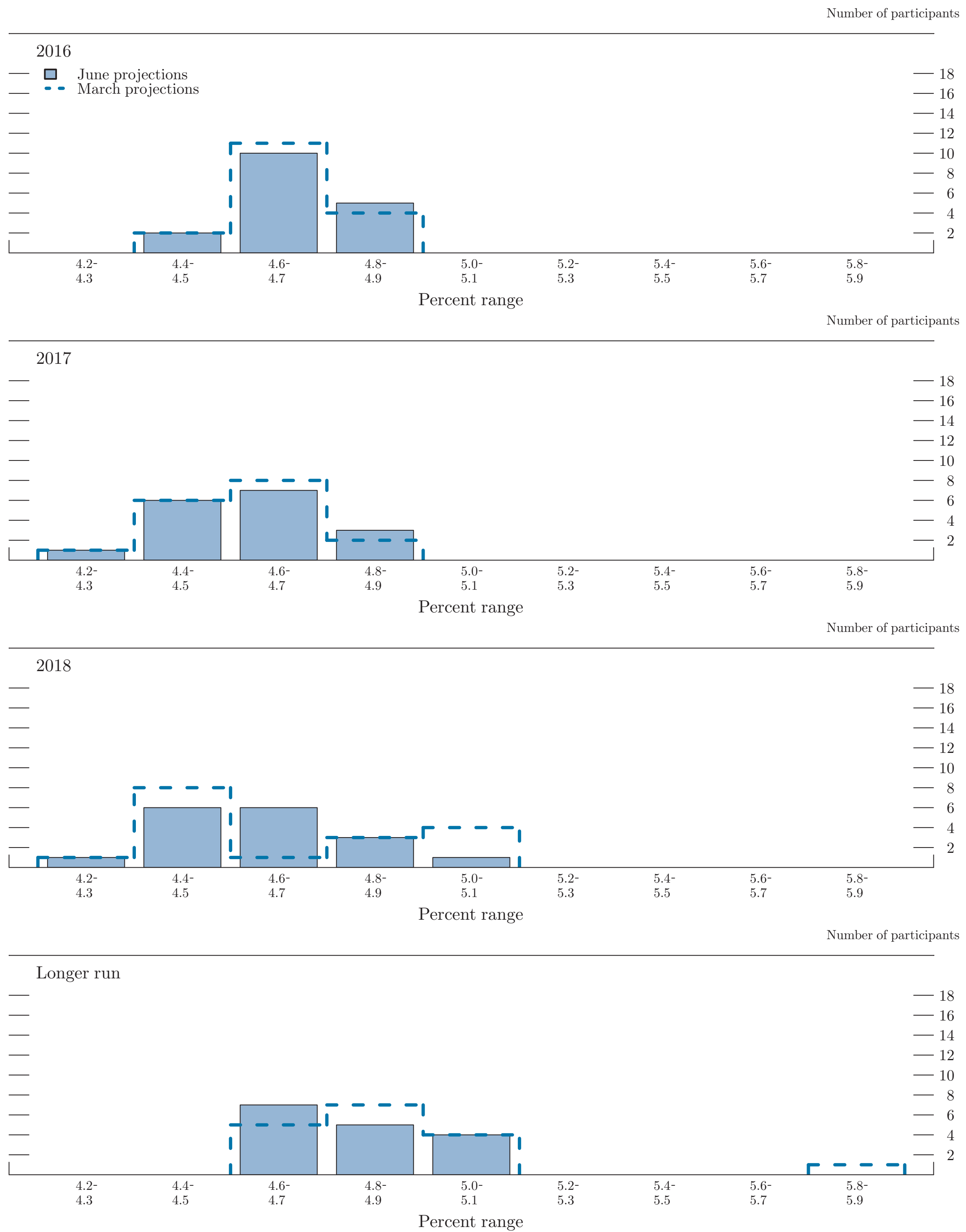
[2] One participant's projections for the federal funds rate, GDP growth, the unemployment rate, and inflation were informed by the view that there are multiple possible medium-term regimes for the U.S. economy, that these regimes are persistent, and that the economy shifts between regimes in a way that 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 cannot be usefully projected.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2016–18 and over the longer run



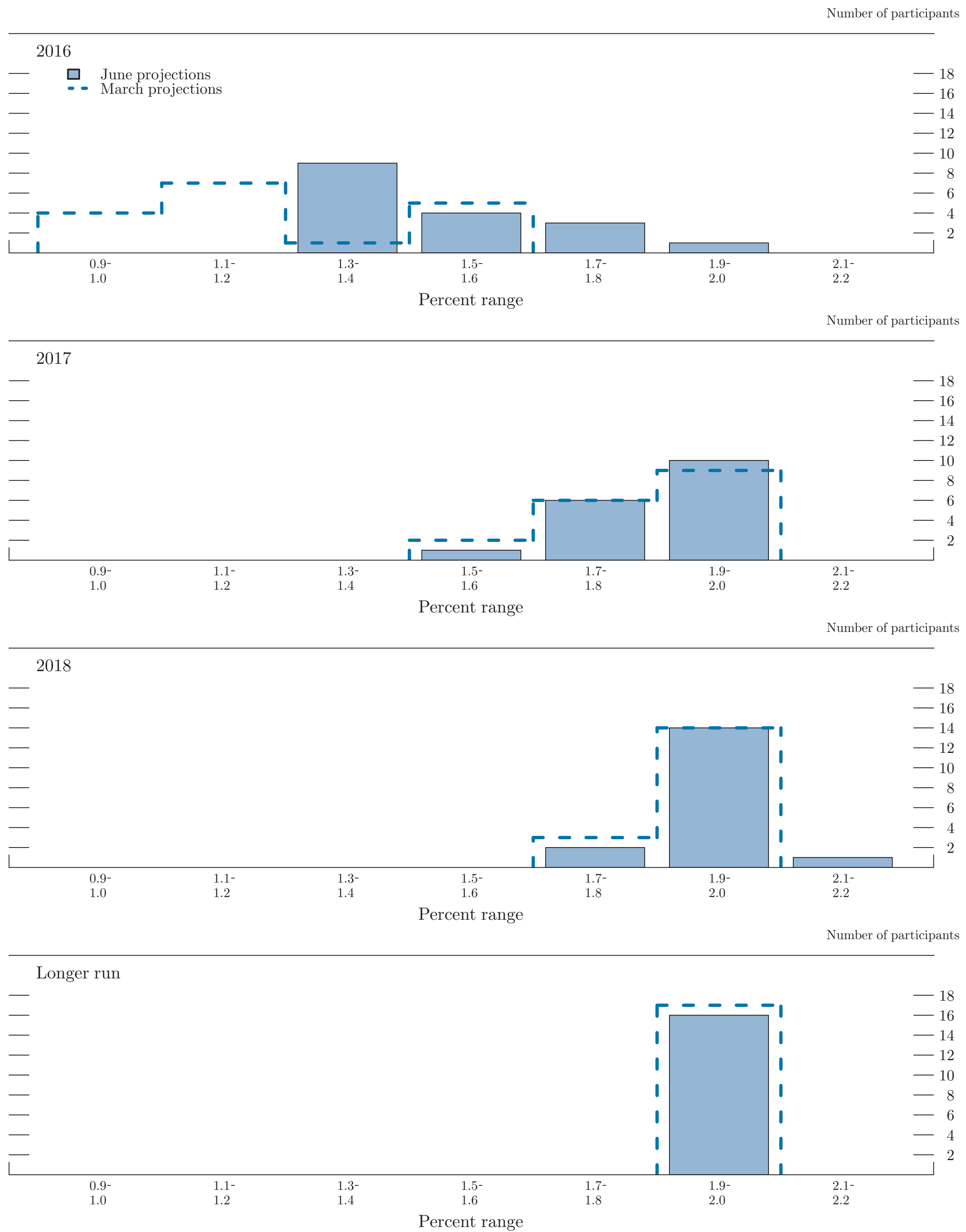
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2016–18 and over the longer run



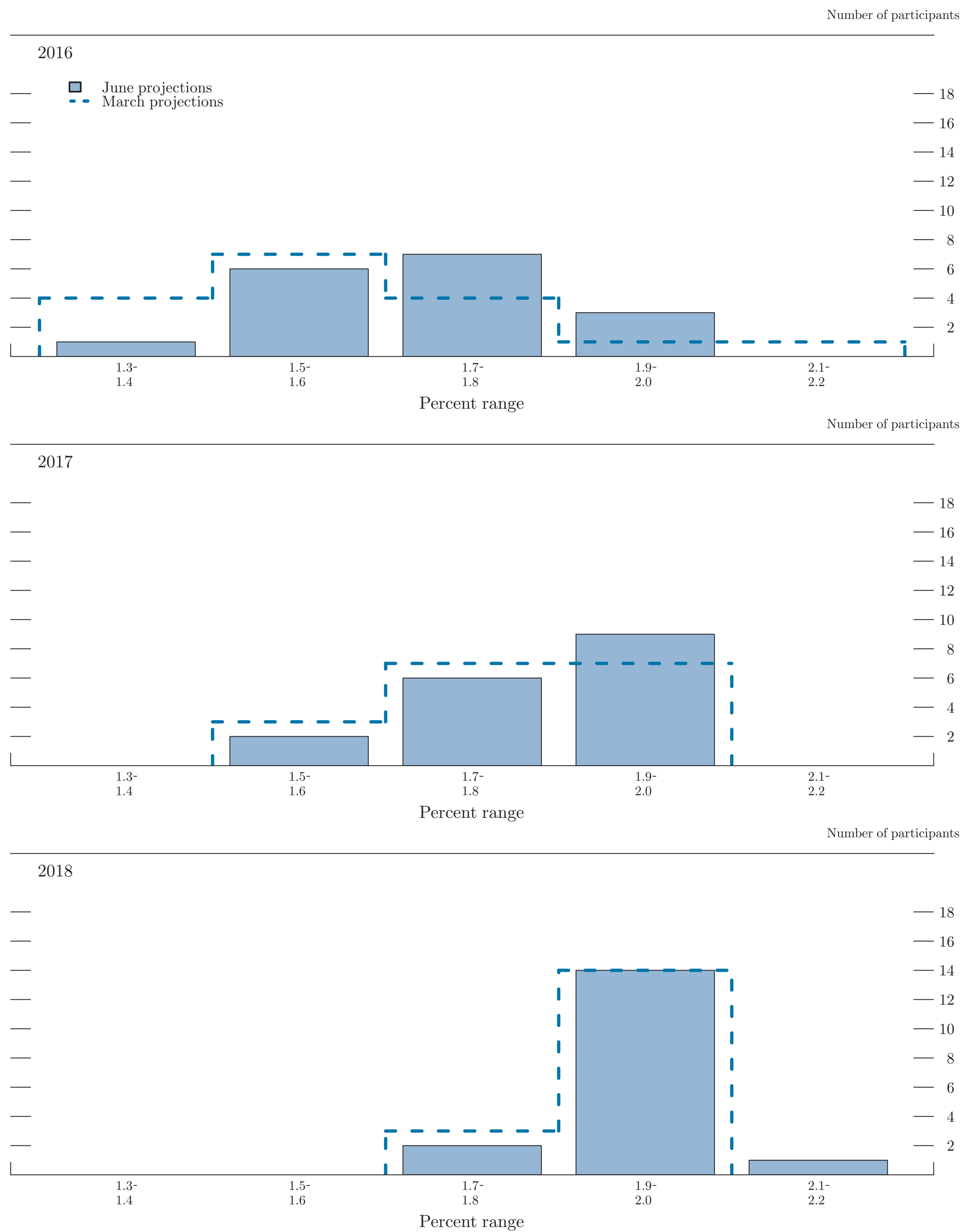
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2016–18 and over the longer run



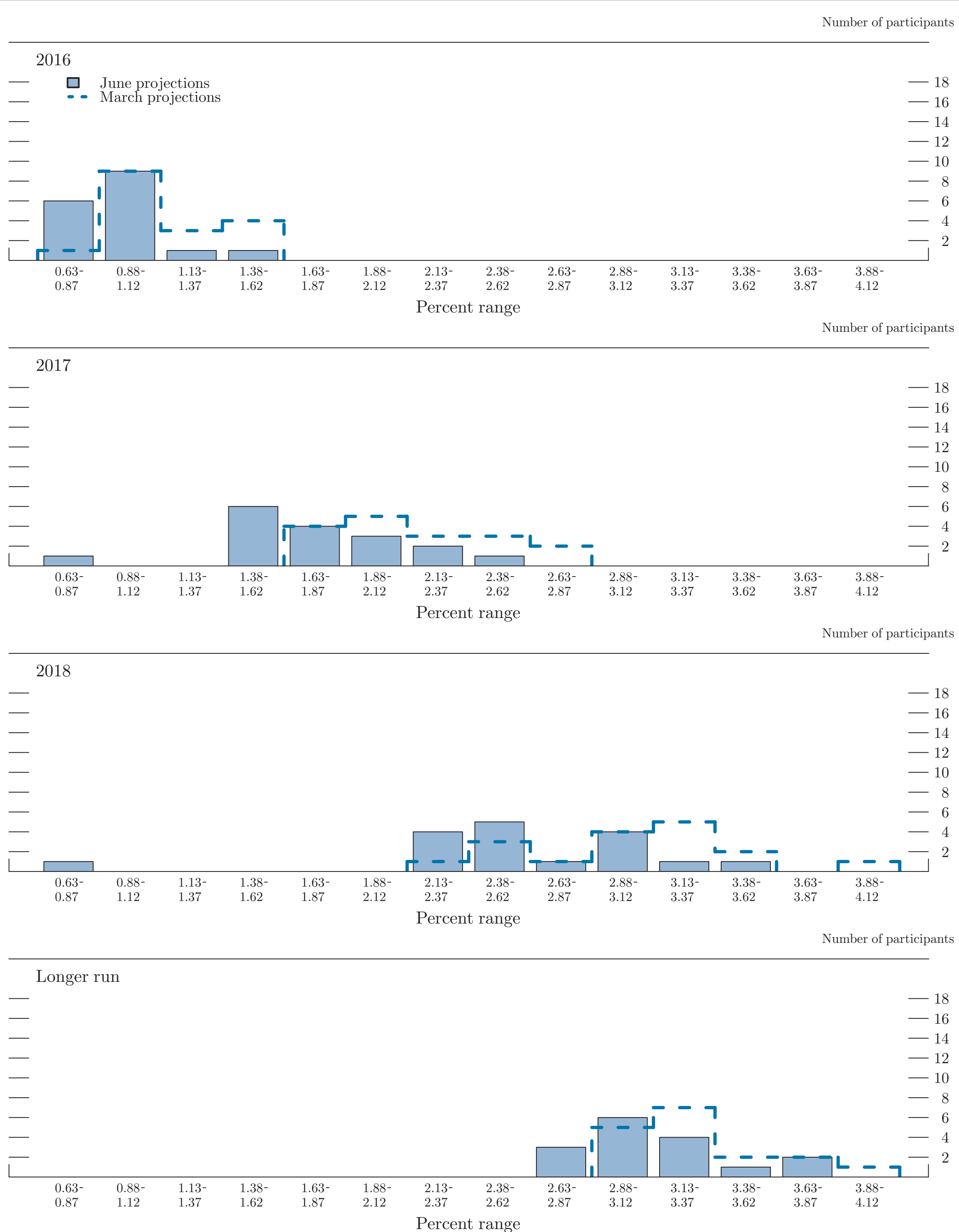
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2016–18



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, 2016–18 and over the longer run



NOTE: The midpoints of the target ranges for the federal funds rate and the target levels for the federal funds rate are measured at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections.

policy normalization. Participants cited a number of factors that pushed down their projections of the longer-run rate, including domestic and global demographic trends and weak productivity growth, which together imply a slower pace of trend output growth.

Uncertainty and Risks

The left-hand column of figure 4 shows that all but a few participants judged the levels of uncertainty around their June projections for real GDP growth, the unemployment rate, and headline and core PCE price inflation to be broadly similar to the average levels of the past 20 years.[3] A few participants saw the uncertainty about GDP growth as higher than its historical average, up from only one in March. These participants cited the surprisingly weak productivity growth of recent years or the continuing fragile nature of the global economic environment as supporting such a view. Most participants' assessments of the level of uncertainty surrounding their economic projections did not change materially from March.

As in March, most participants judged the risks to their projections of GDP growth and the unemployment rate to be broadly balanced, although many still assessed the risks to GDP growth as weighted to the downside and some saw the risks to the unemployment rate as tilted to the upside (top two panels in the right-hand column of figure 4). Participants who saw the risks to growth as tilted to the downside attributed this assessment to the weaker-than-expected May employment report; recent softness in business fixed investment; concerns about the global economic environment, including possible economic and financial consequences of the upcoming British referendum on European Union membership; or the proximity of short-term nominal interest rates to the effective lower bound. A majority of participants judged the risks to their inflation projections to be broadly balanced. However, many viewed the risks to inflation as skewed to the downside, although fewer than in March. A couple of participants pointed to the firming of some measures of inflation in recent months as contributing to the change in their risk assessment. Among those who continued to judge that the risks to inflation were weighted to the downside, almost all cited recent declines in measures of inflation compensation and some survey-based measures of longer-run inflation expectations as reasons for that assessment.

Table 2. Average historical projection error ranges
Percentage points

Variable	2016	2017	2018
Change in real GDP[1]	±1.4	±2.0	±2.2
Unemployment rate[1]	±0.4	±1.2	±1.8
Total consumer prices[2]	±0.8	±1.0	±1.0

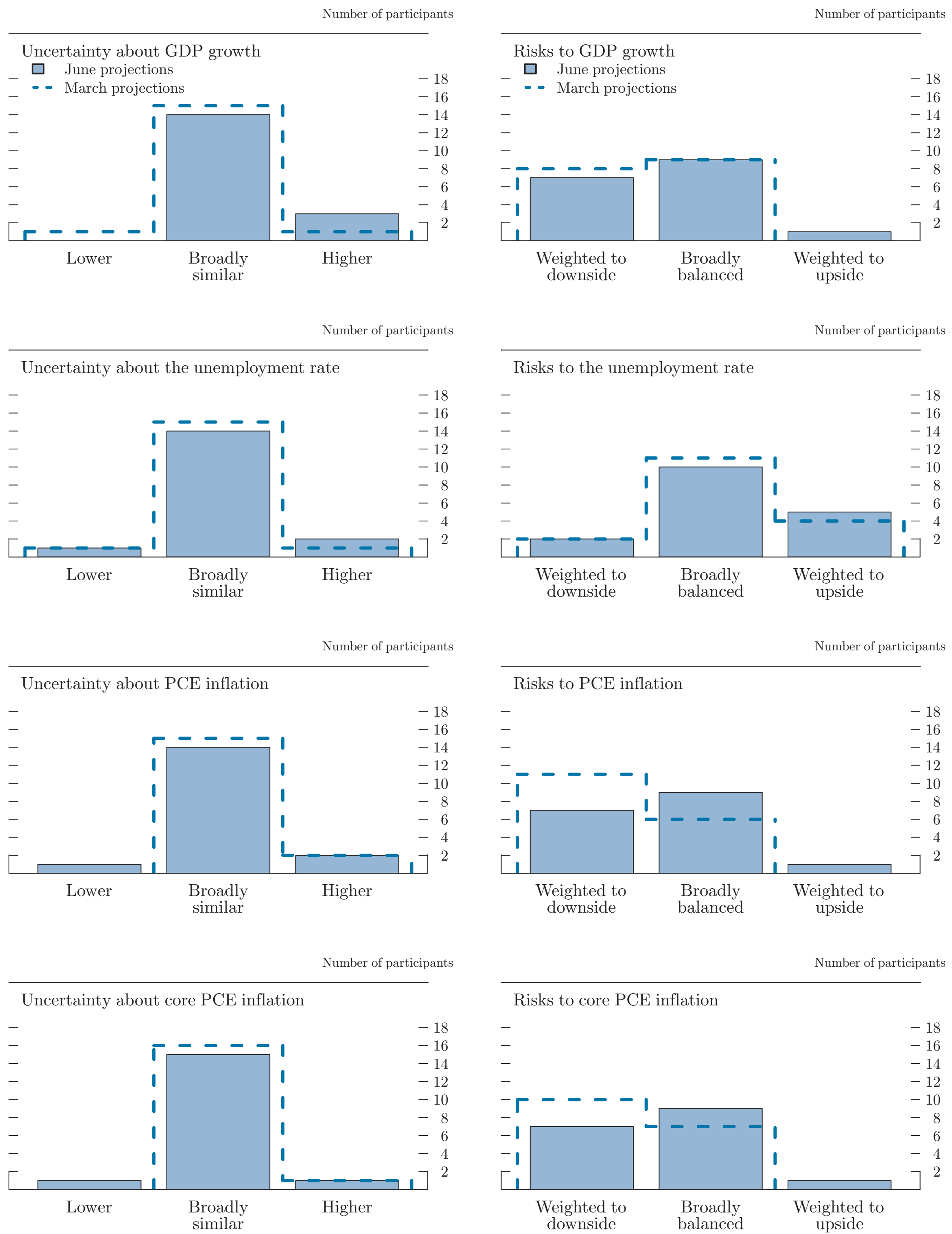
NOTE: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1996 through 2015 that were released in the summer by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices 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 (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November), available at www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html; and Board of Governors of the Federal Reserve System, Division of Research and Statistics (2014), "Updated Historical Forecast Errors," memorandum, April 9, http://www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.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] Table 2 provides estimates of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1996 through 2015. 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. Uncertainty and risks in economic projections



NOTE: For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty." Definitions of variables are in the notes to table 1.

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. 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 1.6 to 4.4 percent in the current year, 1.0 to 5.0 percent in the second year, and 0.8 to 5.2 percent in the third year. The corresponding 70 percent confidence intervals for overall inflation would be 1.2 to 2.8 percent in the current year and 1.0 to 3.0 percent in the second and third years.

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 variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past, as shown in table 2. 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, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

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.