

**Meeting of the Federal Open Market Committee on
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. Those present were the following:

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,¹ 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

¹ Attended Tuesday session only.

Matthew J. Eichner,² 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; 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,² 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

² Attended through the discussion of System Open Market Account reinvestment policy.

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

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March 14 Session

CHAIR YELLEN. Good morning, everybody. I call this meeting to order. Thanks to everyone for braving the elements to be here. This will be a joint Board meeting and FOMC meeting. As usual, I need a motion to close the Board meeting.

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. And without objection. It is my unhappy duty to open today's meeting by noting, as all of you know, that this will be Governor Tarullo's last FOMC meeting. Dan was appointed and confirmed as a member of the Board of Governors in January 2009, a time of tremendous upheaval in the global economy. The events that have transpired over Dan's eight-year tenure rank as truly astounding, and just as astounding has been the pivotal role that Dan has played in shaping those events.

Dan, your accomplishments are far too extensive to enumerate here. Importantly, you are widely regarded as the leader of the Fed's comprehensive efforts to strengthen financial regulation and supervision, and you have been tremendously successful on that score. But because this is a meeting of the FOMC, let me remark more directly on your contributions as a monetary policymaker, which are no less impressive.

Three things stand out for me. First, your contributions reflect outstanding economic and policy analysis. Our deliberations have been greatly enhanced by your coherent perspectives and well-crafted arguments. I would especially highlight your discussions of labor market developments.

Second, your approach to policy analysis has been, let me say, "refreshingly skeptical" of many of the conventional tales told by economists. Perhaps this is partly an advantage that

reflects your legal training. Before simply accepting that monetary policy or the economy works in the ways that economists conventionally assume and incorporate in their models, you often want to see the evidence. The ability to challenge conventional wisdom is always valuable, but it's been particularly important in the aftermath of the crisis.

And, finally, you have contributed importantly to this Committee's deliberations by listening—listening carefully to your colleagues, questioning them on unclear points or on evidence for their claims, and resisting sometimes vague compromises proposed for the sake of consensus in Committee communications or actions. While that trait may have caused a bit of consternation from time to time, it has made all of us think harder, consider different options, improve our arguments, and ultimately make better policy.

Suffice it to say, Dan, you are leaving the place in better shape than you found it. The economy, the financial system, and the Federal Reserve are all stronger because of your leadership and dedication to our mission. On a personal note, I want to thank you sincerely for your work here and say how much I've appreciated your friendship and the opportunity to collaborate. On behalf of everyone in this room, let me wish you all the best. Now I'd like to turn the floor over to Eric, who would also like to say a few words.

MR. ROSENGREN. Just a very brief remark. First, as a lawyer around the table, you've been in the minority, but I think that we've seen quite a value to having somebody who has a legal background. During those times when we have agreed, I've loved your comments. [Laughter] During those times when we didn't, I have respected your comments. And I would just like to conclude by saying that you've played a really significant role in supervision. That's not part of the FOMC, but getting supervision right is critically important for also getting the

macroeconomy right, and I think all the presidents who have had interactions with you have appreciated the changes that you've made. So thank you very much.

CHAIR YELLEN. First Vice President Jim Lyon has also announced his retirement. And I would just like to say that he's attending today's meeting, and I'll take this opportunity to make a few remarks to honor his service.

At the Board and at each Reserve Bank, typically there are a handful of experienced and skilled staff members who are indispensable, and Jim has surely been one of them at the Minneapolis Fed. Rarer still are the individuals who serve in that role at their own institutions and also contribute to important Systemwide initiatives, which is so vital to the effective operation of the Fed, with its decentralized structure. Jim has been that rare person—indispensable at both the Minneapolis Bank and in the System.

Jim, you represent the very best of the Fed. It's been an honor and a pleasure to serve with you. Thank you for 40 years of dedicated service, and all the best for a long and happy retirement. And I understand that President Kashkari would like to—

MR. KASHKARI. Thank you, Madam Chair. Just to add to your comments about Jim, he has served almost 41 years at the Minneapolis Fed. To put that in perspective, that is almost 40 percent of the history of the Federal Reserve. And to also put that in perspective, I was two years old when he joined the Minneapolis Fed. [Laughter]

During his storied career, he's had a wide range of responsibilities. When he first joined the Minneapolis Fed in the Law Department, he made a contribution right away, but then, at the age of 29, he was recognized and became a senior aide to then-President Jerry Corrigan. He's had a variety of responsibilities at the Federal Reserve Bank of Minneapolis—overseeing bank

supervision, becoming a senior officer in the early 1990s in supervision, then overseeing IT, and becoming our first vice president in 2000.

Over the past 17 years as first vice president, Jim was literally involved in hiring, developing, and promoting nearly every officer at the Minneapolis Fed at one time or another. The Minneapolis Fed has been exceptionally well run, in large part because of Jim Lyon's leadership, and it was a great opportunity for me to step into a Bank that was so well run and to have him as my partner my first year or so at the Bank.

I wanted to just share one story that I recently learned that I think all of you would appreciate. Jim's family came to the United States in the 1600s. They were laborers and farmers, and they gradually moved west, settling in Illinois. His grandfather, Leverett Lyon, pursued an academic career. He went to the University of Chicago, from which he got his bachelor's degree, his law degree, and his Ph.D. in economics. He actually had a very successful academic career, and he helped found the Brookings Institution in Washington, D.C. And years ago, when Jim was across the hall during one of his many visits to the Board, he was in the Special Library. I've never paid any attention to the books on the walls in the Special Library, but Jim happened to look on the wall and there were his grandfather's books, and they're there today. And Jim shares that at that moment he knew he had made the right decision in joining the Federal Reserve for his career.

In all, Jim has worked under six Reserve Bank presidents and six Board of Governors Chairs. His career has been truly committed to advancing the public interest. And on behalf of everybody at the Federal Reserve, and echoing the Chair's comments, I just want to thank Jim for his extraordinary public service, his huge contributions, and the gratitude we all feel for him.

We could not be more excited for Jim, his wife, his kids, and his grandchildren as he enters the next phase of his life.

CHAIR YELLEN. Finally, I am pleased to note that Professor Raphael Bostic has been selected as president of the Federal Reserve Bank of Atlanta, effective June 5. I'm also happy that First Vice President Marie Gooding will continue to represent the Atlanta Bank at FOMC meetings until Professor Bostic joins us.

Okay. Now let's turn to our first agenda item. I'd like to ask Simon to begin the Desk briefing.

MR. POTTER.³ Thank you, Madam Chair. Global risk asset prices increased over the intermeeting period even as expectations for an FOMC rate hike at this meeting jumped. Market participants have pointed to strengthening global growth indicators—a trend that began during the summer of 2016—as well as ongoing expectations for expansionary fiscal measures in the United States as supporting the improvement in risk sentiment. That said, investors continue to emphasize that substantial uncertainty remains over a variety of U.S. economic policies, and that upcoming elections pose risks to European political cohesion.

As shown in the top-left panel of your first exhibit, the changes in asset prices that we have seen since the November FOMC meeting were sustained and in some cases extended over the intermeeting period. Gains in U.S. risk asset prices were particularly notable, while the dollar and long-dated nominal Treasury yields have plateaued since reaching post-election highs in December. Emerging-market asset prices also extended gains over the period.

The top-right panel shows the steady increase in the S&P 500 index, the blue line, since the Global Financial Crisis. On the heels of the U.S. election, the index has increased at a fast pace. As shown by the red line, one measure of the price-to-earnings ratio has also increased to post-crisis highs. This valuation metric suggests some degree of exuberance or animal spirits is likely contributing to the persistent rise in U.S. equity prices.

Similar dynamics also appear to be at play in U.S. credit markets. As shown in the middle-left panel, option-adjusted spreads on U.S. high-yield corporate credit, the red line, have reached lows not seen since 2014 and, before that, 2007. The tightening in credit spreads has occurred alongside very low levels of market-implied volatility—as reflected, for example, in the VIX index shown in blue—which further encourages investors to reach for riskier and higher-yielding assets. Market

³ The materials used by Mr. Potter and Ms. Logan are appended to this transcript (appendix 1).

participants also continue to highlight quantitative easing policies of advanced-economy central banks as another driver of reach-for-yield behavior.

Continued expectations that fiscal stimulus and tax reform will be provided by the new U.S. Administration are reportedly underpinning some of this financial market optimism. While there have been few concrete details over the period, increased rhetoric on the part of the new Administration about the potential for tax reform has been seen as boosting capital market valuations. This appears to be a rising tide that lifts all boats, as equity and credit returns do not show any meaningful differentiation between companies with high and low effective tax rates.

Investors also appear to be expecting a positive effect on asset valuations of other economic policies. The far-left bar in the middle-right panel shows the outperformance of financial stocks compared with most other sectors over the period and, in particular, since November. Contacts have cited the Administration's order, in early February, for a comprehensive review of financial regulations as supporting bank equity prices. Meanwhile, bank CDS spreads broadly narrowed, as the effects of increasing bank franchise values appear to be outweighing the potential for greater risk-taking in investors' assessments.

As reflected in the bottom-left panel, more constructive trade policy rhetoric over the intermeeting period led to a 6 percent appreciation of the Mexican peso against the dollar. Ongoing efforts by the Bank of Mexico to stabilize the currency, including the introduction of a new FX hedging program, have also served to support the peso. The appreciation of the peso, along with other emerging market currencies, largely offset the dollar's appreciation against advanced-economy currencies, leaving the trade-weighted dollar, on net, little changed over the period but still stronger since November.

Despite the optimism surrounding fiscal policies, many investors continue to emphasize that there is uncertainty about the ultimate size, timing, and composition of any fiscal package and, more broadly, about other policies the Administration may enact. The bottom-right panel shows the results generated by a special question in the Desk's latest surveys in which respondents were asked to assess, across four dimensions, their current level of uncertainty compared with the level at the time of the October surveys. The median responses, shown by the red diamonds, indicate that the assessment of uncertainty regarding U.S. economic policies is "much higher" now than in October.

Uncertainty was also perceived as "higher" for U.S. financial asset prices. In addition to characterizing the changes in their own uncertainty, in a free response follow-up question, respondents were asked to assess whether the levels of uncertainty reflected in financial asset prices were consistent with their perceptions of investor uncertainty. After excluding responses from efficient market advocates who were somewhat offended by the question, most respondents highlighted that they believe the market is too optimistic regarding the economic policies of the new Administration and their effect on the U.S. economy and asset valuations.

Respondents' assessments of uncertainty surrounding global economic and financial market developments largely stayed the same, potentially driven by continued accommodative policies being provided by advanced-economy central banks complemented by data suggesting they are making progress toward their mandates. The top-left panel of your next exhibit shows that while little changed over the intermeeting period, five-year, five-year inflation swaps in the United States, Japan, and the euro area have increased since prior to the November FOMC meeting, represented by the shift from the pink to red diamonds.

In Japan, the yield curve control framework has successfully kept the 10-year JGB yield near 0 percent, and the BOJ continues to buy JGBs at a fast pace. In Europe, the pace of asset purchases will slow starting in April, and market participants expect the ECB to announce a further reduction in the pace in the fall. Steve will discuss the longer-term picture for interest rate and balance sheet policies by the BOJ and ECB in his briefing.

In the near term, there will be several potentially important elections in Europe that could disturb the progress toward central bank goals through a renewal of financial market turbulence. To date, the effect of this political risk has mostly been limited to a modest widening in French sovereign bond spreads. Current polls generally appear to place a low probability on victories by anti-EU candidates, though we all know polls have not been the best predictor of election outcomes of late.

Another central bank that has apparently gained some breathing room recently is the PBOC, as capital outflows and pressure on the RMB appear to have eased. Investors remain focused on the continuing rapid growth of Chinese leverage, shown by the slope of the blue line in the top-right panel. Estimates indicate credit grew some \$4 trillion over the past year. Outstanding credit is now roughly 240 percent of GDP in China, shown by the red line. An almost universally held view by market participants is that Chinese authorities will have to take action to slow credit growth over the medium term, but short-term stability is expected to be the overriding goal ahead of the Party Congress in the fall.

As I mentioned at the start of my briefing, investors expect a 25 basis point rate hike at this FOMC meeting. The blue line in the middle-left panel shows that the market-implied probability of that outcome increased sharply over the intermeeting period, from about 30 percent to above 90 percent, following a persistent drumbeat on the part of FOMC participants. The Desk's surveys showed that 52 of 53 survey respondents now expect a rate hike at this meeting, compared with just 3 in the January surveys. Despite the sharp increase in the perceived likelihood of a rate hike occurring at this meeting, the amount of policy tightening priced in over 2017—the red shaded area—increased only slightly. This marginal change likely helps explain the benign reaction in broader financial markets to the rapid shift in expectations for a hike at this meeting. For context, the implied pace of tightening after this meeting is similar to what was implied ahead of the rate hikes in December 2016 and 2015.

As shown in the middle-right panel, unconditional expectations regarding the path of the target rate in the Desk's surveys, the red diamonds, remained very close to the market-implied path, the dark blue line. This trend has continued now for three FOMC cycles, suggesting that the negative term premiums previously implied by the spread at horizons of two to three years between the survey- and market-implied expected paths have completely dissipated since November. Both the survey- and market-implied paths remain well below the median modal target rate projections in the December SEP, the pink diamonds. While respondents expect some increase in individual dots, they largely expect the median dots for year-ends 2017 to 2019 and for the longer run to be unchanged at this meeting.

The increase in the survey-implied unconditional path of the target rate since the November FOMC meeting has primarily been driven by an upward shift in expectations for the rate conditional on not returning to the effective lower bound, as the average probability assigned to returning to the lower bound by the end of 2019 is still around 20 percent. Although the improvement in investor sentiment, along with the mild upswing in global growth data, has pushed fears of secular stagnation out of the headlines, market participants remain aware that all advanced-economy central banks have little to no room to use conventional policies to respond to adverse shocks. This might help explain why about 80 percent of our survey respondents continue to assign a nonzero probability to the FOMC never changing its current reinvestment policy. Although these probabilities have decreased in recent months, the probability is still 10 percent, on average, as shown by the red diamond on the left side of the bottom-left panel. If we condition on reinvestment policy changing, shown on the right side of the panel, respondents, on average, assign a greater than 80 percent probability to reinvestments being phased out over time as opposed to a strategy of ceasing reinvestments all at once, and there is no notable difference between expectations regarding Treasury securities and MBS.

With increased investor focus on when reinvestment policy might change, we revised the other questions on reinvestment in our most recent surveys. We had two goals in mind: first, to collect more probabilistic information on the timing and rate level associated with a change in reinvestment policy and, second, to clarify that we wanted information associated with the announcement rather than the actual implementation of the change in policy. The answers to the revised questions remain consistent with investors expecting the Committee to follow a state-contingent approach to the timing of a change. The bottom-right panel summarizes the answers to a probabilistic question about the calendar timing of an announced change conditional on there being a change. Respondents see little probability of an announcement until the fall, and they assign the highest probabilities to an announcement occurring in 2017:Q4 or 2018:Q1. Lorie will now discuss how reinvestment expectations affect our projections for the balance sheet as well as other developments related to money markets and the Desk's operations.

MS. LOGAN. Thank you, Simon. I'll begin on exhibit 3. The Desk continued to smoothly conduct SOMA Treasury security and MBS reinvestment operations over the intermeeting period. To put the reinvestment expectations that Simon discussed

in some context, the total amount of Treasury security maturities in the SOMA portfolio will increase from \$195 billion this year to about \$425 billion in 2018. Meanwhile, receipts of agency MBS paydowns are expected to total roughly \$250 billion in both 2017 and 2018 and are projected to decline modestly as interest rates rise in the coming years.

Expected receipts of MBS principal are highly uncertain, however, as prepayments depend on the future path of interest rates. The top-left panel shows realized and projected paydowns of SOMA agency MBS holdings. As you can see from the blue line, paydowns slowed dramatically following the increase in interest rates at the end of last year. The SOMA portfolio is expected to receive approximately \$18 billion in MBS paydowns in March, a roughly 50 percent decrease from the average monthly paydown in the second half of last year. Our projections for future paydowns also declined significantly, as shown by the shift from the red to the black line. The gray shaded area provides context on the range of projected paydowns should the expected interest rate path deviate by 50 basis points, in either direction, from current forward rates. The prepayment option embedded in mortgages drives the asymmetry of the shaded area, as we would expect prepayment speeds to increase considerably more if realized interest rates were to decline 50 basis points than they would decrease if interest rates were to rise by the same magnitude.

Projections of Treasury security maturities and MBS paydowns will also be featured in the SOMA annual report, which the Desk is planning to publish in early April. The Committee will receive a full copy of the report later this month, in advance of the release to the public. In order to demonstrate the sensitivity of the portfolio and net income to various factors such as interest rates and the long-run level of Federal Reserve liabilities, the annual report will include updated SOMA portfolio projections under several scenarios. The scenarios are derived from publicly available information, including survey-based financial forecasts and expectations for Federal Reserve policy, as well as the FOMC's communications about policy normalization.

In comparison with the 2015 annual report, the 2016 baseline projection shows a higher level of net income during the normalization process, as shown by the shift from the light to the dark blue line in the top-right panel. This result comes from a later expected end to reinvestments, which boosts interest income, combined with a lower projected interest rate path, which reduces interest expense.

In the 2016 baseline scenario, the portfolio is expected to reach its steady-state size in the fourth quarter of 2021, nearly half a year *earlier* than projected in the previous report. This is largely due to an increase in the assumed level of long-run reserve balances from \$100 billion in 2015 to \$500 billion in the current report. The increase is consistent with the long-run framework discussion in the November 2016 meeting minutes, suggesting a future balance sheet that's likely much smaller than at present but at least somewhat larger relative to currency in circulation than in the years before the financial crisis. The report notes that policymakers have not made any decisions about the long-run implementation framework and recognizes the

substantial uncertainty surrounding the future demand for reserves and other Federal Reserve liabilities. Thus, the 2016 annual report also shows how the portfolio and net income are influenced by the long-run level of reserve balances by considering balance sheet alternatives of \$100 billion and \$1 trillion in reserves.

Regarding domestic money markets, repo spreads to the overnight RRP offering rate remained compressed over the intermeeting period, as shown in the middle-left panel. We also continue to observe some modest amounts of repo lending below the overnight RRP rate, primarily by firms that do not have access to the facility. Market participants continue to attribute the recent decline in repo rates, in part, to the reduced supply of Treasury bills against the backdrop of structurally higher demand for safe short-term cash investments by government funds following money fund reform.

The middle-right panel shows that the supply of bills has decreased significantly since early December—by roughly \$150 billion as of our latest reading this morning, though the panel reflects data only through yesterday’s close. The reduction was aimed at bringing the Treasury General Account, or TGA, to around \$23 billion by the end of the day tomorrow, March 15, ahead of the reinstatement of the statutory debt limit on Thursday. This is the so-called soft deadline, though the Treasury can take extraordinary measures to create additional borrowing capacity and remain under the statutory debt limit for some time thereafter. With these extraordinary measures as well as the typically large tax receipts in April, the debt limit is not expected to become binding before the late summer or early fall. Even so, market participants have been particularly attentive to developments regarding the soft deadline this year due to the unusually large reductions in Treasury bill supply leading up to it, including a currently projected one-day decline of \$70 billion tomorrow.

This large projected Treasury paydown has led many market contacts to anticipate that repo and bill rates will trade even lower and that the overnight RRP participation will increase from current levels. Indeed, the combination of low repo rates and reduced bill supply in the context of higher government money fund balances has already contributed to moderately higher take-up in the overnight RRP, as seen in the bottom-left panel. Anecdotally, a few Desk contacts estimate that take-up could increase another \$20 billion to \$70 billion tomorrow, from the current level of \$230 billion, before falling back down as the Treasury ramps back up bill issuance starting as soon as Thursday.

Despite the developments in repo and bill markets, overnight unsecured rates have been stable. As shown in the bottom-right panel, with the exception of month-ends, the effective federal funds rate and overnight bank funding rate both continued to “print” at 66 basis points throughout the intermeeting period—exactly 25 basis points higher than their level prior to the rate increase in December. Contacts expect the effective rate will smoothly shift higher should the Committee raise the target range 25 basis points at this meeting.

Finally, I'd like to update you on a few operational developments. First, in accordance with the Foreign Currency Directive, the Desk provided a more detailed update in February on the foreign-currency-denominated holdings of the SOMA portfolio in the first quarterly report to the Committee under the revised governance framework. Of note, in our euro and yen reserves portfolios, we continue to place incoming proceeds received from coupon securities and maturing securities in cash rather than invest them in short-dated securities. More specifically, short-dated euro-denominated securities remain an unattractive investment option due to a significant liquidity premium in them.

Second, panel 1 of the appendix contains a summary of operational tests performed over the intermeeting period, including a TDF test operation, and those planned during the next period. As noted in the summary, the Desk plans to execute its first small-value sale of euro-denominated sovereign debt securities for the purpose of operational readiness later this month.

We've also added two items to the appendix showing all transactions undertaken subject to paragraphs 1 and 6 of the Authorization for Foreign Currency Operations during the intermeeting period. Panel 2 of the appendix shows that take-up at the central bank dollar swap auctions remained very modest over the period, as prevailing market rates have been lower than the rates offered at the auctions. Indeed, the stretched pricing in FX swap markets reported on in the last Desk briefing was short lived, and FX swap bases quickly returned to pre-year-end levels. As noted in panel 3 of the appendix, there were no intervention operations in foreign currencies for the System's account during the intermeeting period. That concludes our prepared remarks.

CHAIR YELLEN. The floor is open for questions. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. Lorie, do you know what proportion of ON RRP take-up is from government-only money market funds?

MS. LOGAN. It's a large proportion. I don't have the specific numbers, but I would say around 70 percent.

MR. POTTER. For yesterday, about \$209 billion out of \$233 billion.

MR. TARULLO. Okay. You made reference during your remarks to a possible increase in ON RRP take-up, depending on what happens with bills and the debt ceiling. Putting that aside, what are your expectations for ON RRP over the course of the next year or so?

MS. LOGAN. We saw an increase in the average overnight RRP take-up after money fund reform. But what was interesting was, in February we saw that number come back down to \$70 billion. Market participants have said that that was because there was some movement away from government funds, some withdrawal of assets after the year-end, due to portfolio rebalancing. And so they expected take-up to start to drift back up, but not to the levels that we saw just immediately after money fund reform. I would expect the level to come back down toward the level we had seen before money fund reform, but not all the way, and then fluctuate in connection with the Treasury bill supply, of course.

MR. TARULLO. Right. Thank you.

MR. FISCHER. Madam Chair—

CHAIR YELLEN. Governor Fischer.

MR. FISCHER. Simon, on chart 6 in exhibit 1, are these people telling you what they think is going to happen or what they would like to happen?

MR. POTTER. It's hard to look into their heads. What we hope they're answering is their personal assessment of how uncertainty changed since the October 24 survey. And we were trying to capture some of what we thought was a big change from the election in the United States. Not surprisingly, the result is that they think their uncertainty about U.S. economic policies is much higher. If you look at the lower dot, you can read some of the comments as to why those people think it's low. But, overall, it's their individual viewpoints.

MR. FISCHER. Okay, thanks.

CHAIR YELLEN. Other questions? [No response] Okay. Seeing none, I need a motion to ratify domestic open market operations.

VICE CHAIRMAN DUDLEY. So moved.

CHAIR YELLEN. Thank you. Without objection. Okay. Let's now turn to our next agenda item, which is reinvestment policy. As all of you know, since we initially raised the federal funds rate in December 2015, we have stated our intention to continue reinvestments until normalization of the level of the federal funds rate is well under way. I believe that policy has served us and the economy well.

Back in 2014 when we debated and endorsed our Policy Normalization Principles and Plans, we faced a great deal of uncertainty about how financial markets and the economy would react to a tightening of monetary policy. We also worried that some new adverse shock could force a return to the effective lower bound soon after liftoff, particularly if the economy slowed more than expected in response to a policy tightening. By focusing on the familiar tool of the federal funds rate in the early days of the normalization process, we bolstered the public's confidence, as well as our own, that we could scale back policy accommodation in a gradual and predictable manner. And by being patient in our rate moves and by maintaining the size of our balance sheet, we helped keep financial conditions accommodative and reduced the risk of outsized market reactions or a misinterpretation of our policy intentions. This approach has also allowed us to raise the funds rate somewhat faster than would have otherwise been the case, potentially giving us more scope to ease policy in case the expansion faltered.

But now that we've begun raising the federal funds rate, and we can be reasonably confident that further increases will be warranted in coming quarters, it's time to begin forging a consensus on when and how we will allow the balance sheet to contract. Given the current economic outlook, I do not believe we need to rush to take action. The purpose of today's discussion is primarily to get a sense of your views, which will inform our subsequent and more

specific deliberations and allow us to provide greater clarity to the public regarding our reinvestment policy over the course of the next few FOMC meetings.

As we discuss potential changes to our reinvestment policy, it's worth keeping in mind our overall normalization strategy. In particular, our decisions on reinvestment should be consistent with the principles that unless constrained by the effective lower bound, the federal funds rate is the primary means of adjusting the stance of monetary policy, and that we intend to reduce our securities holdings in a gradual and predictable manner. Given this strategy, which I think is well understood by the public, our decisions over when and how to end reinvestments are mainly tactical in nature. This does not trivialize these decisions, however, and we need to proceed carefully, particularly in our communications about the balance sheet and reinvestment policy.

With those opening remarks, I'm looking forward to hearing your views. Let's begin with the staff presentations, and David López-Salido will start us off.

MR. LÓPEZ-SALIDO.⁴ Thank you, Madam Chair. I will briefly discuss some of the results presented in the memo titled "The Macroeconomic Effects of State-Contingent Ending of Reinvestment" that I prepared with my colleagues Hess Chung, Cynthia Doniger, Cristina Fuentes-Albero, and Bernd Schlusche. Then Jane Ihrig and Julie Remache will review several approaches for ending reinvestment.

Our memo focuses on macroeconomic implications of two approaches to ending reinvestment. The top panel of exhibit 1 outlines these approaches and our modeling assumptions. Specifically, we consider a state-contingent policy under which reinvestment ends in the final quarter of the year in which the federal funds rate first passes either 1½ percent or 2½ percent; reinvestment then stops completely and permanently. We compare economic outcomes of adopting such a policy to those of a fixed-date policy under which reinvestments cease in full at the end of the third quarter of 2017, as assumed in Tealbook B, regardless of macroeconomic conditions at that time.

Previous staff analyses examined how different strategies for ending reinvestment would influence macroeconomic variables under the staff's baseline economic

⁴ The materials used by Mr. López-Salido, Ms. Ihrig, Ms. Remache, and Mr. Clouse are appended to this transcript (appendix 2).

projection and under an alternative, adverse economic scenario. In this memo, we broaden the analysis by using stochastic simulations to construct probability distributions for future economic conditions and for the size of the balance sheet under alternative reinvestment policies. We conduct the stochastic simulations using the FRB/US model, with a baseline for real activity, inflation, and interest rates, which matches the January Tealbook projection. The FRB/US model simulations are combined with the model used for balance sheet and income projections in Tealbook B, in which the term premium effects are endogenous. In the simulations, the federal funds rate is governed by an interest rate rule that incorporates an intercept-adjusted inertial version of the Taylor (1999) rule.

The middle panel of the exhibit summarizes the main results. Inasmuch as the federal funds rate in the January Tealbook baseline averages just under 1½ percent in 2017:Q4, about half of the simulations show the federal funds rate below 1½ percent at that time, implying a nearly 50 percent probability that reinvestment continues beyond the end of this year under the policy with a 1½ percent rule. When we instead assume that reinvestment ends in the final quarter of the year in which the federal funds rate passes 2½ percent, the probability of having ended reinvestment by 2018 and 2019 is appreciably lower than under the 1½ percent policy, with the median date of ceasing reinvestment delayed until 2018. Accordingly, across the entire set of simulations, under the 1½ percent policy, the median size of the balance sheet is about \$525 billion larger than under the fixed-date policy. Under the 2½ percent policy, the median balance sheet size is about \$660 billion larger than under the fixed-date policy.

Maintaining a larger balance sheet under the state-contingent policies implies that term premium effects are more negative than under the fixed-date policy. The lower term premiums help stimulate the economy. However, because the federal funds rate is set by the inertial Taylor (1999) rule, the stimulus provided by a larger balance sheet is partially offset by the endogenous reaction of the federal funds rate. As a result, the state-contingent policies are associated with only modestly lower longer-term interest rates. Accordingly, along the median outlook, macroeconomic outcomes under the state-contingent reinvestment policies differ only slightly from those attained under the fixed-date policy.

The small size of these policy effects could stem from two sources: The stochastic simulations of the FRB/US model may underrepresent economic conditions in which policy effects would be large, or we may underestimate the size of the policy effects given economic conditions. A prominent example is when the effective lower bound is binding, when differences between outcomes under the state-contingent reinvestment policies are likely to be larger because there would be no immediate offset coming from the federal funds rate. For those simulations in which the federal funds rate returns to the effective lower bound, the state-contingent policies lead to a median difference in the size of the balance sheet of up to \$1.5 trillion over the three-year period starting in 2018 relative to the fixed-date policy. When the federal funds rate is constrained by the effective lower bound, the payoff associated with a flexible cessation date *does* appear in the real economy: Compared

with fixed-date policy, unemployment runs about 10 basis points and 15 basis points lower under the 1½ percent and 2½ percent policies, respectively. The differential effects on inflation outcomes are very small.

Our simulations suggest that delaying the cessation of reinvestment until the level of the policy rate reaches 1½ percent or 2½ percent provides some modest insurance against the recurrence and length of effective lower bound episodes. Accordingly, policymakers may judge that it's prudent to end reinvestment only after the federal funds rate is reasonably away from the effective lower bound, leaving room to offset unexpected events mostly or exclusively by cutting the federal funds rate.

I should note that our results are sensitive to assumptions regarding the structure of the FRB/US model and its historical distribution of shocks, the baseline projection, and the interest rate rule, as these assumptions play a very important role in determining the frequency and duration of effective lower bound events. An alternative baseline with a noninertial interest rate rule and a lower federal funds rate than those in the Tealbook forecast might well imply a substantially larger probability of being constrained by the effective lower bound. In such circumstances, policymakers might wish to consider resuming reinvestment or even undertaking new asset purchases to support improved macroeconomic outcomes. Thank you. I will now turn the briefing over to Jane.

MS. IHRIG. Thank you, David. Julie and I would like to turn to the second memo distributed to the Committee on approaches to and considerations relevant for changing the reinvestment policy. In order to help frame the Committee's discussion of possible approaches, this memo examines four illustrative options. These options are listed at the top of your second exhibit. The scenarios adhere to the broad policy guidelines provided in the Committee's Policy Normalization Principles and Plans that notes that securities holdings will be reduced in a "gradual and predictable manner," primarily by ceasing to reinvest. As illustrated by the bar charts on the left, the monthly pace of redemptions varies across the four scenarios. The first few columns of the corresponding tables to the right show the annual volume of securities that would be redeemed under each scenario.

The first scenario—immediate cessation—assumes full redemptions of both Treasury security maturities and agency mortgage-backed securities paydowns starting in the fourth quarter of this year. Under this scenario, MBS redemptions (the blue bars) are projected to total about \$175 billion next year and then decline each year thereafter. Note that MBS redemptions are dependent on the path of interest rates, and thus realized redemptions could differ significantly from what is shown here as Lorie highlighted in her briefing. Treasury security redemptions (the red bars) would total \$425 billion in 2018 and \$385 billion in 2019, with an uneven pattern through the year featuring large redemptions in months in which the Treasury conducts its midquarter refunding auctions.

Applying a cap to the total amount of monthly redemptions of Treasury securities could smooth this pattern. The second scenario considers a \$30 billion monthly cap

on Treasury security redemptions—a cap that would avoid the largest spikes in maturing securities. The rightmost table shows that using this cap would result in Treasury security reinvestments of roughly \$100 billion per year.

The third option considers a two-year phaseout of reinvestments for both MBS and Treasury securities—that is, the monthly amount of redemptions would increase in successive steps, moving gradually to full redemptions. The phaseout strategy considered in the memo is constructed as a series of increasing caps on the size of redemptions, defined in dollar terms. Next year, this strategy results in a very modest amount of MBS redemptions and a notable reduction in the volume of Treasury security redemptions relative to the previous two options. While this strategy initially limits any month-to-month variation in redemptions, as the phaseout period proceeds this effect diminishes. Of course, other types of phaseouts could be chosen, either in terms of dollar amounts or percentages of maturing securities as well as the length of time to phase out.

Finally, we bookend the scenarios with one that ceases reinvestments only in the MBS portfolio while maintaining ongoing Treasury security reinvestments.

In your next exhibit, the memo considers the effect of these reinvestment policies on the Federal Reserve’s balance sheet and income statement. The top-left panel shows the projected evolution of the balance sheet. Assuming no securities are sold, immediate cessation, the black line, results in the quickest decline in the size of the portfolio, with it projected to reach its normalized size in early 2021. The capped Treasury securities and phaseout scenarios extend this timing by a handful of quarters, whereas the MBS redemption-only scenario, the green line, has the slowest pace of reduction, reflecting only the projected runoff of MBS.

These scenarios all embed the standard set of assumptions regarding the evolution of the balance sheet, including that currency growth matches that of nominal GDP and that overnight RRP take-up declines to zero as normalization approaches. One key assumption that affects our estimates of the timing of portfolio normalization is the longer-run level of reserve balances—here we assume the amount is \$500 billion. The appendix to the memo provides details on the range of assumptions that influence the eventual size of the portfolio and suggests that the minimal amount of reserves needed to run a floor regime for policy implementation could fall between \$300 billion and \$1 trillion. The assumed size of reserve balances has implications not only for the size of the balance sheet but also for the date of normalization. The top-right panel illustrates that, for the first three scenarios, the timing of portfolio normalization would shift out or in by about one year depending on whether less or more reserves are held in the long run. Meanwhile, if policymakers were to only redeem MBS, portfolio normalization would still most likely be several years away.

A consideration with any scenario that continues Treasury security reinvestment after the first change in reinvestment policy would be how to reinvest the maturing funds. As noted in the middle-left panel, the current policy is to invest in a manner that’s proportional to new Treasury security issuances. The Committee could instead

invest all maturing funds into shorter maturities, perhaps bills. Such a change would serve to reduce the weighted average maturity of the portfolio and move the long-term composition of the portfolio to one that is more reflective of the composition of Treasury securities outstanding. Of course, if bill rates are below the interest on excess reserves rate, as is currently the case, this approach to reinvesting would also reduce remittances. But compared with the current policy, such an approach would likely also reduce the variability of income in the event of an interest rate shock, and if facing an adverse economic shock near the effective lower bound, the short-dated securities could enable a modest-sized maturity extension program instead of a large-scale asset purchase program.

Regarding the behavior of the Federal Reserve income under each scenario, the middle-right panel reports projected remittances under the modal outlook for interest rates. The four paths are not that different, though the trough is the lowest for the MBS redemptions-only scenario because it continues to hold sizable reserves over the next few years. The memo reports the results of stochastic simulations to provide some measure of interest rate risk on remittances; we find that the MBS-only scenario is three times as likely to result in a deferred asset over the next several years than the other scenarios. Julie will now review how these policies could affect financial markets.

MS. REMACHE. Thank you, Jane. The effect of ceasing reinvestments on financial markets will arise, more or less, through the same channels as asset purchases. In general, as the Federal Reserve stops reinvesting, private holdings of these securities will increase, causing the 10-year term premium effect to narrow and putting upward pressure on interest rates. Changes to the reinvestment policy that are well anticipated by markets should generally have only very modest effects on market rates at the time of the announcement.

The bottom panels of exhibit 3 summarize current market expectations and attempt to quantify the potential “surprise” effect of the redemption scenarios on the 10-year term premium. As noted in the bottom-left panel, the Desk’s most recent Surveys of Primary Dealers and Market Participants asked respondents when they expect the Committee will first announce a change to its reinvestment policy. Respondents put the highest probability of such an announcement occurring between 2017:Q4 and 2018:Q2, and when the federal funds rate is projected to be between 1.26 percent and 1.75 percent—that is, three to four more rate increases from its current level. Both metrics are important in view of the state-contingent nature of the policy, and as noted in Tealbook B, there is a considerable degree of dispersion in these expectations. In terms of the type of change market participants expect in reinvestment policy, the average respondent attached a more than 80 percent likelihood that the Committee would phase out reinvestments over time, with a median response of 12 months for the taper in both Treasury securities and MBS.

Our analysis of the potential market effects of a change in reinvestment policy, which is based on results of the December Survey of Primary Dealers, assumed that market participants expect a one-year phaseout starting in the middle of next year. As

you can see in the bottom-right panel, the projected path of the term premium effect drawn from this set of expectations—the blue dotted line—lies between the immediate-cessation and MBS redemptions-only scenarios. Contemporaneously, an adjustment from the market-based scenario to either of the memo scenarios would push the term premium up or down by 10 basis points. The differences reflect the fact that redemptions are assumed to start earlier in the memo scenarios and the different paths of the balance sheet under each approach. Of course, this may not be the only market effect. In particular, as policymakers are aware on account of the experience of the taper tantrum, market participants can interpret communications about changes in balance sheet policy as information about the central bank's reaction function and commitment to its goals. This experience underscores the importance of communication.

In addition, the memo looks at a number of other important issues related to the Treasury security and MBS markets that may affect the market response but are not captured in the standard models. The top panels of your next exhibit look at the ability of the market to absorb the increased supply of long-term assets as reinvestment policy changes. The top-left panel focuses on the Treasury securities market. The blue bars indicate SOMA Treasury security redemptions (the positive values in the projection horizon) under our immediate-cessation scenario, the red bars are projected deficit financing, and the black line is the resulting net change in privately held Treasury securities. This analysis suggests that in 2018 and 2019, markets would need to absorb approximately \$400 billion from SOMA redemptions and \$800 billion from assumed deficit financing for a total of \$1.2 trillion per year in additional Treasury securities. Treasury security markets are, of course, deep and liquid; estimates of capacity to expand the current Treasury debt issuance suggest there is room for a full ceasing of reinvestment of Treasury securities. At the same time, considering expectations for significant increases in deficit financing, this scenario could mean asking the market to absorb the same amount of securities as it did during the financial crisis, a time when demand for Treasury securities was intense; although as a share of GDP, projected issuance in this scenario is less than in the 2008–10 period. The cap and phaseout scenarios, in which Treasury security redemptions are damped, would reduce the amount of securities moving to the market, at least initially, and would give the U.S. Treasury some time to adjust its auction calendar.

In the case of the MBS market, considered on the right, the overall volume of maturities is predicted to be less than for Treasury securities, but it represents a larger proportional increase in the net amount of securities that need to be absorbed by the market. As the change in reinvestment activity influences MBS holdings of private investors, this will influence the MBS–Treasury basis. In particular, market participants suggest that spreads could widen in response to a change in the MBS reinvestment policy, the widening being possibly due to transitory flow effects or due to the exiting of the largest buyer in the market. Convexity hedging is another factor that has the potential to amplify rate adjustments, increasing uncertainty about the market response, although at the current levels of mortgage rates, this effect may not be very large. MBS spreads to Treasury yields have widened since late 2016, with

market participants attributing at least part of that move to increased expectations regarding a change in reinvestment policy. And market participants have suggested the spread might widen an additional 20 to 30 basis points, primarily on the basis of an expectation that this spread will revert to a level consistent with its long-run average over time. Staff analysis using event studies of the FOMC's asset purchase programs suggests a somewhat smaller increase in the spread, though this analysis does not include flow and signaling effects that some market participants view as potentially important.

The last issue touched upon in the memo is communications. As noted in the middle panel, there are several matters that you may want to convey information about to the public as you develop a change to your reinvestment policy. First, you may want to qualitatively discuss how the portfolio may evolve over the medium and longer run, perhaps saying something about how long roll-offs will last. Second, you will need to decide when to inform the public about the approach for redemptions. Third, you may want to signal if you think the change in policy could be reversed in response to an adverse shock.

To conclude: The table highlights some pros and cons of the policy options associated with the four scenarios. Overall, the immediate-cessation scenario offers the most rapid reduction in the balance sheet, which also reduces most quickly the Federal Reserve's exposure to interest rate risk in the portfolio, lowering the likelihood of a deferred asset being recorded. This strategy is viewed as unlikely according to the current Desk surveys and would require further communications to guide market expectations. It also involves the largest initial flow of securities back to the market and therefore poses the greatest risk for market disruption, to the extent that there is one. Given particular uncertainty around the potential for large increases in Treasury financing, the Committee might prefer to employ a cap to limit the spikes in some months in maturities of Treasury security holdings or consider a phaseout of both Treasury security and MBS reinvestments. These options would result in a slightly larger portfolio through the medium run but would have minimal effect on the overall timing to normalize. On the other hand, these policies might be viewed as more complicated to communicate, with the latter needing to specify multiple parameters related to the phaseout. Finally, if policymakers were less concerned about the pace for unwinding the size of the balance sheet, one could move to a portfolio consisting primarily of Treasury securities by redeeming only MBS. Of course, this would leave the Federal Reserve with a larger balance sheet in the event of a shock—either one that pushes up short-term interest rates, causing remittances to drop, perhaps to zero, or one that pushes the short-term interest rates back to the effective lower bound, bringing asset purchases back to the forefront. Let me now turn the discussion over to Jim for some concluding remarks.

MR. CLOUSE. Thanks, Julie. We thought it might be useful to close with a few remarks that could serve as a backdrop for your consideration of the questions for discussion listed on the last page of the handout.

I'll touch briefly on four themes that have emerged in recent staff discussions: the extent to which balance sheet normalization should incorporate state-contingent features; the potential for linkages across policy tools; the balance of benefits, costs, and risks in evaluating various options; and the increasing demands by market participants and others for additional information regarding the details of the Committee's plans for balance sheet normalization.

On the issue of state-contingent policy, we thought the simplicity and clarity of the options presented in the staff memos for this meeting made them natural candidates to consider in the Committee's discussion today. That said, policymakers may wish to consider variations on these approaches that incorporate additional state-contingent features in the approach to balance sheet normalization. For example, much of the discussion in the memos focuses on policies in which the Committee establishes a predetermined level of the federal funds rate as a trigger, possibly with delay, for the permanent cessation of reinvestments during the period of balance sheet normalization. In these options, ruling out the possibility of restarting reinvestments in response to some future adverse shocks induces some "option value" in waiting to cease reinvestments. Policymakers might instead wish to indicate that reinvestments could be restarted in some adverse scenarios. All else being equal, that should tend to reduce the option value of waiting to cease reinvestments. Policymakers may also wish to consider approaches in which the level of the federal funds rate is more of a "threshold" for the cessation of reinvestments rather than a trigger. That might be the case, for example, if policymakers judged that it could be appropriate to begin balance sheet normalization at a meeting that does not involve an increase in the target range for the federal funds rate or if they wished to reserve the option to delay the implementation of redemptions on the basis of an assessment of the economic outlook. In principle, the FOMC could even incorporate state-contingent elements in managing the runoff of the balance sheet over time. For example, the pace of redemptions could be varied over time in response to the evolution of the economic outlook. Indeed, as noted in the memos for research directors, an adverse economic shock could lead to more rapid paydowns of the Federal Reserve's MBS holdings, and policymakers in that event could wish to buffer the market effects of those prepayments by reinitiating MBS reinvestments in whole or in part for a time.

As usual, there are some costs and benefits to incorporating more state-contingent features. In principle, policies that embed state-contingent features may foster better macroeconomic outcomes. On the other hand, these potential benefits may be small and could be undercut if the policies are difficult to explain and result in greater uncertainty about future Federal Reserve actions. Furthermore, incorporating a complex set of state-contingent features in the policy on reinvestments could greatly increase the dimensionality of the FOMC's policy decisions and blur the line between the target range for the federal funds rate as the "active" tool of policy and the balance sheet as a more passive tool.

Another theme that has emerged in recent staff discussions is the extent to which the Committee's announced approach to balance sheet normalization may create perceived linkages across policy tools. For example, policies that link the cessation

of reinvestments or the possible restarting of reinvestments to the level of the federal funds rate could, in theory, induce expectations in which the Federal Reserve's balance sheet and interest rate tools are perceived as complements in achieving the Committee's macro objectives. For example, in response to an adverse economic shock, market participants could judge that the FOMC will soon cut the target federal funds rate. That policy action, in turn, could imply changes in reinvestment policy that would put downward pressure on term premiums and reinforce the downward pressures on longer-term rates stemming from the anticipated cuts in the target rate.

Policymakers may have differing views regarding the desirability of such linkages across policy tools. On the one hand, linkages of this type could be viewed as valuable in helping to stabilize the economy in response to various shocks. Indeed, in the event of an adverse shock, some might regard the juxtaposition of cuts in the target federal funds rate and sizable runoffs in the Federal Reserve's balance sheet as counterproductive policy that is difficult to rationalize. On the other hand, if the term premium effects of changes in reinvestments are small, the potential gains from such linkages may be viewed as small relative to the challenges of communicating how the tools would be coordinated and the potential for unintended changes in prepayment risks in the MBS market. And attempting to design linkages between interest rate policy and reinvestment policy may run counter to a desire to keep the process of balance sheet normalization in the background and largely on autopilot.

In addition, a theme raised in the memos concerns the balancing of various potential benefits and costs of maintaining a large balance sheet over time. At least along the economy's modal path, the differences among the various options and their implications for the macroeconomy, financial markets, and the Federal Reserve's balance sheet and income appear to be fairly modest, for the most part. Against that backdrop, policymakers' views about the most appropriate course to follow may hinge on their perceptions of the most important policy risks at this juncture. Policymakers who regard the constraints posed by the effective lower bound as a key policy risk for the foreseeable future or who see net benefits in maintaining a large balance sheet may be attracted to approaches that result in a relatively lengthy period of balance sheet normalization. In contrast, policymakers that place greater emphasis on minimizing various political-economy risks associated with maintaining a large balance sheet or that are concerned about scenarios in which a new round of large-scale asset purchases may become necessary before the balance sheet can be normalized may tend to prefer options that result in balance sheet normalization sooner and at a more rapid pace. Policymakers may also regard a fairly expeditious process of balance sheet normalization as a way of retaining large-scale asset purchases as an important tool in the Federal Reserve's arsenal. That is, large-scale asset purchases may be viewed as a more effective tool in the future if the Committee can demonstrate that the balance sheet effects of asset purchases can be unwound when balance sheet accommodation is no longer necessary.

Finally, we'd like to note a few issues related to communications regarding the FOMC's plans for balance sheet normalization. One of the highest priorities for decisions regarding the normalization of the balance sheet might be to do so in a way

that avoids risks to the economic outlook. In particular, to the extent possible, policymakers may wish to follow approaches that minimize the potential for an outsized increase in longer-term interest rates as in the so-called taper tantrum period during the summer of 2013. The staff memos provided to research directors focused on the potential for such outsized effects stemming from hedging dynamics in the MBS market. As best we can tell, the scope for that type of market dynamic seems less pronounced today than was the case in 2013. Still, there are many examples of “herd behavior” in bond markets, and we certainly cannot rule out the possibility of outsized fluctuations in longer-term interest rates over the period of balance sheet normalization.

In this context, participants may place a premium on providing greater clarity to the public about the details of the Committee’s plans for balance sheet normalization. Of course, the Committee’s 2014 statement of Policy Normalization Principles and Plans already provides a basic roadmap by noting that the balance sheet will be normalized in a “gradual and predictable” manner primarily by ceasing reinvestments, that the long-run size of the balance sheet will be no larger than necessary to “efficiently and effectively” implement monetary policy, and that the SOMA portfolio will consist “primarily” of Treasury securities in the longer run. However, as the date for the phaseout of reinvestments draws nearer, market participants are already raising many questions about exactly how the Committee plans to draw down the balance sheet, how long the process of balance sheet normalization may be expected to continue, what factors the Committee may be reviewing in judging when the size of the balance sheet has been normalized, whether the Committee has developed views on the desired long-run composition of the balance sheet, and so on.

The summary of your discussion of these topics in the minutes of this and subsequent meetings will be an important vehicle for providing greater clarity on such topics. As noted in the staff memos, as the Committee reaches consensus on some of these issues, it may be desirable to summarize that consensus in the form of a Committee statement of principles. That concludes our presentation, and we’ll be happy to take your questions.

CHAIR YELLEN. Questions for our presenters? Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you. An observation and, I guess, two questions. In the memo, I didn’t get a sense of what the staff would prefer to reinvest into if we decided to phase down the reinvestments. Right now, we’re investing sort of out along the curve. Does the staff have a preference in terms of what would we reinvest into if we were phasing down the reinvestments? It just wasn’t clear to me on the basis of the memo if there was a preference one way or the other.

MS. REMACHE. We didn't intend to convey, I think, a preference but rather to indicate that under the scenarios in which we would be maintaining ongoing reinvestments, it would be important to also consider the assets that we're buying in those scenarios. And one of the points, I think, that we were trying to convey is that those choices could influence the relative risks or—

VICE CHAIRMAN DUDLEY. Term premium effects.

MS. REMACHE. —term premium effects, the ability to run the balance sheet down more quickly in the future, the constraints you face at the lower bound, and the effect on income. All of those evaluation criteria would be affected by the choice of securities that you purchase.

VICE CHAIRMAN DUDLEY. So, presumably, part of the solution that we'd like the Committee to devise is to also include a judgment on that piece at some point, right?

MS. REMACHE. That's right, and the staff could do more work on that on the basis of the feedback given at this meeting. If the Committee would like to consider running down the portfolio at a somewhat slower pace and maintaining some level of ongoing reinvestments, we could evaluate a range of options and articulate the tradeoffs more specifically for a subsequent meeting.

VICE CHAIRMAN DUDLEY. Okay.

MS. IHRIG. I think one of the things we thought of is that, on the first page, we specifically put the rollover column there so that policymakers realize, depending on their choice of a phaseout or a cap, that the dollar amount you'd be rolling over could be small or it could be larger. So that might weigh into your decision about whether you actually want to think about a change in your current policy and having to communicate that to the public.

VICE CHAIRMAN DUDLEY. My second observation was that I found the inertial Taylor rule on the downside not very convincing. If you really thought that the lower bound was

potentially a risk of being binding, why would you want to follow the inertial Taylor rule?

Because it does lead to very distinctive results in the memo, right? You get pinned at the lower bound very infrequently because it just takes so long for the inertial rule to take you there, and I was just curious what the staff thought. Is that a realistic assumption, that the Committee would actually behave in that manner?

MR. LACKER. You're asking the staff? [Laughter]

VICE CHAIRMAN DUDLEY. I just find it not very credible myself, but I'd like to hear you defend it, I guess. [Laughter]

MR. LOPEZ-SALIDO. So, you're absolutely right. In describing past cycles, you tend to predict a tightening cycle that is pretty shallow and smooth, which is captured pretty well by inertia in Taylor-type rules. And when you think about an easing cycle, you're pretty—

VICE CHAIRMAN DUDLEY. I mean, I even went back and looked, and that's really true—very slow to tighten and pretty fast—

MR. LÓPEZ-SALIDO. It's pretty fast in the easing, so this sort of asymmetry is not built in the model right now, and you're totally right. If instead of using an inertial Taylor-type rule, you get rid of the inertia component, within the context of the FRB/US model, there probably would have been a substantial increase in the likelihood of hitting the effective lower bound. So instead of binding by 5 or 6 percent of the time, you get closer to 25 percent of the time, which makes sense on account of the unconditional quality of being at the lower bound. So that is something that is important to bear in mind. On the contrary, the idea of the memo is actually to emphasize that regardless of how you get to the lower bound, it's important to understand what the relationship is between these two policies once you're there. It's true that we're

underestimating the probability of being at the lower bound, but once you think about it, you kind of capture some of the elements that you want to put in the discussion.

VICE CHAIRMAN DUDLEY. Okay. Thank you.

CHAIR YELLEN. Further questions? President Rosengren.

MR. ROSENGREN. I have a question on the reinvestment box—and this actually gets to the Vice Chairman’s first question—where the alternative is to “invest all maturing funds into shorter maturities, perhaps bills.” If the alternative strategy was to let the U.S. Treasury only issue Treasury bills instead of us holding the Treasury bills, would there be any difference in the interest rate effect of that? So just let it roll off, and if the Treasury decides to issue bills rather than at longer maturities, is there an interest rate effect? And that gets to a second part to the question, which is the Treasury’s debt management policy. Under each of these policies, the Treasury debt management team is making choices on maturity, on issuance, on timing. Have we discussed with the Treasury how any of these options would alter their own strategies on debt management? So rather than us trying to manipulate the Treasury securities held by the public, has the Treasury been brought into this discussion? And have they raised any concerns?

MR. POTTER. Obviously, the people responsible for debt management at the Treasury know that we have large redemptions potentially coming up. The way that we’ve described it to them is a bit similar to what we would say to a member of the public—that is, that we will be communicating clearly sometime this year so we don’t expect there to be any surprises. The one thing I’ve emphasized is, for example, you wouldn’t expect to come out of an FOMC meeting and suddenly find out if you’re a Treasury debt manager that you have to issue, say, \$60 billion or \$70 billion more that month. But I’m not sure whether we’d find it appropriate to get into real details with the Treasury until we’ve given those details to the public.

MS. REMACHE. To the first part of your question, President Rosengren, you're right. Of course, the market effect will depend on the Treasury's issuance decisions, and to the extent that they were to make up the increased financing needs through the issuance of bills, we'd expect that to have a smaller effect on market rates. That would probably be similar to the effect if we were buying Treasury bills and maintaining the larger size of the portfolio. Of course, depending on how they manage the issuance in the future—our understanding in conversations with them is that they would eventually look to increase issuance at longer-term maturity points—then that would affect the overall effect on market rates and you'd see that the term premium in longer-term Treasury securities could increase.

MS. IHRIG. I just wanted to note that there was a Board briefing in May of last year by Erin Ferris in which she looked at how the Treasury would respond to the Federal Reserve's redemption policy, and depending if they issued, say, bills only or only long-term bonds, our model suggests there could be an effect.

MR. ROSENGREN. Just a quick follow-up. But they have the option, of course, to start with all Treasury bills and then, over time, go long. So, in effect, if we're worried about the effect on markets, rather than us doing it, they would have the option of doing it over time. Is that right?

MS. REMACHE. That's right.

MR. POTTER. But if they act in an independent way from us, then we don't control their decisions. And currently there is interest in extending the maturity of Treasury debt.

MR. FISCHER. Sorry. Whose interest?

CHAIR YELLEN. The Treasury's.

VICE CHAIRMAN DUDLEY. The Treasury's.

CHAIR YELLEN. Governor Fischer.

MR. FISCHER. Did I understand you to say we tell the public what we're going to do before we tell the Treasury?

MR. POTTER. That's not the way I completely tried to say it.

MR. FISCHER. No, but what did you say?

MR. POTTER. Well, what we try to do is say that there wouldn't be a one-day surprise, but in the conversations, we've made clear that this is an FOMC decision. The one issue that's come up is that it's very hard for them to adjust their auction schedule over a short period of time. So we want them to have a period of time to do that, just as we would want the private sector to have some time to understand that they would be holding more long-term securities than they are right now. That would be true in the mortgage market and also the Treasury securities market.

MR. FISCHER. Okay.

CHAIR YELLEN. President Lacker.

MR. LACKER. Why would they have to alter their auction schedule?

MR. POTTER. Because the size would go up. Remember, right now we're an add-on to the public.

MR. LACKER. Yes, I know, but what difference does it make what day we do it on? You're saying the size has to change, right?

MS. LOGAN. The Treasury traditionally follows a regular and predictable approach to their fund issuance.

MR. LACKER. Right, right.

MS. LOGAN. So they typically would only increase the coupon size to the public by a couple of billion each time, and they would phase that in over time.

MR. LACKER. I see.

MS. LOGAN. So they would start by issuing a larger amount of bills, and then they would—over months or a year or two—extend the weighted-average maturity back toward what their initial target was through coupon issuance, because they don't like to go from an increase in the 10-year note from \$30 billion to \$40 billion to make up—

MR. LACKER. And what's sold to the public as opposed to the add-on is what drives that?

MS. LOGAN. They focus on the amount to the public.

MR. LACKER. I see. I think that's why President Williams was puzzled. You said something about them increasing the amount they issued to the public. But they'd be issuing the same amount, but we would just be taking less of it.

MS. LOGAN. Right. Their communication is always to the amount that they will auction to the public, and they like to keep that amount only moving marginally over time. Even during the crisis when they had to do that, they did that slowly. They may also add a midquarter reopening if they need to increase the total amount by any larger amount, and it will take them a longer period of time. So they may add a reopening of that security.

MR. LACKER. Okay.

CHAIR YELLEN. Other questions? [No response] Okay, then, let's begin our round with the Vice Chairman.

VICE CHAIRMAN DUDLEY. Okay. Thank you, Madam Chair. Uncreatively, I'm going to start with the three questions posed by the staff, and then I'll delve into a few other issues that I think are relevant.

The first part of the first question was factors influencing the timing of a change in reinvestments. I think the timing of ending or phasing out reinvestments should be tied to the relative cost of the risk of returning to the effective lower bound for short-term interest rates over the medium term versus the benefits of having a smaller balance sheet and more room for balance sheet expansion should one end up at the lower bound sometime in the future over the longer term. So I think there's a tradeoff there. If we delay, we don't have as much balance sheet capacity in the future. If we go sooner, we have more balance sheet capacity in the future, and I think that's relevant here.

In terms of the factors that affect the risk of returning to the lower bound—that's my primary criteria for thinking about this—I would first ask the question, what's the likelihood the economy will maintain its forward growth momentum over the next few years? In other words, what's the probability of an economic downturn over a two- to three-year time horizon? And, second, how much room is available in terms of short-term interest rate reductions and balance sheet expansion to avoid getting pinned at the effective lower bound for interest rates? What that means to me is that there's no magic single federal funds rate that tells you when to stop. If you have a stronger, more robust expansion path, or one with less downside risk, that would argue for phasing out reinvestments at a somewhat lower federal funds rate level compared with a weaker economy, or one with more downside risks. The reason why you'd go sooner if you had a stronger economy is that you would value drawing down the balance sheet and freeing up that capacity for some future bad event.

I had been assuming that we would begin to end reinvestments when the federal funds rate was somewhere between 1 and 2 percent. Under the outlook that we have today and the prospect for fiscal stimulus over the next year or couple of years, I'm currently inclined to phase out reinvestments while we're in the bottom half of that range, but, of course, that could obviously change as the outlook changes. So that would imply that we could get to the point of wanting to start to end the reinvestments before the end of the year, depending on the outlook.

Now, I'm open-minded as to the precise starting point, and that really has not been my greatest concern. My greatest concern is to make sure that we're ready to move as early as we would like to move. I wouldn't want to have to delay the start of balance sheet normalization just because we, at the Committee level, hadn't worked out all the details about how this is supposed to work.

The second half of the first question is, what principles should guide possible restarting of reinvestment sometime in the future? My starting point is that a runoff of the portfolio represents a tightening of monetary policy. So that suggests to me that we shouldn't be running down the portfolio—in other words, tightening—if at the same time we're actually lowering our federal funds rate target range.

It seems to me like a very simple reaction function would be whenever you cut interest rates, you also cease runoff. And I don't think that's a particularly difficult thing to communicate to the markets. In fact, we reached a similar conclusion a few years ago when, you'll remember, we were having the agency MBS runoff and we sort of asked ourselves the question, why are we doing this, given that we're pinned at the effective lower bound for interest rates? And then we made a change in policy that we would actually reinvest the agency runoff. So I think that you can have a more complex reaction function than this, but this one seems very

intellectually consistent, coherent, and easy to explain—when we cut short-term rates, we just simply cease letting the portfolio run off. And, obviously, this would only apply until we got back to a normalized balance sheet. Once there's a normalized balance sheet, obviously, you stabilize the balance sheet at that level. Being clear on this point, though, would have the benefit of slightly reducing the risk of returning to the effective lower bound, because investors and market participants know that the runoff will end whenever short-term interest rates fall. That should provide a bit of additional support to the economy by compressing the term premium. That's something that the staff raised in their presentation.

The second question was views regarding the four illustrative options. Well, I feel pretty strongly that the option of the two-year tapering of Treasury securities and agency securities dominates the other three approaches. In my mind, it reduces the risk of a taper tantrum, because the ending of reinvestments occurs slowly compared with the expectations of most market participants, which is for the phaseout of reinvestments to last about a year. This would take twice as long as that. But the cost of doing it over two years seems to be relatively small in terms of the delay in getting back to a normalized balance sheet. By the staff's simulations, there's just a three-quarter lag relative to the full phaseout of reinvestments immediately. Also, having two years of tapering, I think, helps you cope with the two years when the Treasury security maturities are the highest—2018 and 2019. And a more stretched-out process also gives the Treasury more time to adjust its debt management strategy—something we have just been talking about—and auction cycles to minimize disruption to the U.S. Treasury securities market. I don't think that an abrupt end to reinvestments gains us much time in terms of getting back to a normalized balance sheet. But it does, to me, add some nonmaterial risk of disrupting the Treasury security and agency MBS markets.

I'm sympathetic to the idea of putting a floor under the magnitude of the runoff of our Treasury security holdings. I think that does have some attractive features in its effect on the flow of additional Treasury debt supply that the market would have to absorb. But it seems to me it's not as simple to communicate, and at least I have trouble figuring out what level of the floor you would pick and why you would pick a particular number rather than another. Why was the floor set at \$30 billion of Treasury securities, as opposed to \$25 billion of those securities or at some other level? It seems to have a bit more of an arbitrary nature to it.

Confining the runoff to agency MBS, which was the last choice, would significantly raise the period of time to normalize the balance sheet, and I don't think that is very attractive. The fact that the share of the MBS in our portfolio will be somewhat higher if we run off Treasury securities and agency MBS together does not seem to be very material. I don't put a lot of weight on that.

The third question was about what changes in communication may be appropriate concerning reinvestment policy. My view is that, over the near term, we should communicate mainly through the minutes until we have agreement on a coherent strategy and a plan for implementation. I wouldn't want to say too much until we work out all of the details. Later, once we have the plan all worked out, I think it would be appropriate for a broader set of communications. It could be in the minutes, with a clear set of principles. It could be by the Chair in a speech or in her press conference statement. And I think it might even be useful to consider having a white paper that provides a lot of detail in terms of how this is all likely to work out over the longer term. I think the more clarity we can give to people—material to digest—will make this likely to be more successful and have less risk of a sharp market reaction that we don't anticipate. I don't think the communication should be done piecemeal, bit by bit,

because I really do think this fits in in terms of our longer-term balance sheet strategy. And I think it's better to get that all out together in one big piece.

There are a few other issues that I think also need to be addressed. First and foremost, I do think, as part of this design of balance sheet normalization, we also should try to seek agreement about the broad parameters of the balance sheet that we seek to achieve in the longer run. In particular, are we going to run a floor system in which we operate on the flat part of the demand curve for reserves? And, if so, how much excess reserves, roughly, will this require? I felt in our discussion about the floor versus corridor system that we had a few meetings ago there was a pretty strong consensus for a floor, and my view is, let's nail that down and decide what balance sheet we are actually heading to over the longer term.

The staff memo suggested that if we were to go to a floor system, this would imply a range of excess reserves probably in the \$500 billion to \$1 trillion range. And if you read the staff memo closely, it seems like it's probably at the higher end of that range than the lower end of the range, but I don't think we have to be more precise than to just give a margin of how much excess reserves we'd like to see in the system. I think this would have an advantage because if we provided the market with, "this is where we're heading, and this is how much excess reserves we're likely to have in the system," the market could also sort of figure out the balance sheet size that we're likely actually headed to three or four years out. And I think that would also reduce the risk of a big market reaction to this decision, because if you ended up with a balance sheet that included \$500 billion or \$1 trillion of excess reserves, the balance sheet shrinkage over the next few years really would be much smaller than if you were heading back to a corridor system with much lower excess reserves.

Second, I think we need to be clear that we think that a phasing out of reinvestment does represent a tightening of monetary policy. I think we should be clear that at any point in time this type of balance sheet decision should be viewed as a substitute for a further hike in our federal funds rate target. In other words, I think we want to communicate this so that market participants infer that it's unlikely that a decision on reinvestment will be coupled at the same time with a rate hike. I anticipate that when we announce the phaseout of reinvestment, we probably would also take a pause in terms of interest rate hikes.

To put it in more concrete terms, you can imagine rate hikes at this meeting, in June, September, then with the tapering of reinvestment, but no rate hike announced in December, or you could have some different combination. But the point is that I think it's relatively unlikely that you would be in an economy in which you would want to both raise rates and announce the end of reinvestment at the same FOMC meeting, because I think they're substitutes in terms of monetary policy tightening.

Third, I think it's important to recognize more explicitly that just as there are risks from normalizing the balance sheet—the risk that we might not subsequently have sufficient room to cut the federal funds rate and avoid an early return to the effective lower bound—there are also some risks from delaying this process. I think that's sort of in the memos, but I think we could draw that out a little more. The most notable one is that the sooner we start, the sooner we generate more balance sheet capacity that we could potentially use in response to the future periods when we're at or close to the lower bound. More importantly, I think having a large amount of balance sheet capacity should also help us by reducing the risk of inflation expectations becoming unanchored to the downside because people would know that there was this other tool that could be used with some force.

I think the fact is that the Committee recognizes that the bigger the balance sheet and the longer the duration of the assets in our portfolio, the greater the risk in the future that a need to push up short-term interest rates could significantly cause our net interest margin to narrow or even turn negative. That could cut off our remittances to the U.S. Treasury and force us to create a deferred asset on our balance sheet. I think we all put some risk on that, and we can avoid that risk by normalizing the balance sheet a little bit sooner rather than a little bit later.

I'm very pleased that the Committee is taking this work forward, and I thank the staff for their work on the memos. Even if this process doesn't start for a long time, it's good that we've started, and I'm hoping that we get this all nailed down over the next few meetings so that we're completely ready when the time comes. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. This is an opportune time to discuss reducing the balance sheet. Under my projections of the economy and interest rates, I expect conditions will be suitable for us to begin that process by the end of this year. Before describing the conditions and responding to the specific questions posed in the memo, I want to make some general comments.

The staff analysis takes the prevailing view within the Federal Reserve—that is, that LSAPs and the MEP have had large and highly persistent effects on term premiums on longer-term interest rates through stock effects. Although I personally view this as a reasonable baseline case, it is notable that studies in the academic literature—notably, almost the entire academic finance community—question this conclusion. Some of these analyses suggest that our large balance sheet could be playing a relatively minor role in depressing term premiums

today. More generally, estimates of highly persistent stock effects on term premiums vary widely, and the effects assumed in the memos are at the upper end of this range.

I would encourage additional consideration of these outside analyses in the staff memos and potentially in a Tealbook alternative view box. I mention that specifically because I have viewed these boxes to be a great innovation, both for the Federal Reserve staff and policymakers, to challenge and question the conventional wisdom and to encourage divergent views. So I just thought I would mention that. I'm struck by the difference between the views that we all talk about here within the Federal Reserve and what I hear when I leave the Federal Reserve and talk to other researchers outside the Federal Reserve on this particular issue. I'm not trying to draw any specific conclusions—it's more that we should make sure that we challenge our own views.

Regarding strategy, I think that we got it right the first time. The language from our Policy Normalization Principles and Plans document remains appropriate. It says that “the Committee intends that the Federal Reserve will, in the longer run, hold no more securities than necessary to implement monetary policy efficiently and effectively.” Of course, that leaves unanswered how large the quantity of reserves should be in the long run. And although the staff analysis shows that whether the answer is \$100 billion or \$500 billion doesn't really materially affect the path of the balance sheet normalization for the next few years—it doesn't really affect, if you look at the Tealbook B, the term premium in the next few years—I do think, as Vice Chairman Dudley mentioned, that there are advantages if we could clarify sooner rather than later our views on what we think the ultimate size of the balance sheet should be, that there would be some benefits to doing that soon.

In terms of the specifics of the implementation of normalization, I continue to prefer to keep balance sheet management overall in the background and keep the focus on policy actions

and communications squarely on the funds rate. I think that has served us well. It's also consistent with our earlier statement on normalization. There's just too much uncertainty about the effects of LSAPs and balance sheet policy to use them actively as a regular tool of policy in normal times. We don't want market participants constantly trying to guess what our next action will be regarding the balance sheet. Although there is some upside to keeping a larger balance sheet for longer, and every analysis the Board staff does will show that, I just want to note, as I have in the past, that there are also presumably costs of doing so, and it's important to keep both in mind.

So now to the specific questions. I prefer to rely on qualitative criteria to signal the conditions for ending reinvestment. In this regard, it's prudent to recall that date-based forward guidance or setting specific macro thresholds have not always served us well. I would prefer to avoid date-based guidance or economic triggers or references to specific levels of the funds rate. Instead, keep communications qualitative, at least for now.

And like Vice Chairman Dudley, I think a number of factors come together on this decision. The normalization process needs to be well under way. As we've said before, we need a solid economic outlook with balanced risks, and we need confidence that the process of normalization of short-term rates will continue. So I think all of these factors have to come together for us to judge that it's time to start the process of ending reinvestments. Now, my own view, used in my economic projection, is that these factors will be well-aligned when the federal funds rate target is around 1½ percent. Again, like I said, I expect that to be toward the end of this year.

I do worry a bit about this 2½ percent rate that's mentioned in one of the memos. My own view is that r^* with regard to the nominal funds rate is 2¾ percent. I don't think it's

implausible that it's actually 2½ percent. And so I think if we were to set a 2½ percent trigger, we're basically allowing a pretty high probability, in my view, that we will not start normalization for a long time or perhaps not at all. So I would think carefully about having such a high funds rate as a trigger.

In considering options on how to implement the reduction in the balance sheet, my view is that the key is not to have the process look to be actively managed. As much as possible, we want it to be on autopilot. On that score, the most straightforward process and the one easiest to communicate is to have the runoff be based on the pace of maturing securities and principal repayments. I would basically keep it simple. I would also lean in the direction of a shorter rather than a longer phaseout. I do recommend strongly that we never use the word “taper” again in this building, so “phaseout” is preferred to “taper” because you can't have a “phaseout tantrum.” My view is that shorter rather than longer would be best.

Our communications should relay the expectation that the process of reducing the balance sheet will proceed predictably over time. Of course, I agree that the process of rebalancing would, as with any monetary policy decision we make, be subject to what's happening in the economy and our outlook for the economy. Again, I'm just reiterating what the Vice Chairman just said—we should be explicit that the reinvestments or other changes in our balance sheet could be restarted in response to adverse shocks that require a cut in the funds rate. I think that actually has a lot of positives to it, and I think that's consistent with our long-term strategy.

Now, in terms of how to best communicate this, I think, at least for now, we really are going to be using the minutes and, obviously, the Chair's press conferences. Ultimately, we have to come to a clear statement of what we're doing, and we can do that more formally in the FOMC statement. Thank you.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I'm in favor of taking steps to reduce the size of the balance sheet. I do appreciate that we're having this discussion today. I think we could follow up this discussion by changing some of the statement language related to balance sheet issues at future meetings this year. Overall, I think balance sheet expansion was an emergency tool that should now be put away.

I've organized my comments into six main comments. I'll just run through them. A lot of these are going to echo what President Williams and Vice Chairman Dudley just said. First, according to the staff analysis, the effects of ending reinvestment seem to be relatively small. To me, that argues in favor of a policy that pushes ahead and tries to normalize the balance sheet as part of our broader normalization program.

Second, I would prefer moving sooner rather than later. I found the "Immediate Cessation" option the most persuasive. There didn't seem to be a lot of difference between the first three options that were put forward. I would also like to reduce the probability of a negative remittance to the Treasury to a low level, which I think would be problematic for the Federal Reserve and for the Committee.

My third comment is that current monetary policy is arguably twisting the yield curve as we normalize relative to where it would otherwise be. Our big balance sheet policy is actually undoing some of the effects that would otherwise be occurring due to the policy rate normalization process. According to our rhetoric, we are putting downward pressure on the medium and longer end of the yield curve even as we are raising the policy rate. I think this is confusing. It sends conflicting signals as to whether we think the economy is actually improving

enough to withstand a normalization process. Ending reinvestment would allow for a more natural yield curve normalization process than the one we have entrained right now.

My fourth comment is on the policy space issue. The Committee's idea seems to be that raising the policy rate is good because in part it allows the Committee to react to a negative shock by lowering the policy rate in the future. But the same can be said for the balance sheet. By lowering the size of the balance sheet today, the Committee would maintain optionality to again increase the size of the balance sheet in the future should a severe enough negative shock occur. I'm agreeing with Vice Chairman Dudley on that dimension. In short, we should be reducing the size of the balance sheet during the relatively good times that we are enjoying today.

My fifth comment is on taper tantrum issues. Some around the table may worry about events like the taper tantrum during the summer of 2013. In my view, the taper tantrum was a communications issue. Markets turned out to be surprised by an unexpectedly "hawkish" FOMC announcement at the June 2013 meeting. I will remind all of you that we actually did nothing at that meeting. We did not change policy at all, but it was the communication regarding possible future changes that led to the taper tantrum. The actual taper decision was not made until December 2013, and when that decision was made, we saw very little reaction in financial markets. Indeed, we carried through with the taper all through 2014, and we saw very little financial turmoil in response to that. So I think, properly communicated, a balance sheet normalization program would work out just fine.

My sixth comment is that I do not like tying the date of reinvestment cessation to a level of the policy rate, such as 1½ or 2½ percent. That was called "state-contingent policy" in the memo. Those simulations embed the assumption that the current policy rate is below the neutral

level today and, therefore, must be raised in order to maintain inflation at target and unemployment at a low level. I think the Committee should recognize that we may be in a low real interest rate regime, in which case the policy rate would not naturally return to its longer-run mean or even to any value approaching that mean. In short, the neutral policy rate may be much lower than is assumed in these simulations.

To the extent that this is true, we should make an independent decision on balance sheet normalization, not one that is based on the assumption of an unrealistic degree of mean reversion in global safe real interest rates. That argument is, in my mind, a version of the one put forward by Vice Chairman Dudley and President Williams just now. In short, the state contingency should be based on goal outcomes—inflation near target and unemployment at its longer-run level—not tied to the level of the policy rate because of this neutral rate issue and where the neutral rate might be. We are meeting our criteria today in terms of inflation being near target and unemployment being near its longer-run level, so we should prepare to go ahead with balance sheet normalization. From the perspective of the Federal Reserve Bank of St. Louis, we're not seeing a lot of policy rate increases in the future anyway, as we now project out. The only thing left to normalize is the balance sheet from that perspective. So you should get on with it. All right. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. Looking out of my window this morning, I couldn't help but be reminded of that famous motto: Neither snow nor sleet nor gloom of night will keep the FOMC participants from the swift completion of their go-rounds. Of course, maybe they're not so swift as some may think. [Laughter]

I want to start by thanking the staff for the set of memos on reinvestment policy. For me, they did an excellent job of laying out the issues we need to consider. I believe the Committee's statement on Policy Normalization Principles and Plans was still a good starting point. Our goals remain to reduce the size of the balance sheet and return it to primarily Treasury securities. The four options discussed in the memos provide alternative approaches to ultimately accomplishing these goals, and I don't think it's premature for us to have this discussion even though we haven't decided yet on the long-run framework. Even in a floor system, that would entail a smaller balance sheet with a lower level of excess reserves than we currently hold. And taking into account the time it's going to take to reduce the balance sheet absent any sales, we can initiate an end to reinvestments without precluding either framework.

We've already indicated that we'll cease or commence phasing out reinvestments after we have begun increasing the funds rate. This does seem like a good time to begin planning for how we'll go about it. I prefer state-contingent timing for ending reinvestments rather than a date-dependent change. The Committee has stepped back from date-dependent guidance used during the recession, and I see no reason to go back.

As we've seen, the economy can evolve differently than expected, and I see little gain in setting a date to end reinvestments that's independent of the state of the economy. In my view, the economic conditions for ending reinvestments would be the same ones we used to determine the appropriate target for the funds rate. After all, we're setting the funds rate on the basis of trying to get to our dual-mandate goals. I think we could tie the change in reinvestment policy to the level of the funds rate even if we don't communicate it that way in terms of our own discussions and decisionmaking. It seems to me that would be consistent with the language

already in the FOMC postmeeting statement that links reinvestment policy to normalization of the level of the federal funds rate.

Under my economic outlook, I'd be comfortable ending reinvestments sooner rather than later at a funds rate somewhat higher than where we are now and considerably lower than the 2½ percent rate considered in one of the staff simulation exercises. I believe that with proper communication, the economy and financial markets will be able to handle a change in our reinvestment policy later this year, which would be consistent with my outlook.

Once we end or phase in an end to reinvestments, I think the bar should be fairly high for reversing and restarting reinvestments. I view balance sheet policies as a tool for extraordinary times and not as a regular tool of monetary policy, so any restart of reinvestments should be tied to the economy entering into an unusual state. If the economic outlook materially deteriorates, we would begin reducing the funds rate further below its long-run level and the probability of nearing the effective lower bound rises significantly. Then we may want to restart reinvestments. That is, we could consider using our balance sheet tool, but only when the economy reenters a non-normal policy environment.

This is a stricter criterion than Vice Chairman Dudley's, but recall that many of the forecasts, including the Tealbook, have us raising the funds rate above the long-run level and then bringing it back down. To my mind, we need to have some further criteria that we're entering into an unusual state. I wouldn't consider overshooting the long-run level and bringing it back down to be enough.

Regarding the approach to normalizing the portfolio, the four options considered in the staff memo span most of the plausible alternatives, conditional on asset sales being excluded. The memos indicate that the macro effects of the four options considered are not very different,

and the effects on market functioning are also similar. Hence, I prefer simpler rather than more complicated methods. The options do exhibit some differences in terms of the time it takes to reduce the overall size of the portfolio and to change the composition back to primarily Treasury securities.

At this point I'm prioritizing size over composition, so I prefer options 1 and 2—that is, immediate cessation of reinvestments or ceasing reinvestments with a cap on Treasury security redemptions to smooth them out. I would think that with proper communication we could implement option 1, but if the Desk felt that smoothing out redemptions provided a salient benefit, I wouldn't object to that.

I believe the costs of options 3 and 4 outweigh any potential benefits. Option 3, the two-year phaseout, would be complicated to communicate. Not only would we have to communicate the reason we might want to resume reinvestments, but we'd also have to decide on when to increase the amount we allow to roll off or be redeemed and communicate the reasons we're doing so. In addition, the staff's analysis suggests phasing out provides little gain in terms of market functioning compared to option 2's caps redemption strategy.

Option 4, which ceases reinvestments in MBS only, does move the composition toward Treasury securities more rapidly than the other options, but at the cost of a slower normalization of size and a higher risk of negative remittances. According to the simulations in the memos, under option 4, there's a relatively high estimated 25 percent chance that the Federal Reserve incurs losses and is forced to recognize a deferred asset on its balance sheet.

With respect to communication, this discussion and subsequent discussions of reinvestment policy will be indicated in the minutes of our meetings. These discussions won't be a surprise to the markets, as they've been focusing on this policy as well and would welcome

some clarity on the part of the Committee. We currently refer to our reinvestment policy in the FOMC statement, so when we have come to a decision about the policy, the statement would seem to be the appropriate vehicle with which to announce such a decision.

A state-contingent approach allows us to discuss the policy decision further in advance, as it doesn't lock us in should the economy evolve in an unexpected way. Once we've made a decision, we would announce it. A white paper discussing the prepayment model the Desk uses and projections of the balance sheet could also be used as backups to the announcement in the statement.

Over this intermeeting period, we had an excellent example of the power of clear communication. When the Committee wants to do it, it can change market expectations pretty quickly and without extreme volatility or deterioration of financial conditions. This leads me to believe that any discrepancy between how the market currently believes we'll handle reinvestments and how we ultimately decide to do it—and potential signals we could be sending about the pace of removal of accommodation—can be dealt with by appropriate communication, emphasizing that interest rates are our normal policy tool and that the balance sheet is beginning to return to a more normal size and composition because the economy is on solid footing. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I found the FOMC discussion we had on the size of the portfolio during what was almost an impromptu session in July 2016 to be extremely interesting and productive. Then we had another session on the issue in November, and we're still using the same statement in paragraph 5 of the FOMC statement. It's time to move on. The

work that we've received, as President Mester mentioned, is really very interesting and very good, and we owe thanks to the staff for it.

Our discussion obviously takes it for granted that the large balance sheet is in part the stock counterpart of past flows of QE and has the same effect on market interest rates. I know there's skepticism about this in parts of the academic community, but it's kind of hard for me to believe that when you increase the supply of something, the price doesn't go down.

Now, when we first started discussing this, I and possibly others among us were quite taken with the notion that it was really a major, so to speak, insurance function for the Federal Reserve, as we could use our balance sheet and structure it so that it sort of was balanced like an insurance company should balance its balance sheet and to be ready to intervene here, there, and everywhere with different securities suitable for such an intervention. It was very interesting, but I don't think any of us should consider going down that road. We use monetary policy, which is powerful because it covers the whole economy. And I will refrain from references to Jeremy Stein at this point.

Monetary policy is a macroeconomic instrument, and I don't think we should try to go further than to use open market operations of the traditional sort except in a major financial crisis. So what should we do about reinvestments? I think we're getting close to the point at which we need to start ending them, and before the end of this year would be a good idea. In part it's because of all this nagging we're getting from the private sector, which is not really necessary. I think we can figure out what we want to do reasonably soon, and—except for the 2½ percent interest rate scenario—we will also be in a position to move reasonably soon.

Let me just go to changes in minutes, et cetera. If we want to move before the end of this year, the time we have for both formulating what we want to say to the public and moving is

rather short because I think we're going to have to have several discussions. So we'd have to get on with deciding what we need to tell the public and get on with making the relevant decisions.

I'd like to mention one other thing. The big disadvantage I see in not saying that we would resume reinvesting if economic conditions warranted is, I believe, that quantitative easing works. I believe that saying, as a principle, "I'm not going to use this tool" at a time when you might want to use it and you have the tool in your hands, you're sending a message that it doesn't matter that much to you and it's not particularly useful. That's not, I think, a precedent we should want to set, that we forsake this tool in certain circumstances, although it might turn out to be useful and it might even turn out to be important if we're getting close to the effective lower bound. So I'd be wary of not saying what I think every one of us has said so far—namely, we should make it clear that we'll adjust our plans to run off the portfolio if it is necessary to help deal with an unexpected event that would be relatively important to handle by stopping the runoff of our assets and to add that, of course, we hope that such changes will not be necessary.

With regard to the size of the reserves and so forth, I think we've got to agree on the principles that we need for determining how large excess reserves would be. I don't know whether you all got this \$100 billion number in your mind. I saw \$1 trillion for excess reserves as the steady state level and thought, "Gee, I hadn't thought of that." And I wonder whether there is any sense that that's a large number. I know the economy will catch up to it someday, but is that a number we actually should be thinking of? Let's see. Obviously, that will depend on the interest rates we pay on reserves as well. I think I agreed with almost everybody here, so I'll stop. I've got a few other comments, but nothing that hasn't been said three times. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Madam Chair. I also want to thank the staff for the memos, which were very helpful. My read of the memos is that basically it doesn't matter which of the options we choose in terms of the macroeconomic effects. I'm not in favor of the MBS-only option because it's so slow. I'm agnostic among the other three.

I think, overall, our goal should be to surprise the markets as little as possible and do everything we can to avoid any kind of a tantrum. That to me says we should separate the announcement of what our plan is from the actual implementation—I think Vice Chairman Dudley suggested maybe a white paper. I think a detailed announcement six to nine months or longer in advance of the actual implementation would be very helpful, just to give markets plenty of time to prepare for it.

In the memo, you have this notion of date based versus state based—it is something I talked about a lot with my staff. I actually come out in favor of date based, and I'll tell you why. If we announce a detailed plan sometime soon, that itself could be a trigger event for some type of market reaction. But if we then have a state-based actual implementation, that's a second trigger event. And that FOMC meeting, when we decide to actually get to our threshold of 1.5 percent or whatever it is, becomes a momentous event. Are we actually going to move the federal funds rate and not only raise rates, but now trigger the ceasing of reinvestment?

The thing I like about a date-based plan is there's one possible trigger event well in advance of implementation, and then, basically, the balance sheet is on autopilot. And if the economy goes south, if the euro zone breaks up or something happens, we can always hold. We'll always have an excuse if we need to press pause and delay the actual implementation of the policy. So I'm in favor of date based because I think it minimizes the risk of an adverse market reaction.

The last comment I'll make is, there's been discussion of needing to raise rates in advance of doing any of this so we have room to cut them. I always struggle when I hear that argument. To me it's like driving down the highway and saying, "Well, we may have a hill approach, so let's let off the gas now so we can floor it if the hill comes." It's better to just maintain your speed than let off the gas in advance so you can floor it when the hill comes.

And I think about the notion of, if we raised rates, are we really going to cut them if this balance sheet announcement triggers an adverse market response? I doubt it. I think it's much more likely we're just going to hold our policy and maybe defer our federal funds rate hike. If I'm right that in response to an adverse market reaction we're just going to hold, I would rather hold at a lower federal funds rate than hold at a higher federal funds rate while that tantrum subsides. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I start with the premise that the Chair actually articulated in the beginning, that interest rate policy is the Committee's preferred tool for affecting broader financial conditions in the pursuit of our mandates. The Committee has incomparably more experience in using policy rate changes to affect financial conditions than it does in using the balance sheet.

To me, the implication of that preference is that, in the absence of other considerations, which I'll return to in a second, the Committee would ideally not begin to allow the balance sheet to shrink until the federal funds rate is at least approaching a level that would allow the Committee to react to a downturn aggressively and effectively through interest rate reductions. I don't see this view as located on the "hawkish–dovish" spectrum, but rather as being prudently bearish in the spirit of hoping for the best and preparing for the worst.

So the question is: How high should the federal funds rate be before the Committee moves away from full reinvestment? I don't have an exact figure, but I'll just point out that over the past 50 years, the average total policy rate reduction associated with a recession has been over 5 percent, and the smallest such reduction has been more than 4 percent.

If the Committee raises rates three times this year, the federal funds rate will be at 138 basis points. And even with a neutral rate that could be a full point lower than it used to be, a rate of 138 basis points is not high enough, in my view, to actually begin to reduce reinvestments. On the current path, the middle of 2018 seems to be about the right time to seriously consider moving away from full reinvestment, and that timing is also consistent with market expectations, diverse though they may be. And I would echo others that I personally am not particularly attracted to a specific date or to a threshold. I would rather keep it qualitative for the time being.

There are plausible reasons why the Committee might go sooner, and one such reason is that moving sooner would send a healthy signal that the Committee is intent on shrinking the balance sheet. That could add some legitimacy to future use of the balance sheet, although it is hard for me to see big or lasting incremental gains on that front from moving in December 2017 rather than two or three meetings later.

Another question is, how many rate increases are you forgoing in order to move the shrinkage of the balance sheet forward in time? It's very hard to say, but I think we should assume that it's two or three rate increases. In effect, the choice now is, do you want to move the end of reinvestment forward by two or three meetings, or would you rather have 50 or 75 basis points more on the federal funds rate? I guess I come down on the side of wanting to have a higher federal funds rate. That is partly just the near presence of the effective lower bound. As

David López-Salido suggested earlier, the memos do estimate a very low probability of hitting the lower bound. The probability drawn from the postwar period is actually much higher than that, and, therefore, I think the memos understate the value of having more powder if we do hit the lower bound.

Another consideration is the path of the economy. If the economy does surprise to the upside, I guess my first preference would be to raise rates even further. If the economy grows even stronger than expected, to the point at which the Committee feels that it's getting "behind the curve," then that would strengthen the case for doing something sooner on reinvestments. In any case, I think it's wise to reduce reinvestments at a moment of relatively high confidence about the strength of the economy.

If the Committee is persuaded that reinvestment policy should be changed this year, about half a year before the market broadly expects, then I think that would argue for a more gradual phaseout of purchases along the lines of the third option laid out. I also think there will be a need to manage our communications very carefully. In the world of the memos, the public perfectly understands that if we reduce the balance sheet more quickly, then we'll raise rates less quickly.

In the actual world, as we know—indeed, as we have proven—communicating tapering decisions is a tricky business. I think the market is highly likely to take the dot plot as a given and take a change in reinvestment policy as additional policy removal or a "hawkish surprise." I'm not particularly concerned about another taper tantrum, but I do think we need to be clear whether that is the Committee's intent.

I also agree that once the Committee begins to reduce the balance sheet, the process should be on automatic as far as possible and that we should not be in the business of using the

balance sheet as a meeting-by-meeting tool. However, I do see it as relatively straightforward to resume reinvestments in the event of a downturn that required us to cut rates, and our communications should clearly state that a decision to cut rates is likely to be accompanied by one to resume reinvestments.

Finally, this is a highly timely discussion. It would be good to reach a consensus on guidelines. And I think if we're going to make a decision to taper this year, I guess I would be in the camp of wanting to have that be a delayed effect and then to be phased in gradually over time. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. I really appreciate the staff's work and the timing of this discussion. To date there have been strong arguments to delay the start of balance sheet normalization, but, as others have said around the table, many of those reasons are fading in importance, and we are steadily approaching a time when normalization should begin. Doing so will reduce the risk for Federal Reserve remittances; create some policy space for ourselves, as others have said; and perhaps reduce a source of volatility in the markets. It's also consistent with our stated normalization principles, and I believe that staying consistent with those principles is also quite important.

Like others, the factors I see influencing the timing of normalization involve the level of the funds rate, the state of the economy, and the balance of risks. I would like to see two or maybe three more rate hikes and that the economic risks are roughly balanced. And there's a possibility, as Governor Powell said, that we may be in an economy that is very different, one in which those risks are actually to the upside, and so we'd have to take that into account.

Now, work by my staff and also, of course, the Board memos indicate that with proper communication the “when” and the “how” of normalization will have relatively small effects on yields and market functioning. Risk considerations are, thus, central to the way I think about this. The memos distributed prior to the meeting discuss at length the risks associated with future macroeconomic or financial shocks.

The FOMC, though, always has the option to change course in response to tail events, so these are not the types of risks that most concern me. Related to President Williams’s comments, the risk I worry about the most is model uncertainty. We are far from certain with regard to the effects of SOMA holdings. Current models may underestimate the effects of redemptions and perhaps even miss some channels that prove crucial after the fact. If, say, we find out that redemptions increase yields by substantially more than estimated, we would also have to revise upward the amount of accommodation SOMA holdings have been providing since 2014 and revise downward the strength of the underlying economy.

In the worst-case scenario, we would find ourselves moving faster in the wrong direction. Therefore, I think we need to be cautious. A sociologist, Charles Perrow, describes as normal accidents those to be expected in complex systems that are, one, interactive; two, have tight coupling; three, firm cascading failures; and, four, are opaque.

Financial markets clearly qualify, and we should be cautious. Therefore, it seems prudent to me to start with a cap on redemptions, as shown in the staff memo, and possibly gradually raise it as we become more certain of the effects of normalizations. We could start, say, at \$30 billion and perhaps bump the cap up by \$10 billion a quarter if everything goes as planned, soon then ceasing all reinvestments. There are other ways we could do this, but I think to me the cap approach and being flexible about that makes some sense.

I'm a bit more wary regarding our knowledge of normalizing MBS and whether that market is as robust as the market for Treasury securities. It may be even more worthwhile to consider phasing in the normalization process with MBS. My staff and I were just curious why that option was not considered, and if you could answer that question I would appreciate it.

To reiterate, the conditions for starting normalization are roughly those I expect to prevail close to the end of this year, 2017, when the target range for the federal funds rate is likely to be 125 to 150 basis points. However, I think explicitly linking the level of the federal funds rate with the start of the normalization process would be problematic on several counts.

First, communications would need to be carefully crafted to avoid confusion over whether the condition on the federal funds rate level necessary to start balance sheet normalization is a threshold, a trigger, a hint, or a sign. Exactly what is it? In addition, the timing between the level of the federal funds rate and the start of normalization would raise the stakes, as others have said, on what would be or should be a relatively mundane 25 basis point increase. So I am also supportive of the idea of separating the reinvestments decision from a decision we would make on raising the federal funds rate. I just think it adds too much drama to the situation that we can avoid.

Also, it seems preferable to rely on the data-contingent language in a manner analogous to that deployed for the federal funds rate until the Committee comes to a consensus, at which point I am supportive of some clear communication, whether it's a clear statement of policy, a white paper, or some other form—but we're not there yet, and we have to form a consensus in the Committee. Although using data-contingent language will not remove all uncertainty regarding the start date, I view data dependence as a guiding principle of monetary policy. Despite what critics say, and I know they hate that phrase, I actually think it has served us well

with interest rate adjustments, and for similar reasons I believe it should be adopted with respect to the normalization of the balance sheet as opposed to any other start date or trigger or threshold for the federal funds rate. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. I would like to thank the staff for useful background memos on this topic before I begin. I'll start with an overarching consideration. I think we should end reinvestments in a way that avoids conveying that we intend to use the timing, pace, or nature of the reduction in our balance sheet as a distinct discretionary policy instrument. I think others have made that observation. I agree it is hard to have much confidence in the estimates of the incremental macroeconomic effects of changes in the balance sheet size or composition. I endorse President Williams's suggestion that further attention should be paid to that issue.

I think we are better off relying on traditional interest rate policy and setting our balance sheet on a path that is formulaic and predictable. I also think we want to minimize the extent to which market participants are preoccupied with conjectures about our balance sheet plans. Today's discussion will appear in the minutes. I think it is likely to trigger a great deal of speculation about the timing and nature of our decision. I would prefer to commence running off our balance sheet sooner rather than later, and to make doing that as simple as possible.

I would like to see us simply announce at an upcoming meeting, in paragraph 5 in our statement, that we are ending reinvestment of both Treasury securities and MBS. We can make it effective a short time in the future. To me, a month seems perfectly adequate. That should put the discourse to bed fairly quickly.

Among the options presented by the staff, I favor the first scenario, in which we immediately cease all reinvestments. When we get close to having normalized our balance sheet, we should sell off the residual MBS holdings, as we said we could in our normalization principles and plans, and, if necessary at the time, reinvest the proceeds into Treasury securities. These MBS would be a nuisance. Besides, I think we should try to get to our objective of achieving a Treasury securities-only balance sheet sooner rather than later, again, consistent with our principles.

I will comment here on the size of our normalized balance sheet. To say that an estimate that is stated as \$500 billion to \$1 trillion is an imprecisely estimated quantity is sort of an understatement. In looking over the analysis, I'd urge the staff to maybe dig a little deeper. I brought to the subject the intuition derived from our pre-crisis operations that it only took a couple of billion dollars of excess reserves on Wednesday afternoon in surplus relative to what the market needed to drive the funds rate fairly low. So something is wrong with that intuition if we need \$500 billion in excess reserves to run a floor system systematically. I suspect it is much less than \$100 billion. But, anyway, we can probe as we get there and figure that out, but that, I think, needs a lot more work.

I think we should actually consider, and the staff should analyze, a hybrid approach in which we set a floor under the rate at which our MBS holdings decline rather than letting the pace of MBS runoffs be governed by just the vagaries of the principal repayment flows. We can set a minimum monthly rate at which we would reduce our MBS holdings. Whatever we don't achieve through principal and interest payments we could achieve through outright sales. That way, we could set our MBS holdings on a more or less predictable path, or occasionally repayments might spike above that minimum amount, but we could set it at an amount that gives

us confidence we can achieve our announced objective in a reasonable amount of time. We could have the proportion of MBS in our portfolio when we get to normalization be much smaller than it is here, which is almost half.

Now, I realize that the scope of today's discussion was limited to reinvestment policy, and that's consistent with us having decided some time ago to avoid asset sales. I think it might be worthwhile to revisit that decision, to open that up. My recollection is that a decisive factor was the potential effect on remittances—the possibility of negative remittances, of realizing capital losses by selling long-dated securities in a rising rate environment and thereby the risk, as many people have alluded to, of recording a deferred asset. That effect would be without any direct economic consequence of any significance, but the optics were viewed as potentially costly on the political front.

I'd point out, though, that there are other adverse political optics associated with our balance sheet that deserve consideration as well, and many of these cut in the opposite direction. For example, when long-term yields rise another 10 to 15 or 20 basis points, we will begin showing unrealized capital losses in our financial statements—granted, in the footnote, but they will be there to find. And, as rates rise, they will rapidly swamp the book value of our capital. I think that could easily get as much attention as a deferred asset on our balance sheet. Avoiding sales is not going to protect us against adverse optics, in other words.

I'd also mention that the dollar value of the payments we make as interest on excess reserves has gotten significant attention politically as well, and minimizing that is obviously aided by more rapidly running off our balance sheet. The basic point is that considering asset sales shouldn't be a taboo.

Finally, I just want to say that I have the utmost confidence in the Federal Reserve Bank of New York's markets group and their ability to be well prepared to buy MBS should we decide to do so in years ahead. I see no reason to continue to buy or sell MBS for the purpose of "maintaining operational readiness." Thank you.

VICE CHAIRMAN DUDLEY. Glad you have so much confidence in us. [Laughter]

CHAIR YELLEN. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. I always enjoy following President Lacker for the point-counterpoint that this provides. [Laughter] To date, our balance sheet strategy has been to fully replace any maturing assets in the SOMA portfolio because we have been primarily concerned with avoiding a return to the effective lower bound. However, the changing economic environment calls for a reevaluation of this strategy.

If we tighten in March and June, the funds rate will be more than 100 basis points above zero for the first time since 2008. There are relatively few instances in postwar history in which we have lowered rates by more than 100 basis points other than times in which we were entering a recession. If, on the other hand, we are faced with a recession, history suggests we will need to cut the funds rate by more than the 300 basis points that is our current estimate of the equilibrium funds rate. When the next recession arrives, it is quite likely that we will make a return trip to the lower bound.

These business cycle facts bear implications for our balance sheet policy. To address modest concerns, such as occurred in the wake of a Russian default crisis, a buffer of 100 basis points may well be sufficient. To address a recession, however, we will likely be faced with the need to provide more stimulus than conventional policy can provide, perhaps using our balance sheet once again to augment conventional policy.

My basic concern is that at the end of this tightening cycle we will have plenty of room for small adjustments, but we likely will not have enough room to avoid, once again, hitting the zero bound in the event of a recession. What would a balance sheet policy that takes these considerations into account look like? First, I do not want our announcement about a change in the reinvestment policy to have a significant macroeconomic effect. We should try to avoid a significant taper tantrum-type response in the market. I believe this approach argues for a very tapered strategy, possibly beginning by rolling off as little as 10 or 20 percent of what is coming due and reinvesting the rest. If we plan to follow a very gradual roll-off of securities, I would prefer to start relatively soon.

Second, while lowering the term premium has advantages when at the lower bound, these advantages could become disadvantages when the economy is approaching both elements of our dual mandate. Flatter yield curves make financial intermediaries that are borrowing short and lending long less profitable. In part, this is why flatter yield curves may also encourage greater reaching-for-yield behavior, particularly for investors seeking to match longer-term liabilities with longer-term assets. I think we are already seeing some evidence of this in the low capitalization rates for real estate, which is why I see this as an area with enhanced financial stability concerns. Normalizing the long end of the curve may be more important for financial stability than normalizing the short end of the curve.

Third, as the international pre-briefing described, there may be less exchange rate response to a balance sheet change than there would be for an equivalent movement in short-term rates. If we want to tighten without having an undue effect on exchange rates, a mixed strategy of balance sheet shrinkage and short rate increases may be optimal.

Fourth, and perhaps most important, I view the balance sheet as a monetary policy tool we are likely to be forced to use again in the next recession. With a low inflation target and a low equilibrium interest rate, the balance sheet may become a more frequent tool of monetary policy.

During the transition toward our long-run balance sheet configuration, I would prefer that we have the ability to adjust the pace of balance sheet shrinkage should the economic outlook change dramatically. A tapered strategy to shrinking the balance sheet that could be adjusted in response to changes in the economic outlook could provide us that flexibility.

With these factors present, I would prefer to target as early as the third quarter as the appropriate time to start shrinking the balance sheet should the economy unfold as I expect. Because I expect the economy to grow a bit above 2 percent and expect to have attained our dual mandate by the end of the year, I would expect that the economy could tolerate a June tightening that includes communication of an impending, but very gradual, taper strategy.

Of the options presented to us, the first two are not very attractive. The first option maximizes the risk of disruption, in my view. While our models may not see this as a large risk, I do. And most market participants I talk to are more interested in our plans for the balance sheet than our federal funds rate path.

The second option focuses on limiting Treasury security rollovers in order to prevent disruptions in the Treasury securities market. I was surprised to see this concern getting such a large weight. If our Treasury security roll-off is predictable and our reinvestment strategy is clear, I would expect the Treasury has more than enough debt management options to avoid any surprises or disruptions to the Treasury securities market. As the U.S. Treasury can alter the distribution of maturities and the size and timing of issues, I see no reason to tie our reinvestment

strategy to the lumpiness of retirements. The one factor I would be concerned about is a binding debt ceiling, which would possibly constrain the ability of the Treasury's debt management tools to smooth out our lumpiness in retirements.

However, even this concern could be reduced if we choose a very tapered strategy and timed our first announcement so it did not coincide with an occasion of a binding debt ceiling. In terms of the option to focus solely on MBS, this choice is my least favorite. I think this strategy has the second-highest chance of disrupting markets. Unlike Treasury security issues, there is no large player smoothing out the market. Furthermore, the role of dealers is somewhat uncertain in view of the leaner inventories they have been holding. The MBS market is neither as liquid nor as resilient as the Treasury securities market.

Finally, when I talk to market participants, I hear relatively few concerns about Treasury security roll-offs, but I do hear significant concerns about MBS roll-offs. I understand the appeal of this option to those who would like us to return quickly to an all-Treasury-securities portfolio, but I do not share this goal, and I think moving too quickly in this direction entails significant market function risks. I would strongly oppose this option.

This leaves the taper strategy as my first choice. It is likely to be much less disruptive than an abrupt end to the reinvestment of all securities or of only MBS securities. If the taper begins with a small rate of balance sheet shrinkage, there would be little reason not to begin relatively soon and some risk to waiting too long. Because the tapering is state dependent, as is the funds rate, it highlights a balance sheet policy that will, for the foreseeable future, be a necessary tool of monetary policy. Specifically, future recessions will probably entail aggressive balance sheet actions.

I would prefer a strong presumption that we would gradually increase the percent of securities we allow to roll off, although we would have the option to reverse, stop, slow, or speed up the balance sheet shrinkage should the economy behave significantly different than our expectation.

The communications strategy begins with the minutes. I am hopeful that the minutes will discuss that the timing of the change in our reinvestment policy is later this year, that a taper strategy is preferred, that the taper will begin gradually, and that the taper will apply to all securities. Assuming economic outcomes are consistent with our forecast, our statement at the next meeting should make clear that we are likely to start our taper in the middle of this year. At the June meeting, we could announce both another increase in the short-term rate and the expectation that a taper strategy would begin in the third quarter.

In order to communicate coherently about our balance sheet strategy, we need to settle some key aspects of our longer-term operating regime. In particular, as part of the initial communication, we should be clear that we plan to operate in a floor environment featuring significant excess reserves. But we also need to provide some sense of the volume of excess reserves consistent with our floor regime. In that regard, it makes little sense to lead markets to expect a return to a scarcity-of-reserves model if we think there is a high likelihood that short-term interest rates will return to near-zero values during most economic downturns, requiring a return to unconventional monetary policy tools. Between now and June, we should settle on the volume of excess reserves we believe would be consistent with continuing to comfortably operate with our current procedure. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Gooding.

MS. GOODING. Deferring my thoughts on the questions posed in this discussion, I will go on record as saying I think the positions contained in the Committee's statement of policy normalization plans and principles are still sound. In particular, I support reducing the portfolio in a gradual and predictable manner, with the timing dependent on how economic and financial conditions and the economic outlook evolve. I think the goal here includes minimizing market disruption as much as possible, as others have said. I also support the goal of a balance sheet that is primarily composed of Treasury securities and is as small as is consistent with the efficient and effective implementation of monetary policy.

To jump ahead to one of the communications questions, I am for affirming the key elements of the policy normalization plans and principles, and I think it would be a good idea to decide on and communicate such an affirmation as soon as we can, perhaps even in the minutes of this meeting.

With reference to the July 2015 FOMC discussion, I would have been in the camp favoring beginning redemptions on the basis of a qualitative assessment of economic conditions and a wind-down that engineers a smooth decline in the balance sheet. Of the approaches to redemption policy in the staff memo, my preference is for a phasing out of both Treasury securities and MBS over time. I think the loss and the speed of adjustment compared with a full redemption strategy is worth the insurance against unexpected market disruptions. I am in favor of retaining the flexibility to adjust the pace of redemptions over time as we gain experience, though I acknowledge that this approach will involve some challenges with respect to communications.

I should add that although I support retaining the option to adjust a taper over time, I think the presumption should be that the adjustments will be relatively few in number.

One of the implicit themes in this discussion is whether the balance sheet adjustments should be considered an active policy tool and to what degree that tool should be considered substitutable with explicit interest rate policy. I think it is much simpler not to present balance sheet adjustments as an active policy tool in both public communications and Committee deliberations. In other words, I think balance sheet adjustments should be on autopilot, as a couple others have said here, to the extent compatible with economic and financial developments. I would let interest rate policies adjust to whatever effect balance sheet normalization requires, not vice versa.

On a related theme, I would not favor communications that lay out conditions under which reinvestment would be restarted. My thinking is, the conditions under which this would be appropriate—a downturn in the economy, for example—will be readily apparent. The value of communicating this conditionality up front is, to me, overshadowed by the risk of seeing doubt about the Committee’s commitment to full normalization.

Finally, I would like to see the Committee start the process of balance sheet reduction as soon as reasonably prudent. Assuming the economy is still on track, I think the 1½ percent threshold on the federal funds rate would be the best time to begin the process of shrinking the balance sheet. My forecast for the economy over the next three years, and the uncertainty surrounding it, put very little weight on the likelihood that we would find it necessary to restart reinvestment during that time. Thus, I see limited benefit to waiting for a higher funds rate before acting. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. I’d like to thank the staff for the informative memos on our policy options. For some time we’ve made it clear that we would maintain our

current reinvestment policy until normalization of the federal funds rate was well under way. I believe this conditionality remains appropriate. It allows for policy flexibility against unforeseen developments.

Of course, the question remains: At what level of the funds rate should we begin normalization? A higher rate might lower some economic risks and reinforce our strong commitment to a symmetric 2 percent inflation target. But large reserve levels do make me nervous about the optics and political risks of the Federal Reserve making larger and larger IOER payments as policy rates rise. I don't want to unnecessarily delay our eventual normalization of the balance sheet. Taking into account these considerations and in light of the outcomes described in the staff memos, waiting until the funds rate is somewhere in the range of 1½ to 2 percent before changing reinvestment policy seems like a good plan to me.

Regarding communications, I believe it is important to reinforce that the federal funds rate is our primary policy instrument. But if fundamentals were to change and we risked heading toward the lower bound again, I think we need to retain the option to change our balance sheet policy if necessary to achieve our employment and inflation mandates. This is simply part of outcome-based monetary policy.

As long as we have a low inflation objective of 2 percent and are in a low-growth, low- r^* environment, we face a real risk of returning to the lower bound and having to use our balance sheet to provide appropriate monetary policy accommodation. We should probably communicate this contingency. I wouldn't want to make too much of it, though, and would also indicate that active use of the balance sheet would be limited to more challenging economic conditions.

With regard to communication tools, the qualitative descriptions the Chair used in a recent testimony do a very nice job of describing the conditions for changing reinvestments and are worth repeating. Of course, the minutes should describe the range of issues we discuss here today, and, as we move through the year, if growth and inflation evolve along the lines most of us see in our SEPs, we can use the press conference, minutes, and speeches to inform the public that we are closer to changing the reinvestment policy and to give a broad outline of our operational plans. I see no need for any references in the FOMC statement until we're quite close to acting.

Turning to the illustrative options put forth in the staff memo, as long as we accomplish our macroeconomic goals and reduce the balance sheet over a three- or four-year period, I do not have strong feelings on the precise way we operate. Assuming that we are achieving our dual-mandate goals, option four, which ends MBS reinvestments while continuing reinvestments in Treasury securities, does not normalize the balance sheet rapidly enough for me. But the remaining three alternatives get there fast enough and produce relatively similar paths for the balance sheet and economic outcomes.

I recognize each option has different implications for how we interact with the Treasury security and MBS markets. I will look to the Board and New York Federal Reserve staffs for their advice about which combinations best address potential market disruptions. My staff coalesced around a combination of options 2 and 3 in which we put a dollar cap on the amount of Treasury securities we redeem in any month and phase out MBS reinvestments gradually. This seems to smooth out larger Treasury security redemptions and would provide time for MBS market participants to adjust to any changes in market dynamics. I recognize, though, that we

could tweak the parameters a bit to achieve the same pace of balance sheet reduction as in option 2.

One thing that came out in the presentation was the chart about the pros and cons and how the communication in one case is easy—that of immediate cessation—a bit more complicated in the case of capped Treasury securities, and complicated in the case of a two-year phaseout. I almost asked the question, “Complicated to whom?” because we’re dealing with market experts. I would think that at some point we’d just describe what this is going to be. The larger, simpler point is, simply, we want to be at the point at which we can announce we’re now going to stop reinvesting, and our balance sheet will start to glide down, and there will be details about that. I don’t really find the complicated argument to be that persuasive.

Whichever option we end up with, our communications should focus on the macroeconomic objectives and the normalization principles that we’ve already stated. We should emphasize the overall pace at which we are reducing our balance sheet and de-emphasize the details of how we’re accomplishing it.

Indeed, when the time comes, many of the particulars could be described in the directive to the Desk or the implementation note rather than the FOMC statement. This would highlight the technical market function nature of these decisions, and it would reduce the risk that market participants might mistake a particular operational detail as a signal about the overall stance of monetary policy or as a worry over some financial stability concern. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. I think the 1½ percent trigger is an appropriate conceptual place to start, subject to continued progress in meeting our dual-mandate objectives. I think this trigger and our actions should be state dependent, and I do think our

actions should be reversible, although I would prefer not to state precisely under what conditions we would reverse our tapering.

The reasons I'd like to see us get started sooner rather than later are political economy reasons, in large part in that I do believe that in the future we're going to need to use our balance sheet, and I think if we keep too large a balance sheet, we risk not being able to use it in the future when we most need it. So, again, I would get started sooner rather than later.

I would argue that when we do start, it should be done gradually, and in terms of the options of either a one- to two-year phaseout or a capping of securities or some combination thereof, I'll defer to the Open Market Desk, but, for me, slower is likely to mean we'll run off this balance sheet faster. I think the period of greatest risk will be at the start, and I think once we get launched and rolling, we have a much greater likelihood that this will be a sustainable policy. It will also give us the greatest probability by going slower at the start of shoving off and making sure we've got market stability and we minimize the effect on the markets.

In terms of when we announce this, my own view would be, conceptually, either at the meeting at which we raise the federal funds rate target range to 125 to 150 basis points or at the meeting after that meeting. I would recommend we make an announcement and we begin one to two months later. I actually would be in favor of shortening the time frame between when we announce this and when we implement it, because I think fear of the unknown may actually be the biggest factor in the market reaction.

I think at that point when we make the announcement, we should write a public implementation memo or an amendment to the Policy Normalization Principles and Plans and lay it out then. And, for me, in terms of today, the main thing I'd want communicated in our minutes discussion is that we reaffirm the Policy Normalization Principles and Plans and that we

had a discussion. But I would want to wait until a future meeting to give a detailed articulation of what we plan to do and then start again one to two months later and not leave too much time between announcing and starting. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. Assuming the federal funds rate continues to rise toward its expected longer-run level on the SEP median path, we should be prepared to issue a revised statement of principles and plans for balance sheet normalization by the second or third quarter of this year.

I would expect a revised statement to outline, in broad strokes, the conditions under which the balance sheet would start to be released, the relative roles of the federal funds rate and the balance sheet and their relationship in achieving the Committee's objectives once that process begins, the process for allowing the balance sheet to run off, the framework that will govern the size of the balance sheet when it reaches the "new normal," and any conditions that might warrant alteration of that path. Let me take each in turn.

First, the Committee should continue to follow a state-contingent and, more specifically, a rate-contingent policy in determining when full balance sheet reinvestment should be discontinued. Although the staff simulations using the FRB/US model suggest little economic difference between state- and date-contingent approaches, the Committee's judgment must also take into account the more complicated reality of the markets as well as any unexpected shocks. A policy that's contingent on the level of the federal funds rate would enable the Committee to clearly communicate its intentions while retaining control over the timing in the event of changes in economic conditions or adverse shocks.

In contrast, a time-contingent strategy risks either time inconsistency or relinquishing that control in the face of adverse shocks. For instance, a time-contingent policy of discontinuing reinvestment in the third or fourth quarter of this year could coincide with a time of unusual stress in the Treasury security markets in the event that uncertainty over the debt ceiling has not been resolved by then, as happened in the previous two episodes.

By contrast, a policy that's tied to the federal funds rate would clearly signal the intention to proceed if economic circumstances warrant while retaining the flexibility to adjust to adverse developments through adjusting the path of the federal funds rate. Indeed, the policy adopted in December 2015 to rely solely on the federal funds rate to remove accommodation until normalization is well under way has demonstrated the value of this approach. It has ensured that our most familiar and tested tool, the funds rate, will have reached a level at which it can be cut meaningfully to counter adverse shocks and thus help to guard against asymmetric risks associated with the effective lower bound.

With regard to the SEP median, placing the long-run value of the federal funds rate around 3 percent, it would be reasonable to define normalization as well under way once the range for the federal funds rate has reached midway to its long-run equilibrium value, which suggests passing a threshold of around 1½ percent. A threshold below this level leaves too little room to cut the funds rate if needed, while a threshold significantly above it risks delaying for too long balance sheet normalization. Current SEP numbers suggest this threshold could be reached as soon as the third quarter of this year, such that full reinvestment could be discontinued in the fourth quarter if economic conditions continue to evolve in line with the median projection.

Once full reinvestment is discontinued, the FOMC effectively will have two tools to remove accommodation, which is a change from previous tightening cycles. The revised policy statement should clarify whether the Committee will employ a strategy of complementarity in which the federal funds rate target and balance sheet are both used actively, as some have suggested, or a strategy of subordination, which would prioritize the federal funds rate as the sole active tool away from the effective lower bound.

In this approach, once the federal funds rate rises sufficiently, the balance sheet would be set on autopilot, shrinking in a gradual, predictable way until a “new normal” has been reached, and then increasing in line with trend increases in the demand for currency. Indeed, I would argue that predictability, parsimony, precision, and clarity of communications all argue in favor of focusing policy on the federal funds rate as the single active tool in circumstances in which the two tools are largely substitutes.

Third, I favor a gradual and predictable phaseout of reinvestments, at least over the first two years when principal repayments are elevated. While the background memo suggests there would be little difference in the economic effects of gradually phasing out versus immediately ceasing reinvestment, we cannot rule out that there may be material differences in how markets will react. A phaseout should reduce the risk of an adverse market reaction because it would only gradually increase the amount of securities the market will be required to absorb. It also aligns with the Committee’s desire to remove accommodation gradually and seems to risk a lower likelihood of misinterpretation by markets as a signal of impatience.

As the smoothing effect of the initial phaseout would fade over time and then end, it might be prudent to develop additional guard rails for reducing any spikes in the amount of securities that need to be funded by the market each month, for instance, by a monthly cap. Such

an approach would further reduce the chances of adverse market reactions, and I'd be open to this type of approach if the staff felt the possibility of such disruptions were material. In addition, I'd be inclined to apply the change in our reinvestment policy symmetrically to Treasury securities and MBS.

Fourth, the revised principles will need to set expectations about the framework that will govern the size of the balance sheet once it reaches its "new normal." The Committee's deliberations in November suggest that there's substantial support for maintaining the current framework, especially in view of its greater relative simplicity.

The minimum level of reserves to efficiently and effectively implement monetary policy in a floor system depends on the structural demand for reserves and the variability of short-term changes in the demand and supply of reserves. Because of changes since the crisis, it's difficult to know with any precision how low reserves can be allowed to drop while still maintaining effective interest rate control. Staff analysis suggests that regulatory changes and a heightened sensitivity toward risk on the part of financial participants may have moved the post-crisis demand for reserves up to a level between \$250 billion and \$750 billion, and a buffer capable of absorbing short-term variability might be about \$250 billion.

As we can't be sure of the "new normal" level of excess reserves, the Committee may want to indicate that it will monitor money markets for indications that any further reduction in the supply of reserves would put upward pressure on money market rates as the balance sheet gradually declines perhaps below some amount, such as \$1 trillion.

Finally, it could be helpful for the revised principles to indicate circumstances that would call for exceptions to this approach. Most obviously, during the period when the balance sheet is running down, if the economy encounters large adverse shocks, it may be appropriate to

commence the reinvestment of principal payments again, in order to preserve conventional policy space. Informing markets of our intentions in this regard ex ante could promote stability in financial markets and resilience in the economy.

In conclusion, the normalization principles released in September 2014, together with the December 2015 statement language, provided important clarity that was appropriate for the economic conditions of the past few years. If progress toward our goals continues as expected, it will soon be time to revise those principles to clarify when and how balance sheet reinvestment policy will change. I look forward to further discussion in meetings ahead. Thank you.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. I, too, appreciate the staff memos addressing the issues related to our reinvestment policy, and I see them building on the Committee's discussions going back to 2015.

In terms of the factors that should influence the timing of the change to reinvestments, the staff analysis pointed to little difference in macroeconomic outcomes whether we start that process later this year or when the funds rate reaches 2½ percent. From this standpoint, I see current conditions and the outlook providing an opportunity to adjust the reinvestment policy this year. While precise market reactions are difficult to predict, I have some confidence that, with the right communications, we could be less concerned about market reaction of the sort we saw in 2013.

In terms of selecting a date versus a level for the funds rate, I recall that most of us favored the state-contingent approach when we discussed this issue in 2015. Assuming tomorrow's decision will raise rates further, I would be comfortable viewing the normalization process as well under way and that, assuming no material change in the outlook or balance of

risks, by the time of our May or June meeting, it would be appropriate to tell the public what our plans are and begin ceasing reinvestments at the next meeting.

My views about the principles for restarting reinvestments are guided by the discussion we had last November about the long-run implementation framework. What we reported in the minutes for that meeting was that most participants did not indicate support for using the balance sheet as an active tool in situations when short-term rates were not constrained by the effective lower bound.

Away from the lower bound, my preference would be for balance sheet policy to be on autopilot. On the other hand, we should be realistic that even if the economy unfolds as we expect, interest rates could remain relatively low for some time and a shock could bring policy back to the lower bound. Under that scenario, restarting reinvestments may not be desirable but are certainly an option the Committee would have at its disposal.

Regarding the options, assuming that the differences between the various approaches appear somewhat modest, I favor an approach that is relatively simple and aims to have minimal effects on market functioning. I thought the option of capping Treasury security investments seemed to best fit that criteria, but I would certainly look to the Desk to guide the Committee's evaluation of this and other options drawing on their experience and their own interpretation of market dynamics.

In terms of communication, I favor reaffirming the 2014 principles for policy normalization in terms of reducing the balance sheet gradually and predictably and to hold Treasury securities in the long run. With the minutes conveying the Committee's discussion at this meeting, we could announce the change to the reinvestment policy at an upcoming meeting,

preferably one with a press conference, with the actual change in policy to be implemented soon after.

I would also be comfortable explaining that redemptions would continue at least until the level of necessary reserve balances are achieved and that reinvestments could be restarted in the future should economic conditions warrant. Thank you.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. On this issue I have definitely crossed the line from being someone whose views matter simply because I hold them to being someone whose views will matter only if they are worthwhile or helpful. [Laughter] In that spirit, I was trying to jot down some observations about the dynamic of the discussion of those of you who have preceded me today in hopes that it will help clarify the decisions you will need to be making over the course of at least the next several meetings.

First, and I noticed this in bilateral discussions with many of you over the last several months, I think there has been a movement away from the basic frame of reference that Governor Powell articulated toward something closer to what President Rosengren and, to some degree, President Kaplan articulated as well. For a while, a lot of us were of the view that we didn't really want to have to resort to further LSAPs, and so a situation in which even a modest accommodating step would have required LSAPs was one that made people uncomfortable and, therefore, there was a desire to get rates up before starting to do anything that would suggest you would have to resort to balance sheet policies.

We are now within sight, at least, of that position. But as President Rosengren said—and I am trying to say things with which he agrees so that he'll like what I say rather than just dismissing it [laughter]—as President Rosengren pointed out, and Governor Powell said the

same thing, for any significant recession, we are going to quickly get to the effective lower bound, and that brings up the question or expectation of what will be used, and it is likely to be the balance sheet.

I think people need to focus a little bit more on some of the issues to which Governor Powell alluded that were informing a view for a lot of us in the not-too-distant past that there was a little bit of reluctance to resort to the balance sheet. The issues that President Lacker mentioned concerning remittances and potential capital losses—just the criticism of something that was an unusual policy that may entail, in the view of some people, financial stability concerns and the like—those potential latent criticisms are going to be made regardless of whether the Committee thinks it is using balance sheet policy in an unusual or recession-like situation as opposed to just tweaking monetary policy a little up or down.

To me, that argues for—as many of you as feel comfortable doing it in your public statements on this—making clear that you regard the use of the balance sheet as something not necessarily to be done in a tweaking fashion, but that would be a tool to which the Committee would naturally turn pretty quickly in the event of anything more than a mild recession. Because if that is not done now, you are probably going to face some of these same political concerns when you get to the point at which you say, “Now maybe we need to do it.”

With that understanding, and getting to some of the things that Vice Chairman Dudley said at the very outset, I think trying to move relatively soon would be a good way of demonstrating that those who increase the balance sheet can also decrease the size of the balance sheet. It’s hoped that would give a little bit more reassurance to people who have been skeptical about that.

That does, though, I think underscore the importance of everybody answering for themselves and for their colleagues the question, What constitutes unusual circumstances in which the balance sheet would be used? If it is only 2009, then I think you have a problem with a significant but not rare recession. If by that you mean anything more than a mild recession, that seems perfectly consonant with what people around the table have been saying. But, again, I think people need to say that publicly so that the world understands that that is the situation that you occupy.

If you don't think that, then you are back to problem that President Williams mentions every three or four meetings, which is, how do you do monetary policy in a low- r^* world? If it's not through balance sheet measures and has an interest rate lower bound of zero, or maybe a little bit below, what else is available to you?

Next, I understand people's reluctance to think in terms of an ongoing larger balance sheet as a tool to be used in other than a first-order macroeconomic fashion; that is, to try to adjust the yield curve or to deal with financial stability concerns. I think this may, again, be echoing some of what President Rosengren said, or at least it is a variant on one of his themes, but I think you may not want to dismiss that out of hand even though it is clearly not a policy that is ready for prime time because it hasn't been thought through enough.

The reason I say that is several-fold. First, again, if r^* is going to be lower indefinitely, you do face the prospect of potentially flatter yield curves in a much larger proportion of situations than have been faced in the past. Thus, the kind of concerns that Eric mentioned are going to recur with more regularity.

Second, many people seem to want more macroprudential tools. I don't think I am going out on a limb to predict that the next several years are not going to see the enactment of

legislation providing more macroprudential tools to the Federal Reserve or anybody else. And so if you are concerned about having an instrument other than short-term interest rates, it may be that the shape of the yield curve, the composition of the balance sheet, is one of the few that would be available. It may be that the balance sheet you contemplate is not big enough to be able to affect the yield curve significantly, but I think you have got to at least try to think that through.

Finally—and this is one of my bugaboos that I am going to leave the Federal Reserve without it having been addressed—the potential continued existence of ON RRP, which I think is at least possible if a floor regime is the one that is chosen on an ongoing basis. I guess it is not necessary, but it is certainly possible. And if ON RRP is to continue, then, I just wanted to reiterate the financial stability concern that I have, like a broken record, been reiterating for the past several years. Please don't have a facility that is an invitation to short-term investors to run from financial institutions to you at the first sign of stress.

A number of meetings ago I suggested that the time might be opportune, in light of the proportion of government-security-only money market funds investing in ON RRP, to add a different qualification for being a counterparty. That is not an idea that has been taken up. I still find it somewhat attractive. But if that's not the route you want to go, I hope you continue to think about other prophylactic measures that could credibly be taken, because you don't want to be in the situation if, for example—and I think this is not beyond the realm of possibility—ECB policy changes and all of a sudden the debt costs of the peripheral countries go up a good bit and, as a result, the banks in those countries are facing short-term funding problems, and you get a bit of a run. You don't want to be in the position of having your balance sheet facilitating something that is regarded as negative. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Well, thanks for a very good discussion, and the minutes, of course, will summarize much of this, and we will try to find a path forward. I think I heard a considerable degree of consensus around the table that I think will be helpful in crafting that. Let's take a break for lunch—about half an hour? Forty minutes? All right. Forty minutes.

[Lunch recess]

CHAIR YELLEN. Let's get going. Bill Wascher is going to start us off with remarks on the economic outlook.

MR. WASCHER.⁵ Thank you, Madam Chair. I'm going to be referring to the set of charts with the title "Material for Briefing on the U.S. Outlook."

As you can see in panel 1 of the forecast summary exhibit, the GDP projection that we wrote down in the March Tealbook isn't materially different from our January forecast.

Starting with the near term, the spending indicators that we have in hand suggest that real GDP growth will step down from a 2 percent pace in the fourth quarter of last year to about 1½ percent in the current quarter—a somewhat weaker pace than we had anticipated at the time of the January Tealbook. However, we think that some of the slower pace of growth this quarter likely reflects transitory factors. In particular, there was a surprisingly steep drop in state and local construction in January that we don't expect to persist, and growth in consumer spending was held down by a drop in outlays for energy services that probably reflects unusually warm weather. As a result, we are projecting real GDP growth to pick back up to 2 percent in the second quarter.

After the March Tealbook was closed we received several additional pieces of data, including the fourth-quarter Quarterly Services Survey and the January international trade release. As we indicated in the Forecast Update that we circulated last Friday—and as you can see in panel 2—the incoming data and updates to our financial conditioning assumptions had very little effect on our outlook for real GDP and inflation.

Of course, last Friday we also received the February employment report. On the whole, the labor data looked stronger than we were expecting but not markedly so. Payroll employment—panel 3—posted a second consecutive gain in excess of 200,000 last month, although both January and February featured large increases in construction employment that were likely associated with milder-than-usual weather. In the household survey, the unemployment rate edged down to 4.7 percent last

⁵ The materials used by Mr. Wascher are appended to this transcript (appendix 3).

month, as we were anticipating, while the participation rate ticked up one-tenth rather than posting the 0.1 percentage point decline that we had penciled in. Abstracting from the weather, which now appears likely to hold down job growth in March, in our near-term forecast we would be inclined to take on board a bit of the upward surprises to payroll growth and the participation rate implied by last week's release. That said, we don't see the incoming data as materially altering our view of labor market conditions.

In panel 4, I've updated a chart that provides a closer look at developments in the labor market by plotting the unemployment rates for several broad racial and ethnic groups. Taking the longer view, the unemployment rates for these various groups are now close to their pre-recession levels, as are the cross-group unemployment rate differentials. It is interesting to note, though, that over the past year or so, the jobless rate for African Americans has continued to move lower even as the rates for Hispanics and whites have each moved roughly sideways.

As in our previous projection, we have taken only a limited signal from the improvement in various survey measures of consumer sentiment and business conditions that occurred in the wake of the November election. So far, we haven't seen much to make us question our decision to temper our reaction to these surveys: The incoming data on household and business spending haven't really surprised us to the upside, and our reading of the February Beige Book is that growth in economic activity isn't in the process of picking up appreciably faster than we have assumed. That said, we cannot rule out the possibility that we should be taking more of a signal from these survey-based indicators—and, indeed, one of the dynamic factor models that we follow has done just that and is predicting a noticeably faster pace of first-quarter GDP growth than we are. Hence, in the Risks and Uncertainty section of the March Tealbook, we once again included an alternative scenario in which the recent improvement in these surveys turns out to be a harbinger of a sharper acceleration in private demand than we have projected.

As far as the medium-term forecast is concerned, the changes that we put through to our conditioning assumptions were largely offsetting in terms of their implications for real activity. First, we delayed the timing of our projected fiscal expansion. As you know, we have been using a personal tax cut equal to 1 percent of GDP as a placeholder to capture the effects of anticipated—but as yet undetermined—expansionary changes in fiscal policy. In the December and January Tealbooks, we assumed that this tax cut would be enacted in the third quarter of this year. However, taking into account apparent legislative priorities and after consulting with our colleagues in the Congressional Liaison Office, we decided to push back the assumed date of the tax cut to the first quarter of 2018. In addition, in response to the hiring freeze that was announced after the January projection was completed, we have built in a modest reduction in federal government employment that extends through the first part of next year.

By themselves, these changes to our fiscal policy assumptions would imply a little less real GDP growth over the medium term. Going in the other direction, however,

the higher path of stock prices and weaker exchange value of the dollar that we have assumed in this projection act to boost output growth. All told, the level of real GDP at the end of the medium term is basically unrevised from our January forecast.

With no important changes to our supply-side assumptions, our view of the economy's current and prospective cyclical position—the solid line in panel 5—is not very different from our January assessment. In particular, we think that output is a little above potential at present, implying a slightly positive output gap. Over the medium term, we continue to expect that aggregate demand will outpace aggregate supply, resulting in a level of real GDP at the end of 2019 that is about 1¾ percent above potential.

The minimal revisions to our projected output gap path imply a medium-term forecast for the unemployment rate—panel 6—that is also little revised since the previous Tealbook. At the end of 2019, the unemployment rate is expected to be just over 4 percent, almost 1 percentage point below our estimate of the natural rate.

Panels 7 and 8 on the next exhibit summarize the inflation outlook. The price data for January came in higher than expected, with much of the miss attributable to core prices. However, as we have noted for several years now—and as Jae Sim discussed in his pre-FOMC briefing last week—core PCE price inflation tends to be both more volatile than usual and to come in higher than average at the beginning of the year, a pattern that we believe is partly attributable to residual seasonality. We have therefore taken little signal from this upside surprise for our core inflation forecast. Tomorrow morning, we're going to get the CPI report for February, and I'll update the Committee on that then.

In terms of year-over-year changes—panel 9—the most recent monthly data imply a 12-month change for total PCE prices in January of 1.9 percent and a 12-month change in core PCE prices of 1.7 percent. The 12-month change in the headline index has moved up from less than 1 percent last summer, as the steep declines in energy prices in late 2015 and early 2016 that had been holding down inflation gave way to a series of increases more recently. Looking ahead, we expect the 12-month change in total PCE prices to move above 2 percent briefly before easing to 1¾ percent in subsequent months. By contrast, we expect the 12-month change in core PCE prices to remain roughly steady at around 1¾ percent through the end of the year. Returning to panels 7 and 8, our projection beyond this year is essentially identical to our January Tealbook forecast, with inflation edging up toward 2 percent over the next two years.

Finally, we received several pieces of compensation data over the intermeeting period, including—after the March Tealbook was closed—the average hourly earnings figure for February and business-sector hourly compensation through the fourth quarter given in the Productivity and Costs report. As you can see in panel 10, which plots several of the various measures that we follow, there are some signs that labor compensation is accelerating modestly—a development that we see as

consistent with the interplay of an increasingly tight labor market and continued lackluster structural productivity growth. Steve will continue the briefing.

MR. KAMIN.⁶ Thank you, Bill. I'll be referring to the handout titled "Material for Briefing on the International Outlook."

As indicated in panel 1, following its third-quarter rebound, total foreign growth edged down just a little in the fourth quarter to about 2¾ percent. That was a bit stronger than we'd written down in January and mainly reflected higher-than-expected growth in Canada and Mexico, which have large weights in our foreign GDP aggregate. We see foreign growth falling a little further, to around 2½ percent, in the first half of this year, mainly because we predict a sharp slowing of the Mexican economy in the face of hikes in gasoline prices, plunging sentiment, and monetary tightening. So 2½ percent is roughly what we judge the potential rate of foreign growth to be, and our projection has the foreign economy growing at about that pace through the remainder of the forecast period: China gradually slows in response to credit tightening and sectoral rebalancing, but South America pulls out of recession and Mexico eventually picks up, too.

Despite some firming of economic activity abroad, the U.S. trade balance (the black line in panel 2) declined in January to its lowest level, or largest deficit, in five years. This may sound worrisome, but the damage to our external sector should not be exaggerated: First, whether measured in dollars or as a fraction of U.S. GDP (the red line), the deficit remains far narrower than it was in the years immediately preceding the Global Financial Crisis. Second, the widening of the trade deficit is actually somewhat overdue—last year we had expected the stronger dollar to depress the trade balance but were surprised by unusually weak imports. This is evident in panel 3, in which the contribution of net exports to GDP growth (the solid line) was actually positive for much of 2016 and well above the prediction of our trade model, shown by the dots. Since then, imports have rebounded and the net export contribution has turned negative again, but to a level more in line with our models. By the end of the forecast period, the drag diminishes considerably, as the dollar, shown in panel 4, is projected to rise only a little higher from its current elevated level.

That further appreciation of the dollar comes mainly from projected increases in the federal funds rate that are greater than the market expects. As described in Alain Chaboud's pre-FOMC briefing to the Board last week, the contraction in our balance sheet that occurs once we stop reinvestment should also boost the dollar. However, we view this boost as likely to be small, largely because the market has already anticipated some contraction in our balance sheet, and the market's expectations for our reinvestment policy aren't all that different from the staff's own projections.

In contrast to the Fed, we see the major foreign central banks staying essentially on hold at very accommodative levels throughout the forecast period. But this

⁶ The materials used by Mr. Kamin are appended to this transcript (appendix 4).

accommodation cannot last forever. As shown in panel 5, by 2019, the projected output gap in the United Kingdom and Japan largely disappears and is nearly closed in the euro area. And by the end of the forecast period, U.K. inflation, the middle panel, is converging on its 2 percent target from above, while euro-area inflation is nearing the target from below. Japanese inflation remains further below 2 percent, but, as I'll discuss momentarily, we think the BOJ will end up settling for inflation somewhat below its current target.

In consequence, we believe that sometime after the forecast period ends in 2019, these three central banks will normalize their policies. The guidance these banks have announced on their normalization strategies varies considerably, as indicated in panel 7. The Bank of England, which has essentially completed its asset purchases, plans to maintain its stock of assets at current levels until its policy rate reaches 2 percent; notably, the Bank of England has not yet decided how it will contract its balance sheet and has stated that it views stopping reinvestment and outright sales as equivalent policies from a monetary policy perspective. The ECB intends to continue its purchases at least through December and has said it will not raise interest rates until "well past" the end of those purchases. Finally, the Bank of Japan has stated that it will continue to expand the monetary base, presumably through asset purchases, until inflation exceeds its 2 percent target "in a stable manner," a development that we think will occur, give or take a few years, approximately never. [Laughter]

On the basis of these central banks' announced strategies as well as an extension of our economic projections beyond the standard forecast period, we've developed an admittedly quite speculative illustration of how monetary normalization abroad might proceed. Panel 8 presents our guesstimates of the paths of interest rates in the United Kingdom, euro area, and Japan. To calculate these paths, we started with estimates of each economy's eventual steady-state nominal interest rate, shown at the far right. For the United Kingdom, we assumed a long-run nominal rate of 3 percent, reflecting its inflation target of 2 percent and a real r^* of 1 percent, similar to r^* s estimated for the United States. For the euro area, the steady-state nominal interest rate of 2½ percent also reflects an inflation target of 2 percent but, reflecting its lower potential real growth rate, a real r^* of only ½ percent. For Japan, we assume inflation will settle at 1½ percent, below the Bank of Japan's target, resulting in a long-run nominal rate of the same level, as the real r^* is assumed to be zero. Finally, we assume that interest rates converge to their steady-state levels at different speeds in the three economies, depending on their economic conditions as filtered through an inertial Taylor rule.

Conditional on these interest rate paths, panels 9.A, 9.B, and 9.C illustrate our even more speculative projections for central bank balance sheets, focusing solely on securities purchased and held for monetary policy purposes, not on the entire balance sheet. We assume the Bank of England and the ECB start to contract their balance sheets exclusively by fully stopping reinvestments. We also assume that the ECB follows the Bank of England's lead in stopping reinvestment when the policy rate hits 2 percent. Note that for the ECB and the Bank of England, even by 2025, a

substantial fraction of their QE-based securities holdings remain. This, of course, is even more true for Japan, where, despite some rise in policy rates, we see asset purchases continuing throughout the period shown, albeit at a diminishing pace.

The normalization of monetary policy abroad should ultimately lead to some retracing of the earlier surge in the dollar. Panel 10 shows the implications of our projections for the real dollar against AFE currencies in aggregate. We assume that, by the end of the standard forecast period in 2019, the markets come to understand and anticipate further U.S. monetary policy moves—therefore, the path of the dollar during the forecast extension period exclusively reflects actions by foreign central banks. The blue line shows the projection of the AFE real dollar, taking into account only the projected rise in policy rates among the AFEs—because that projected rise well exceeds the meager increases currently signaled by long-dated market quotes, the dollar depreciates in response. The red line adds in the effects of the balance sheet normalizations. We have assumed that investors are not incorporating any expected future contraction of balance sheets into their asset pricing, so that reductions in central bank asset holdings will boost foreign term premiums and depress the dollar—however, as you can see, these normalizations add only a little to the dollar’s depreciation.

All told, our calculations suggest that the normalization of monetary policy abroad, at least through 2025, should reverse only some of the surge in the dollar since 2014. In practice, of course, the confidence intervals here are extremely wide: It’s hard enough to predict what the dollar will do the next month, much less the next decade. However, under the admittedly speculative assumptions underlying the projection, I would not be surprised if the dollar fell further than shown here. The surge in the dollar from 2014 through the present was much larger than can be explained by our models, perhaps reflecting flight-to-safety flows amid uncertain and worrisome global prospects. If the foreign outlook stabilizes sufficiently to allow monetary normalization, as we’re assuming here, those flight-to-safety flows should kick into reverse and push down the dollar. Michele will now continue our presentation.

MR. CAVALLO.⁷ Thank you, Steve. I will be referring to the packet labeled “Material for Briefing on the Summary of Economic Projections.” To summarize: Your projections are quite similar to those you submitted in December. In addition, your assessments of the uncertainty and balance of risks surrounding your projections are mostly unchanged.

Exhibit 1 summarizes your economic projections, which are conditional on your individual assessments of appropriate monetary policy. As shown in the top panel, the medians of your projections for real GDP growth this year and in 2018 are 2.1 percent, a bit above the median pace of 1.8 percent expected in the longer run. Nearly half of you project that economic growth will slow in 2019 and run at or slightly below your estimates of its longer-run rate. One participant did not submit

⁷ The materials used by Mr. Cavallo are appended to this transcript (appendix 5).

longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate; that fact will be noted in the SEP material that will be released to the public. As shown in the second panel, the median of your projections for the unemployment rate in the fourth quarter of this year is 4.5 percent, slightly below the median projection of its longer-run normal level. Most of you project that the unemployment rate will be slightly lower in the fourth quarter of this year than it was in the latest employment report for February, and that it will not change much over the subsequent two years. As can be seen in the third panel, the median of your projections for headline PCE inflation moves up from 1.9 percent this year to 2 percent in 2018 and 2019. Only two of you see inflation continuing to run below 2 percent in 2019, while several of you see inflation modestly above 2 percent in that year. Turning to the bottom panel, the median of your projections for core inflation rises to 2 percent in 2018 and 2019.

Exhibit 2 compares your current projections with those in the December Summary of Economic Projections and with the March Tealbook. As can be seen in the top panel, the median of your forecasts for real GDP growth in 2017 is unchanged from December, while the median projection for 2018 is one-tenth percentage point higher. About half of the participants continued to incorporate greater fiscal stimulus into their projections; almost all in this group now project slightly higher real GDP growth next year than in their December projections. As shown in the second panel, the medians of your projections for the unemployment rate are little changed from December, with a few of you making modest downward revisions to your estimate of the longer-run normal rate of unemployment. As can be seen in the third and fourth panels, the medians of your forecasts for headline and core PCE inflation are largely unchanged from December, although core inflation is expected to be slightly higher this year than in December. Compared with the March Tealbook, the medians of your projections for real GDP growth are broadly similar through 2019 and slightly higher in the longer run. The medians of your projections for the unemployment rate are above the staff forecast in 2018 and 2019 but lower in the longer run, with the Tealbook seeing a much more pronounced undershooting of the longer-run normal rate. The medians of your projections for headline and core inflation are generally somewhat higher than those presented in the Tealbook.

Exhibit 3 provides an overview of your assessments of the appropriate path of the federal funds rate. The median of your projections, indicated by the red horizontal lines in the top panel, stands at 1.38 percent in 2017, consistent with three 25 basis point rate hikes by the end of this year. Thereafter, the medians of your projections are 2.13 percent at the end of 2018 and 3 percent at the end of 2019. Even though some of you marked up your assessments of the appropriate level of the federal funds rate 25 basis points or, in one case, 50 basis points, the medians of your projections are little changed since December. As in December, almost all of you anticipate that the appropriate level of the funds rate at the end of 2018 will remain below your individual judgments of its longer-run level, but more than half of you—slightly more than in December—judge that the federal funds rate should rise above its longer-run level in 2019. In your discussions of appropriate monetary policy, a number of you commented on the Committee’s reinvestment policy; most of those who did so

expected a change in reinvestment policy before the end of this year. As shown by the red diamonds in exhibit 3, the median prescriptions for the federal funds rate from a non-inertial Taylor (1999) rule, using your individual projections of core inflation, the unemployment gap, and the longer-run federal funds rate, are little changed since December. Almost all of you continue to project levels of the federal funds rate for this year and the next that are well below the prescriptions that result from using your individual economic outlooks as variables in the policy rule. The median of your projections for 2019 is also below the median Taylor rule prescription, but significantly closer than for 2017 and 2018.

Exhibits 4.A through 4.C for real GDP growth, the unemployment rate, and inflation, respectively, present new graphs that combine the “fan charts” at the top with your current assessments of the uncertainty and risks surrounding your economic projections at the bottom. These exhibits will appear for the first time with the SEP write-up that will be released with the minutes of the March meeting. The fan charts show the median projections (the red line) surrounded by confidence intervals based on the root mean squared errors of various private and government forecasts made over the previous 20 years. If the uncertainty attending your projections is similar to that seen in the previous 20 years and the risks are broadly balanced, future outcomes would have a 70 percent probability of occurring within these symmetric confidence intervals. As shown by the upper panels in each of the three exhibits, for all three variables, this measure of forecast uncertainty is substantial and generally increases as the forecast horizon lengthens. Of course, the width of the historical fan charts shown in exhibits 4.A through 4.C may not adequately capture your current assessments of the degree of uncertainty that surrounds your economic projections, which are presented in the lower-left panel of each exhibit. In addition, the historical fan charts, which are symmetric by assumption, may not adequately reflect your assessments of the balance of risks to your economic projections, which are summarized in the lower-right panel of each exhibit.

As shown in the lower-left panels of exhibits 4.A through 4.C, a majority of you continue to view the uncertainty attached to your 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. As illustrated in the lower-right panel of exhibit 4.A, most participants judged the risks to real GDP growth as broadly balanced, unchanged from December. One more of you now sees the risks to unemployment, the lower-right panel in exhibit 4.B, as weighted to the downside. In addition, the balance of risks to your inflation projection, the lower-right panels in exhibit 4.C, has shifted up slightly since December, as one fewer of you now judges the risks of inflation as weighted to the downside and one more of you views the risks as weighted to the upside. In your narratives, many repeated the view expressed in December 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. In your narratives of the risk associated with your projections, some of you mentioned

improvements in recent readings of household and business confidence as well as subsiding risks in the economic and political landscape abroad.

Your final exhibit shows a fan chart pertaining to your median projections of the federal funds rate. This chart will also be released with the minutes. Your assessments of appropriate policy are also subject to considerable uncertainty, reflecting uncertainty about the evolution of GDP growth, the unemployment rate, and inflation over time. This exhibit is intended to help the public distinguish the uncertainty that surrounds your assessments of appropriate policy from the diversity of views presented in the dot plot. Under your median assessment of the appropriate path of the federal funds rate, the width of the historical fan chart shown in exhibit 5 implies a 70 percent probability that the level of the federal funds rate will be within a range of 0.5 to 2.3 percent in the current year, 0.1 to 4.1 percent in 2018, and 0.6 to 5.4 percent in 2019. The forecast error bands provide a sense of the uncertainty regarding the future path of the federal funds rate that is generated by uncertainty about macroeconomic variables and other factors.

Thank you. That concludes our prepared remarks. We would be happy to respond to your questions.

CHAIR YELLEN. Any questions for our presenters?

MR. FISCHER. Steve, have you asked what would happen if France left the monetary union?

MR. KAMIN. What we have done—and we put it in a box in the Tealbook and a description there as well as an alternative scenario—is to look at what happens if Europe comes close to the euro area breaking up. This is a scenario in which France holds a referendum, and there's a period of uncertainty when people don't know which way it's going to go. And that leads to huge financial stresses and a recession that lowers euro-area GDP 4 percent, which is pretty bad, and it has pretty material effects on the United States. Now, you asked what happens if France actually leaves the euro area, and I guess my inclination is to say, "Well, at that point, all bets are off." But let me just say, I think it would probably lead to much more profound financial disruptions and contagion than in our relatively dire scenario that just shows the euro area coming close. I think it's unclear whether the euro area would survive France leaving, as it is one of its very major members.

MR. FISCHER. As we know it, it won't survive.

MR. KAMIN. Exactly. It is conceivable that it could, but even if it does survive in its smaller state, I think the disruptions for the first couple of years would be pretty drastic.

MR. FISCHER. Okay. Thank you.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I'm looking at the International Outlook, exhibit 2, which shows what happens under scenarios when different central banks try to normalize policy. You have long-run nominal interest rates differing across countries and long-run real rates differing across countries. Is there anything that would force those to be arbitrated?

MR. KAMIN. Let's put it this way. I don't think there is as much arbitrage implicit, or at least of a material sort, in the inflation rates, which are going to be pretty similar across all three. We have the United Kingdom having the highest real rate of interest, and, in principle, that should motivate capital flows into the United Kingdom that, in the near term, should boost their GDP growth, but over time that arbitrage should lead to equalization of productivity growth in different regions and to some equalization in growth. I would view that as a very long-term process and not something—

MR. BULLARD. Well, you put "long run" here, so—

MR. KAMIN. Well, there's "long run" and "really long run." Let's put it this way. I think that our historical experience indicates that different economies can exhibit very different potential growth rates for very long periods of time as a result of a range of structural and demographic differences. And it's unclear that those are subject to all that much arbitrage.

MR. BULLARD. Well, these are capital markets. So I guess what you've got here is that this is more what I would think of as a medium term, and there would still be some transition dynamics going on even in the long run that you're talking about here. Is that fair?

MR. KAMIN. Yes. Absolutely.

MR. BULLARD. Okay.

CHAIR YELLEN. President Williams.

MR. WILLIAMS. Yes. In the recent paper that Kathryn Holston, Thomas Laubach, and I did, we actually looked at this issue of what are real interest rates and equilibrium r^* s in these different regions. We didn't include Japan, but we did include Canada, and it's clear in the data that there are real rate differences across countries, and it's also, I think, clear in the estimates that there seems to be some divergences—I would agree with you—over the short to medium term, in r^* s across the countries, reflecting different developments.

One of the challenges in this is that the theory would tell us, as you said, that in the long run we should see an equalization of r^* across the countries, if they are measured in the same way, assuming we're looking at the same concept. But at least so far in our estimates, you definitely get some medium-term divergence in real rates and what we estimate to be r^* 's across these countries. And the ordering is like this, with the United Kingdom higher, and the United States, and then the ECB lower, and Japan's at the low end. So I think there is a medium-term versus long-run issue that you're pointing out, and I think that this is consistent, at least with the research I've seen so far, again, with that caveat that it's during a process of transition, maybe, to a long-run steady state.

MR. KAMIN. I should note that we looked at your paper, and its estimates helped inform our estimates here.

MR. EVANS. How do exchange rates behave during this transition? I kept waiting for that to be introduced somewhere in the—

MR. KAMIN. Oh, well, exchange rates are what we get to at the end of it, which is, as you have different countries normalizing and raising their rates, then capital shifts from the United States back to these countries as they're raising rates, and that's what leads the dollar to fall. Did I miss something there?

MR. EVANS. No. I thought that r^* was going to depend on a bunch of real things that might not move, and so you'd have to have some longer-term exchange rate process throughout all of this—

CHAIR YELLEN. Do you mean that the difference in real rates would drive capital flows, which would cause maybe an appreciation—in a high real rate country, the exchange rate would overshoot and eventually it would compensate for the differential in real rates? But I think that is what theory would suggest.

MR. KAMIN. Yes. I think that's what happens over the longer term. But, again, over the period shown here, in a situation in which market participants did not expect very much rise in interest rates over this next 10-year period, as those rates started to rise because the economic situation allowed the central banks to tighten, that should lead to some change in investor perceptions of relative rates of return, leading to capital flowing, in notional terms, from the United States to these countries and pushing up their currencies and pushing down the dollar.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. Just for myself, I'm skeptical that this will all be arbitrated even in the very long run because you have all sorts of different risk assessments; political regimes; home-country bias in terms of investing; and saving propensities that could be

very, very, very long-lived. There might be some forces that will try to push it together, but I think there are also some forces that are keeping them apart.

MR. KAMIN. I should note that in the very broadest sense, the countries we're talking about—the United States and these three AFEs—are all advanced economies and have a lot of similarities. As a group, they are very distinct from the group that I haven't talked about in this briefing, which are the emerging market economies. And there you should also get a certain amount of monetary normalization because a lot of those countries have low rates, and you can see even more profound depreciations of the dollar against those economies.

CHAIR YELLEN. Further questions?

MR. FISCHER. What's happened to Mexico? Has it shaken off some of the effect of our election on it? Or is it just steady with that avenue?

MR. KAMIN. Well, right now, let's say its real outlook and its financial outlook are going in slightly different directions in the sense that following the election, there was a great deal of concern about Mexico's situation. The peso depreciated very dramatically in an environment of real uncertainty, and their yields went up a whole lot. Over time, as it seems like perhaps the most dire expectations of people about, among other things, U.S. government policy, are not coming to pass, the peso has been strengthening. It's kind of returning. It's still pretty depreciated relative to pre-election, and financial conditions are getting more under control. That is on the financial side.

On the real side, a big hike in administered gasoline prices, a big fall in consumer and business sentiment, a drop-off in foreign direct investment into the country, and strong interest rate hikes by the Bank of Mexico are leading to a situation in which we've projected a pretty sharp slowdown in growth in the coming year. So—

MR. KAPLAN. I might just tag on at the end of that, taking into account all those trends, the threat of more political instability and the election of a government that is much more hostile to the United States, if we're not careful, is a real possibility.

CHAIR YELLEN. Okay. Further questions? [No response] Let's begin our round with President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. My economic outlook is quite similar to that of the Tealbook, with an assumption of both four increases in the federal funds rate and a tapered reduction in our balance sheet to begin in the third quarter. I expect the unemployment rate to be 4½ percent and both total and core PCE inflation rates to be just under 2 percent by the end of this year. I expect the economy will continue to grow at 2.3 percent in 2018, in part because of my assumption that stimulative fiscal policy will be enacted at the beginning of that year. My assumption about the fiscal stimulus, like that of the Tealbook, is fairly conservative and results in growth next year being 50 basis points above potential. As the stimulus could well turn out to be larger, I see upside risk to the growth forecast and the possibility that the unemployment rate will fall to unsustainably low levels. My baseline forecast already requires a somewhat faster pace of tightening than the Tealbook in 2018 in order to avoid the Tealbook's predicted outcome of an even larger overshoot of full employment.

For 2017, private forecasters provide quite similar forecasts. The Survey of Professional Forecasters has the unemployment rate at 4½ percent at the end of this year and total PCE inflation at 2 percent. Thus, private forecasters expect we will be at our target inflation rate but beyond full employment at the end of this year. The Survey of Professional Forecasters then expects 2.4 percent growth in 2018, with payroll additions averaging more than 160,000 per month. Such an outcome is associated with an unchanged unemployment rate, which would

require continued above-trend growth in labor force participation. While this could be interpreted as successful probing, the Survey of Professional Forecasters' optimistic outlook for demand and hiring implies a significant risk that we will greatly overshoot full employment.

The policy rate path assumed in the Tealbook forecast is still associated with a noticeable overshoot of both its and my estimate of full employment. Such an outcome could be appropriate from a policy standpoint if there is a need to raise inflation and inflation expectations to the 2 percent level. However, unlike the Tealbook, I am not confident that inflation will be so well behaved if the unemployment rate is approaching 4 percent.

An unemployment rate so far below full employment is likely to produce a number of signs of fundamental imbalance. First, I would expect that labor constraints would become an increasing problem. There are currently 16 states with unemployment rates at 4 percent or lower. Four of those states are in New England. While some of the reasons for those low unemployment rates derive from the older population in those states, it is still the case that businesses in the more rural states, such as New Hampshire, Vermont, and Maine, are complaining that they are shelving expansion plans because of the difficulty in hiring and increasingly discussing the need to move to cities such as Boston, which has a large pool of young, well-educated workers.

A number of asset prices are also showing signs of froth, which is notable in an environment in which monetary policy is widely assumed to be on a tightening path. Emerging market stock prices have increased rapidly. This is a sector that one might expect would be adversely affected by higher U.S. rates and the possibility of an appreciated dollar. In addition, high-yield corporate bond spreads to 10-year Treasury securities have come down significantly. Several research studies have highlighted the fact that narrow credit spreads can reflect ebullient

financial markets. Finally, stock P/E ratios have risen well above their five-year average, and capitalization rates for commercial real estate are quite low by historical standards.

I recently met with a group of executives of large commercial real estate firms to discuss current conditions. Rather than defend current valuations, they emphasized that reaching-for-yield behavior was reflected in the willingness of domestic and foreign investors to continue to view commercial real estate favorably despite the high current valuations. While they had concerns with overall evaluations, they felt that their sectors, mostly high-rise buildings in major markets, were underwritten more carefully and had been selected so well that they thought they would be reasonably insulated from a potential negative shock. Despite their assurances, I am not particularly comforted by the cranes that are now beginning to cap some of the new high-rise buildings in the Seaport District of Boston, providing a risk of softening prices as the new supply hits the market.

In summary, I am concerned that a forecast of very low unemployment rates has implications beyond just tight labor market conditions. Other imbalances are likely to appear, and asset valuations in exuberant markets are prone to disappoint. I will discuss the implications for this in our monetary policy discussion tomorrow.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I see this as a pivotal meeting for this Committee. Some Wall Street commentary is describing the past two weeks as an abrupt change in FOMC communications. I interpret this to mean that the hard data on the economy have not shown a marked change and yet the Committee has apparently, nevertheless, turned notably more “hawkish.” I do not think that making a move at this meeting is the issue. I think it’s all about the trajectory of rate increases a move at this meeting may set up. The tendency to view

the Committee as more likely to move once per quarter for the foreseeable future will be difficult to combat and, in my opinion, would be too “hawkish” a trajectory.

Much has been made of the distinctions between messages being sent by hard versus soft data in recent months. My staff divided the available data into two groups, one characterized as “hard” and the other characterized as “soft.” We then made near-term real GDP forecasts based either on hard data alone or on soft data alone. The soft forecast predicted 4 percent real GDP growth over the near term, while the hard data predicted just 2 percent growth. Similarly, contacts in the Eighth District reported relatively weak activity so far in 2017 but, nevertheless, maintained a certain degree of optimism for the year as a whole. My “takeaway” is that expectations are running well ahead of actual events and that we could do better as a Committee to focus more squarely on what is actually happening than on what may or may not transpire during the remainder of this year.

Real GDP growth for 2016 was just below 2 percent, similar to 2015. Many hard-data-based tracking estimates for Q1 real GDP growth and the Tealbook are below 2 percent. Residual seasonality may again be at work on the Q1 numbers, but, on the other hand, this winter was exceptionally warm, not exceptionally cold as in previous years—today’s D.C. weather notwithstanding. A weak Q1 will require significant bounceback in Q2 to rationalize the idea that the U.S. economy is growing at an above-trend pace.

One might look to job growth as suggesting a different story. The January and February jobs reports have been good, but still, year-over-year nonfarm payroll growth was 2.4 percent in January 2015 and has slowed to 1.6 percent today. Year-over-year total private-sector hours was growing at a 2.8 percent pace in January 2015 and has slowed to 1.2 percent today. Hours

growing at 1.2 percent year over year suggests an economy growing at trend if you add in ½ percent for productivity growth not above trend.

It could be that the soft data are more forward looking and foresee rapid growth ahead, reflected in equity prices and expected fiscal policy. But, in my view, there are reasons to doubt this. First, equity markets are up considerably in recent months. It is true that they may foresee higher growth, but more likely they foresee lower tax rates. Lower tax rates alone, should they materialize, could cause a one-time upward revaluation of the U.S. corporate sector, and Simon Potter's earlier commentary indicated some evidence of that.

Second, concerning fiscal policy, the characterization of upcoming fiscal policy changes as traditional deficit spending stimulus seems like a misreading of the political situation to me. A more likely outcome is what I would describe as revenue neutral tax reform. This change in the source of tax revenue may or may not be growth enhancing and is something we could certainly debate, but it does not increase deficit spending. Any infrastructure spending, in my view, is further in the future, and, anyway, it would take a lot of time to have a major effect on growth.

The bottom line is, soft data optimism may be running ahead of reality. I think the Committee can take a wait-and-see approach to find out whether the hard data catch the softer data or vice versa. I continue to think that we are better off with a regime-based forecast, which can be interpreted as something close to a steady state, with real GDP growing at 2 percent, unemployment fluctuating between 4½ and 5 percent, and inflation close to 2 percent, and very little change in the necessary policy rate to support that. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I apologize, but I am going to come back to what's been bugging me for the past three meetings, so you're going to hear it again. The U.S. economy and the structure of the global economy are at critical points and depend on political and economic policy decisions—some that have been made this year and some that still have to be made around the world.

In the 1990s, we heard often about the end of history, but history is upon us now and will be with us for a very long time. Let me start with the good news. There are encouraging signs of the beginnings of recovery in the rest of the world. The European Union's economy is growing somewhat. Temporarily, the Chinese economy looks more stable, although it's not clear whether we are seeing the fruits of a massive credit expansion in a highly indebted economy or the positive results of more-fundamental policy changes, which are not entirely visible. Japan is growing. The Indian economy looks better than it did a few months ago, as it tried to see how much you could damage your economy through monetary manipulation, and much of Southeast Asia is doing well. There are favorable developments in Latin America. But there are major questions about the survival of the European Union and the consequences of Brexit and about the stability of global oil and other energy markets, even as commodity-dependent economies in Africa and Latin America begin to emerge from their difficulties of recent years.

But most important, the U.S. economy is at a policy turning point. Our basic approach to the global economy, our willingness to accept the burdens and the benefits of acting as the global hegemon, may be about to change. That means that domestic policies, fiscal and structural, may henceforth be guided less by the postwar consensus that produced the modern global economy

and more by populist rhetoric that may affect fiscal and financial stability, with consequences for monetary policy.

The maintenance of financial stability appears to be especially difficult, as our national memory seems to be so short and the calls to take more risks, to reduce capital requirements and other burdensome regulations, become more strident. The difficulty is that a country that is unsafely loosening financial-sector discipline may be able to maintain stability for years until the stability of the financial system is once more put to the test.

We owe thanks to our colleague Dan Tarullo for his leading role in the work that has strengthened financial systems in the United States, in particular, and in many of the most advanced countries. We still have to be vigilant in doing our best to maintain that stability and not to succumb to the siren song whose eventual result will be another financial crisis. That will not be easy, but it has to be done if we are to avoid once more incurring the costs that this, and other nations, paid as a result of the Great Recession.

We may also be at a turning point at which globalization is beginning to be undone. Very likely, the second half of the 20th century saw more progress for a greater proportion of the world's population than had ever happened before. That growth depended on globalization. But if we want the process to continue, and we should, not least because that process also brought benefits to many in the advanced economies, we have to find ways to help those who would otherwise be left behind in our country and elsewhere.

With regard to the difference between soft and hard data, I think it's fairly simple. We can adjust our expectations on the basis of soft data for some time, but at some point the soft data have to be showing to have some connection with reality. And the less that happens, the more the soft data become invalid and come to be recognized as invalid. I think we are waiting. If

there is no delivery on the optimistic expectations that many have, we'll see it. And it's inevitable that if nothing is done, that's what will happen, and that is not a possibility you can exclude.

With regard to monetary policy, we are very close to attaining our targets for both inflation and unemployment. Institutions that attain their goals sometimes don't know what to do next. Fortunately, our challenge has been set out by the staff in its forecast, shown on page 4 of Tealbook A. According to the staff forecast, the unemployment rate will decline to 4.1 percent by 2019, with PCE inflation at 1.9 percent and the federal funds rate at 3.36 in 2019. In the longer run, the projection has unemployment at 5 percent, inflation at 2 percent, and the federal funds rate at 3 percent. Well, the policy challenge, if that's the case, is how do we get from 4.1 percent to 5 percent unemployment? Will that take a recession? Or is a soft landing possible? I think, by the way, I am echoing something that has already been said in this session.

This issue was analyzed in the paper by Stephanie Aaronson and others that was sent to the FOMC on December 1 last year. The paper's conclusion is, "Our inquiries into whether an undershoot is likely to foster financial imbalances or yield benefits to the supply side of the economy suggest that both outcomes could be possible." Reflecting the honest approach of good research, they say, "However, . . . , we are unable to draw clear conclusions." And that is the background for tomorrow's discussion on what we're going to do now that we've hit our targets, in essence, and the economy continues even beyond that point, Madam Chair. Thank you.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. Overall, the Fourth District economy continues to expand at a moderate pace. Many District contacts reported that economic conditions have improved moderately since the January meeting.

The Federal Reserve Bank of Cleveland staff has constructed a new diffusion index that controls for the composition of business contacts. With this index, the staff can better track changes in conditions over time. According to this index, the percentage of business contacts reporting better versus worse conditions moved up from 16 in January to 38 in February, its highest value since autumn 2014. Compared with earlier this year, contacts in both manufacturing and construction reported improved business conditions and rising prices for raw materials.

Business and consumer sentiment remain elevated in the District, although so far there are few reports that this optimism has translated into substantial increases in spending or investment. In trying to get a better understanding of the sources and implications of this positive sentiment, I asked my directors how likely optimism would fade if changes to tax policies, infrastructure spending increases, and regulatory reform were slower to materialize or didn't meet expectations. It was interesting that they generally thought that businesses would remain optimistic even in this case. As they explained it, maintaining the *status quo* was enough. They indicated that many businesses perceived the previous Administration as being anti-business and increasingly so over time. So the directors said that if businesses knew that the climate for business wouldn't get any worse in terms of new burdensome regulations or anti-business attitudes, this would be sufficient to keep businesses optimistic even if the proposed policy changes fell through.

Incoming data continue to show that District labor markets are essentially at full employment. Through December, District employment grew 0.6 percent on a year-over-year basis, a rate modestly above the Federal Reserve Bank of Cleveland staff's estimate of District trend employment growth of about 0.25 percent. The District's unemployment rate remains

stable at about 5 percent. There's variation in unemployment rates across the District, from a low of 4.8 percent in Kentucky to 5 percent in Ohio, 5.4 percent in Pennsylvania, and 5.8 percent in West Virginia.

The Cleveland staff has estimated trend rates of unemployment for the Fourth District states using a job flow model. According to this analysis, by the middle of 2016, the District's state unemployment rates were all within 30 basis points of their estimated trend rates of unemployment, and since that time, for the District as a whole, the gap has closed. This is consistent with District contacts' anecdotal reports that they continue to have trouble finding workers. Indeed, although District builders might gain should federal infrastructure spending increase, they are concerned about their ability to staff such projects.

Employers in the restaurant and hospitality industry note that they are beginning to see more job hopping and upward wage pressure, and a number of workforce development contacts say they're seeing a reduction in the credentials and the skills of the people they're attempting to assist.

Turning to the national economy, incoming information on the real side of the economy is coming in largely as expected. Labor market conditions continue to strengthen, and wages and incomes are rising. I believe the soft consumer spending data in January will prove to be temporary. The recent inflation data have been a bit stronger than I anticipated. On balance, my modal outlook for the economy over the medium run has changed little since our previous meeting.

My SEP forecasts are much the same as they were in December, with growth a bit stronger, the unemployment rate a bit lower, and inflation a bit higher in my forecast this round compared with December. I see the Tealbook's assumptions about the size and timing of the

fiscal stimulus as plausible, and I've incorporated similar stimulus assumptions into my forecast, which provides a similar modest boost to growth and inflation next year. I have not changed my federal funds rate path since December and view an upward path of the policy rate as appropriate.

I see favorable fundamentals, including accommodative monetary policy and financial conditions, improved household balance sheets, the strong labor market, and modestly more stimulative fiscal policy as supportive of GDP growth over the forecast horizon at somewhat above trend, which I estimate at 2 percent over the next few years. This pace is sufficient to put downward pressure on the unemployment rate. I expect the unemployment rate to fall to 4½ percent by the end of this year and to remain below my longer-run rate of 5 percent over the forecast horizon.

We have met the full employment part of our dual mandate. Job gains have averaged more than 200,000 per month over the past three months, keeping employment growth well above its longer-run trend. The labor force participation rate has been essentially flat over the past three and a half years, and is above estimates of its trend, and the broader measures of labor underutilization are down. For example, the U-6 measure, which includes part-time workers who would rather work full time and people who have been discouraged from looking for a job, has fallen to its lowest level of the economic expansion. And although the share of part-time workers who would prefer full-time work remains higher than before the recession, as I noted at our previous meeting, it's possible that the trend level of this measure has risen as a result of structural factors so that the current level has already returned to trend.

For inflation, recent readings on headline and core inflation firmed. PCE inflation rose to 1.9 percent, reflecting higher energy prices, and core PCE inflation remains stable at about 1.7

percent. The headline, core, and the Federal Reserve Bank of Cleveland median CPI measures all exceed 2 percent. Inflation expectations, including survey measures provided in the SPF and University of Michigan and the Federal Reserve Bank of Cleveland's model-estimated measure and inflation compensation derived from TIPS have been broadly stable.

With the earlier large declines in energy prices rolling out of the year-over-year measures, headline inflation rates are likely to fluctuate over the next few months. References to core inflation may help in explaining these fluctuations. But we need to be careful that we not make the public mistakenly think that we've changed our long-run inflation objective to core PCE inflation from total PCE inflation.

With downward pressure coming from earlier declines in energy and input prices dissipating, inflation expectations reasonably stable, the labor market continuing to strengthen, and the economy growing at a moderate rate, my forecast calls for somewhat stronger inflationary pressures than in the Tealbook. I anticipate that inflation will move up to 2 percent toward the end of the year, a tad sooner than in my December projections, and it will stay near our 2 percent goal for the rest of the forecast horizon despite some anticipated downward pressure coming from further appreciation of the dollar.

Under my outlook, I believe it will be appropriate to move the federal funds rate up over this year and next. My policy rate path is unchanged since my December projections, with the funds rate ending 2019 at a level slightly higher than my long-run estimate of 3 percent. My policy rate path is similar to the outcome coming from the inertial Taylor rule in the Federal Reserve Bank of Cleveland's set of simple policy rules. Because my policy rate path is steeper in the near term than the Tealbook's path, my forecast results in somewhat less undershooting of the unemployment rate from its longer-run estimate compared with the Tealbook.

With the labor market already at full employment and inflation expected to move to target, I believe the economy can handle our ending reinvestments later this year, at which point I consider normalization of the level of the funds rate to be well under way, consistent with our statement language.

As in December and January, I see the risks associated with the outlook as broadly balanced, but I believe we will need to remain very open to the possibility that the economy will evolve differently than we currently anticipate. For example, there's still considerable uncertainty about U.S. fiscal and other government policies. As some of that uncertainty is resolved, we may need to change our outlook, including our policy rate path, more than we have in the past couple of years.

Furthermore, the Tealbook alternative scenario suggests it would be wrong to be complacent. For example, consider the scenario incorporating a steeper wage Phillips curve and more sensitive long-run inflation expectations. Essentially this entails an inflation process that is more in line with what we experienced in the 1990s than in the new millennium. In this case, even with a steeper path of monetary policy tightening, inflation could rise significantly faster than currently expected to nearly 3 percent, a notable deviation from our symmetric inflation objective.

With the economy at full employment, strong employment growth continuing, and inflation near target, the lesson is that we need to remain vigilant and continue to improve our understanding of the inflation process through further research and analysis. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. The balance of risks has changed materially in the past few months abroad as well as at home. Between 2014 and 2016, adverse spillovers from abroad along with a sharp decline in oil prices slowed progress in the U.S. economy and the adjustment of monetary policy to an extent few had anticipated. But after being an important constraint, the external environment currently appears more benign than it has been for some time, even though risks remain. Recoveries are gaining traction in China, Europe, and Japan, in part reflecting greater confidence in their respective policy environments. The improvement in the global risk outlook was also helped by the gradual pace of monetary policy tightening and the continued progress in the United States last year.

In recent quarters, market participants appear more confident that China has the will and capacity to maintain its exchange rate regime while achieving its modestly lower growth target, although there's a tension with high credit growth that will eventually need to be addressed. Following the considerable foreign exchange and financial market volatility we saw last year, Chinese authorities boosted the supply of credit, ramped up fiscal stimulus, initiated new communications regarding the exchange rate, and clamped down on capital outflows. As a result, the exchange value of the renminbi has remained relatively constant against the designated basket of currencies, and it has depreciated against the dollar at a more gradual pace. While still significant through the end of last year, net capital outflows have moderated and in February, China reported inflows for the first time in nearly three years. The damaging cross-border spillovers we saw last year have abated.

In Europe the recovery has proven to be increasingly resilient, with monetary policy continuing to provide crucial support. As a result, several challenges—including the referendums in the United Kingdom and Italy, and liquidity and capital stresses faced by German

and Italian banks—have so far been navigated without significant damage to growth, stability, or inflation expectations. Fiscal policy has ceased being a drag and, in some cases, has turned moderately expansionary. Overall euro-area GDP increased at an annual rate of $1\frac{3}{4}$ percent last year, sufficiently in excess of potential to bring the unemployment rate down nearly 1 percentage point. And measures of inflation compensation obtained from 5-to-10-year-ahead inflation swaps, which fell to $1\frac{1}{4}$ percent in the middle of last year, have recently moved up to $1\frac{3}{4}$ percent.

Activity in Japan has also picked up recently as monetary policy has remained supportive. Of course, medium-term risks remain. In China, the price of near-term stability, as Governor Fischer noted, has been a large increase in leverage, particularly in the corporate sector, which has to be addressed eventually, especially as growth is expected to continue to slow. In Japan, core consumer inflation is close to zero, well below the target, and scope for additional accommodation is limited. In the euro area, upcoming elections pose a near-term risk, as reflected in the increases in French and Italian sovereign spreads in recent months. In short, for the first time in many years, we may be seeing a period of synchronized growth at home and abroad.

The latest news here at home on the labor market has been quite positive, with payroll employment gains of about 235,000 in each of the past two months; the unemployment rate remaining relatively stable, near 4.7 percent; and the participation rate of prime-age individuals rising 1 full percentage point since the fall of 2015, which suggests significant cyclical improvement and defies the expectations of many observers. Compensation per hour in the business sector, the most comprehensive measure of wages, increased at an average annual rate of $3\frac{1}{4}$ percent for the past two years, noticeably above the pace earlier in the recovery.

Together, these data suggest we are closing in on full employment. Even so, there may still be some room for improvement. The prime-age employment-to-population ratio, for example, remains 1¾ percentage points below pre-crisis levels. There is still an elevated share of employees working part time who would prefer full-time work, and the employment cost index has increased relatively little in recent years.

Most recently, we're also seeing welcome signs of progress on the second leg of our dual mandate. The 12-month change in core PCE inflation was 1.7 percent in January, up 0.1 percentage point from a year ago. Inflation compensation has remained at a level well above the lows seen last year, and although both market- and some survey-based measures of inflation expectations still remain somewhat low relative to historical experience, there has been movement in the right direction. Still, with core inflation below our 2 percent target for almost all of the past eight years, further progress is necessary to reach and sustain our symmetric inflation goal.

The recent easing in financial conditions and indicators of aggregate spending suggest we will continue to move closer to our goals in the months ahead. Since the beginning of the year, equity prices are up close to 5 percent. The dollar has declined slightly, and spreads on high-yield corporate bonds have moved down further.

A note of caution is warranted, however, as was noted by President Rosengren, as valuations in some asset markets, such as that for equities, now appear somewhat stretched and could move sharply lower if growth and earnings do not pick up as much as appears to be priced in, possibly because fiscal policy falls short of expectations.

With regard to spending, although temporary weakness in energy services will likely weigh on growth this quarter, continued job gains, rising wealth, and elevated confidence should

lead to stronger gains in coming quarters. After changing little the past two years, there are currently signs of renewed growth in business investment. This is a sharp contrast to the situation only a year ago.

Today risk spreads have moved back down. Business sentiment has rebounded. Economic profits look to have turned up, and new orders for capital goods are moving higher. The partial rebound in oil prices has also given a boost to drilling activity, and after flattening out over the preceding year, manufacturing output has increased at an annual rate of a little over 1 percent the past six months, helped by higher energy prices and some stabilization of the dollar.

On balance, upside risks to domestic demand have grown more prominent in recent months. Since the start of the year, measures of household and business sentiment have either remained elevated or increased further, and equity prices have continued to advance. The greater optimism could be tied to expectations of more expansive fiscal policy, another upside risk, and, of course, the progress that we've made over the past year has also contributed to the favorable shift in the balance of risk.

This increase in upside risk to domestic demand and the diminution of foreign risks together suggest that risks to the outlook are more balanced today than they have been for the preceding two years. Together, this favorable shift in risks, along with the recent progress in the labor market, inflation, and the prospect of continued above-trend growth in aggregate demand, suggest the economy is at a transition, a welcome development. Thank you.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. Remarkably, my latest SEP forecasts of output growth, unemployment, and the funds rate are completely unrevised from my submissions

in December. The fact that the incoming data did not immediately contradict my previous projection is notable. It's been pointed out that this must be a rare, almost unprecedented event, but I take it as a sign that I have greater forecast acumen in the future.

I could just leave it at that. However, President Evans and I have a friendly wager about when we're going to finish our discussion today, and I took the "over." So I am going to continue with my remarks. [Laughter] The economy is expanding at a moderate pace, and I continue to expect GDP growth of 1¾ percent this year and next year. The unemployment rate looks to bottom out at about 4½ percent by the end of this year, overshooting my estimate of full employment, before eventually turning back upward toward the natural rate. Of course, there were both upside and downside surprises in the past few months, but these effectively offset each other.

On the upside, the key development was an increase in equity prices to historic highs, and that should provide some lift to household spending. The jump in equity prices—I agree with President Bullard here—likely reflects favorable tax changes, perhaps expectations of reduced regulatory and compliance costs. However, an increased risk tolerance among investors also seems to be pushing up equity valuations, compressing the equity risk premium and initiating what could be the start of a new IPO frenzy out in Silicon Valley.

Counterbalancing this positive financial news was a revision to my assessment of likely fiscal actions. The uncertainty and lack of progress on Capitol Hill has caused me to postpone the start of any fiscal stimulus until next year, similar to the Tealbook. Two things that should not be news: One is the weakness in the data reflecting some spending indicators coming in soft at the beginning of the year. The second is, I'm going to talk about residual seasonality. Neither of those should have been a surprise. Outside forecasters have had this tendency to pull down

their estimates of first-quarter real GDP growth over time, and we're seeing that same pattern today.

For many years, residual seasonality has depressed real GDP growth in the first quarter. Of course, it's offset in later quarters. We don't want to get mixed up on either side of that. Last December I thought GDP growth in the first quarter would be around 1½ percent. That forecast actually hasn't changed. Our current estimate is that residual seasonality has probably taken about ½ percentage point off Q1 growth. That would suggest underlying properly seasonally adjusted growth around 2 percent in the first quarter.

Of course, when we think about appropriate monetary policy, we shouldn't be focusing on one quarter of data, but we should be looking at growth relative to a sustainable benchmark. Now, my views on this benchmark have not changed, and I continue to view 1.6 percent as a reasonable estimate of the longer-run growth in real GDP. I recognize that that puts me at the low end of the Committee, so I do want to talk a little bit more about that.

I'd also mention, and picking up on something that Governor Fischer said and maybe broadening it, a lot of people talk about the upside risks to potential output from policy changes. I actually see there being significant downside risk to potential output from some of the things that people are talking about in this city, including restrictions on immigration, obviously a pullback from globalization. I have concerns that there are things that could reduce supply in the economy relative to what I guess is already a pretty low baseline.

But at next week's Brookings panel on economic activity, John Fernald on my staff, along with Bob Hall, Jim Stock, and Mark Watson, are going to present their research on the issue of what's underlying growth in the economy and the causes of that. They asked the basic question that we've been talking about for years: Why has growth been so slow during the

recovery since the recession while at the same time we've seen the big decline in the unemployment rate? I think we all know the numbers: GDP growth has averaged 2.1 percent during the recovery, but the unemployment rate fell, on average, $\frac{3}{4}$ percentage point per year. For the unemployment rate to decline so much, growth over this period obviously consistently exceeded potential.

This new research applies Okun's law logic to adjust output growth and other variables for the cyclical changes in unemployment. The study confirms that the disappointing pace of growth during the recovery reflects disappointing growth in potential. In particular, TFP growth has slowed substantially, and labor force participation, as we've discussed here quite a bit, has fallen. Now, they also argue that these two powerful factors also took root well before the financial crisis and the recession, and they appear likely to continue.

As we look ahead to the next few years, with the cyclical slack generated by the recession already absorbed, we should be expecting slow growth. The economy is unlikely to grow as fast as the 2.1 percent average that we've seen over the past eight years. In fact, look at private forecasters. They are currently expecting growth to be $2\frac{1}{4}$ to $2\frac{1}{2}$ percent over the next few years, with only modest declines in the unemployment rate. These forecasters have been consistently surprised to the downside by growth during the recovery, and I think they are poised for another further disappointment ahead.

Turning to inflation, the latest data show that core prices have risen a little bit faster than expected, but just like GDP, I do think that there is a residual seasonality that can explain a portion of that surprise. I'm not taking much signal from that for the rest of the year. But I still expect core inflation to move back gradually to our 2 percent target by the middle of next year and then to overshoot it slightly for a time thereafter.

With regard to appropriate policy, I haven't changed my projection. I continue to pencil in four funds rate increases for this year and even more for 2018. Like the Tealbook, my forecast contains some overshooting of the funds rate in '18 and '19 relative to my estimate of the long-run equilibrium level of $2\frac{3}{4}$ percent. This policy is aimed to limit the amount of overshooting—I would subscribe myself to the comments President Rosengren made about the desirability of limiting the overshooting—and I think that balances the risks to the economy. Also, as in the Tealbook, I expect that the SOMA portfolio will start gradually declining by the end of this year as reinvestments begin to phase out.

Finally, I view the risks as balanced. I agree with what Governor Brainard said about how the risks have evolved over the past couple of years, and I think that's an important change for thinking about the outlook and also policy. I also view the risks today as broadly consistent in magnitude with those of the past 20 years. And for those of you who have trouble sleeping at night, I once again will tell you my SEP respondent number is two. Thank you.

CHAIR YELLEN. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. We are still in a volatile and somewhat fragile period in the energy markets. On the one hand, we believe global supply and demand continue to move toward balance, and early reports suggest OPEC nations are largely abiding by the agreed production cuts for approximately 1 million barrels a day. On the other hand, this is all in the context of a record level of excess global inventory, which still hasn't been worked off because we need to get to balance first before excess inventory can start getting drawn down.

In addition, while OPEC is cutting production, U.S. production is increasing, particularly in the Permian and now possibly even in parts of the Eagle Ford. We are also seeing major oil companies shift their capital spending away from larger long-lived projects to more flexible,

shorter-cycle, less risky shale projects. As shale activity increases, we're seeing growing demand for fracking, sand, and other production inputs.

Although prices had generally firmed since the start of the year, we've seen a recent weakening, and it makes sense to us because the obvious tension in 2017 is likely to be whether OPEC participants will extend their reduced production output agreement into the second half while the United States continues now to increase its production levels. Remember, over the past two years it's been the opposite. The United States has been cutting, and OPEC has been increasing. We've now flipped, and our contacts are hopeful that, as long as U.S. production does not increase too quickly, the production cuts by OPEC are likely to be extended. But this equilibrium may prove to be fragile and bears watching.

In the meantime, one constraint to increased drilling is the shortage of production crews, particular in the Permian. Crew and equipment quality is an issue for new drilling, and the cost of production is steadily increasing as a result. This increased cost and crew shortages may help temper drilling growth and may be one factor that helps maintain the current equilibrium in global supply and demand.

Regarding the Eleventh District, our service-sector surveys continue to show strength, while the turnaround in our manufacturing survey has solidified. Business optimism remains high, although most businesses note that this optimism has not yet translated into substantially increased consumer activity. Businesses we talk to are increasing cap-ex and increasing their hiring plans, but a lot of this—echoing President Mester—is based on what they perceive as a more favorable regulatory environment and a more positive attitude from government toward businesses, and that's enough, at least for the time being, to sustain their optimism.

We expect 2½ percent job growth in 2017 in Texas, which is the highest we've had in three years, and our business surveys show intensifying wage pressures and reports of labor shortages, particularly in skilled trades. One fabricated metals manufacturer commented regarding his recent interviews with prospective workers. He only had one primary question, "Can you get yourself to work and be on time?" Another thing he asks is, "Can you breathe?" But I left that out. [Laughter]

A window manufacturer tells us that the ability to find qualified labor for manufacturing jobs has become extremely difficult. He commented that even with increases in starting wages of 30 percent in the past two years, applicants are less qualified and less able to work a consistent 40-hour week. And we are finding probably the same thing in our District that you're seeing nationwide: Worker availability and slack is highly correlated with either less than high school or high school levels of educational attainment.

Vocational training, which is ramping up, is certainly one positive help to this, but we're also seeing that lack of adequate child care and lack of available transportation are significant impediments to getting workers back into the labor force. We really lack the ecosystem, at least in our District, and vocational training alone really isn't enough to get people back into the workforce.

Regarding the nation, our economists at the Federal Reserve Bank of Dallas forecast 2017 real GDP growth of approximately 2¼ percent. This forecast is based on the expectation of solid growth in consumer spending and a more positive outlook for business investment. Potential new fiscal policies and structural reforms have the potential to add to our forecast to the upside, but we also see, like President Williams, downside risks, which include policies that can impede workforce growth or create disruption for logistics, intermediate goods, and trading

relationships—things which, we believe, improve U.S. competitiveness and add U.S. jobs.

We're also monitoring the effect on certain segments of consumers of repeal of the Affordable Care Act, which we think could have a negative effect on consumer spending.

As far as my SEP is concerned, my baseline projections are essentially unchanged from those I submitted in December. For GDP growth and the unemployment rate, my projections are not very different from the Tealbook baseline forecast, maybe a little more positive. However, at this point I see room for a slightly flatter upward funds rate path than is assumed in the Tealbook, and I also anticipate a more rapid return to our 2 percent inflation objective. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. The data have been coming in close to what we anticipated in January, and my directors and other contacts continue to be upbeat. Much of this optimism is driven by hopes for the future. In one way or another, everyone is still focused on developments in Washington. This underscores the importance of greater clarity on fiscal, trade, and regulatory policies. Uncertainty remains high.

In terms of recent developments, the CEO of Discover Financial reported strong consumer spending in January and February. This is starting to feel like a trend, he said. Similarly, the CEO of a large diversified manufacturer remarked that his business had picked up further in the first quarter, and it was at the higher end of expectations. He also noted that the tone regarding capital spending had improved. He remains cautious, however, having seen early promise of a strong first quarter fizzle out in three of the past four quarters.

We also heard better news about economic activity in Europe and Asia from a variety of contacts. That said, everyone remains attuned to the risk from potential European political developments.

I was struck again by how most of the upbeat commentary continues to be based on expectations rather than actual sales. The CEO of ArcelorMittal USA says he hasn't seen this much optimism in 10 years, but despite many inquiries for steel products used in energy and infrastructure, few new orders have been placed. Caterpillar also reports some improvement in their sales trajectory, but not as much as one might have expected, in light of all of the happy talk. And financial contacts were almost giddy about current equity valuations, with some describing possible additional upside potential. Others, though, see valuations as "rich" relative to their assessments of longer-run earnings growth.

A few more of my contacts talked about wage and price increases this round. I heard reports of higher prices across a variety of manufacturing sectors, for example, and the CEO of Manpower said that wage growth for production and light industrial jobs stepped up in February. These wage and price increases, however, did not appear to be generating any broad-based inflationary concerns for my contacts.

Turning to the national outlook, the recent data have not meaningfully changed my projection for either growth or inflation from my December SEP. However, the data do boost my confidence in these forecasts. In particular, we now assess the risks to the inflation outlook as balanced, an improvement over December, when we characterized the risks as tilted modestly to the downside.

That said, we still project that inflation will not reach 2 percent on a sustained basis until the end of 2019. My projection is premised on a gradual removal of accommodation as well as

continued strong communication of our commitment to a symmetric 2 percent inflation target. Both are needed to solidify inflation expectations at our target, which should exert upward pressure on actual inflation.

As in December, our SEP submission—I'm number three—calls for two increases in the federal funds rate in 2017, four in 2018, and three in 2019, with no change in reinvestment policy this year. After eight-plus years below target and a projection that doesn't deliver 2 percent inflation on a sustained basis until 2019, I don't want to be changing my policy assumptions on the basis of small adjustments in the outlook. It would take a more meaningful upgrade to the inflation path to call for a fast removal of accommodation. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Gooding.

MS. GOODING. Overall business activity in the Sixth District appears to be little changed since our previous meeting. Most contacts report steady activity consistent with modest growth. Although many District retailers noted a sharp pullback in consumer activity in February, that slowdown apparently gave way to a rebound in early March. Our contacts believe February sales were adversely affected by the IRS delay in distributing refunds and attribute the early March bounce to the resumption of a more typical pace of IRS payouts. If tomorrow's retail sales report is soft, we may want to look through that weakness.

Across a wide array of sectors and businesses, we get the picture of a labor market that appears to be at or very near full employment. Challenges in finding and attracting qualified labor is a persistent theme among our contacts. Although this is not a new story, concerns about actual or potential labor tightening have spread to almost every type of business and worker skill level.

There were more reports of turnover this cycle, particularly at the entry level. District businesses are responding by offering more bonuses and off-cycle merit increases, increasing flexible time or other quality-of-life policies, and, in some cases, raising their company-wide entry-level wages.

We have yet to hear anything that would suggest a widespread acceleration of wage pressures beyond the moderate increases in wage growth that we are seeing in the aggregate data, but my sense is that labor market conditions are on the minds of our contacts and are increasingly a factor in business planning. For example, we hear more and more stories of businesses developing new in-house training programs to expand their potential base of qualified workers.

While the wage bill for Southeast businesses appears to have increased moderately, staff survey data suggest that nonlabor input costs have not accelerated appreciably, and profit margins have remained relatively stable. We are not yet detecting anything in our report suggesting a broad pickup in price-level growth.

The risks to my outlook on both the upside and downside revolve around continued uncertainty about fiscal, regulatory, and trade policies. Remarks from our directors and District contacts on the outlook continue to be optimistic. However, this optimism is tempered by growing uneasiness about the timing and nature of the policies that will come from the Congress and the Administration. As one director put it, uncertainty will rule the year. That sentiment was shared by others at the table and echoed by many contacts. As a result, they are in wait-and-see mode until they gain clarity on potential policy changes. In other words, our contacts consistently report that their own behavior and thinking exhibits the same disconnect between

hard facts, reflected in spending and production data, and the strength in the soft data that includes consumer sentiment and business optimism.

I do want to emphasize that while most of our contacts are looking to upside risks from potential policy changes, there are downside risks. Several contacts voiced specific concerns about potential changes to U.S. trade and immigration policies. Two large retailers with global footprints say they have postponed their planned investment and employment activities until it becomes clear what those policy changes will be.

Overall, I have left my projections of growth and inflation mostly unchanged since January. Last week's job report gives me a bit more confidence that some of the incoming weakness in the spending and production data is transitory. But I am not yet taking on the pickup in momentum suggested by the improvement in sentiment since early November, nor do I assume in my projections any particular changes in the path or nature of fiscal policy. I see real GDP growth continuing at around 2 percent over the next few years. The recent data on retail prices may be a bit overstated as a result of residual seasonality, but it seems apparent that the trend has moved closer to target. I'm keeping the risks to my outlook weighted to the upside for the time being. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. I suggest we take a short break to grab some coffee for about 15 minutes and then resume.

[Coffee break]

CHAIR YELLEN. Let's get started again. Our next speaker is President Harker.

MR. HARKER. Thank you, Madam Chair. Happy Pi Day. Nobody noticed this: 3.14. Only an engineer would love this day. But in honor of Pi Day, I begin by noting that I think the economic recovery has pretty much come full circle. [Laughter]

Over the intermeeting period, economic activity in the Third District accelerated mildly. Close to home, the Philadelphia metro region remains one of the key areas of strength in our regional economy. House prices are at an all-time high, and there is an inventory shortfall in housing. Further, we are seeing an uptick in manufacturing in the District and strengthening construction activity.

Our Business Outlook Survey, which is due out Thursday, came in at a healthy 32.8 after surging to 43.3 in February. That was the strongest reading in 20 years. There was strength in orders, shipments, and prices, both paid and received. Contacts in the region have been especially upbeat, and that optimism is reflected in a future activity index of 59.5. One manufacturer indicated that his order book is growing extremely fast and his backlog is rising. They now have plans in place to expand many of their business lines. Growth in his medical bill coding business is especially robust, and he reports a lot of growth among small businesses that he deals with.

In engineering and IT, there are serious supply shortages, and wages in those fields are rising noticeably. In a special question, we saw marked increases in those firms reporting labor shortages, skills mismatch, and job vacancies remaining unfilled for more than three months when compared with 2014. Now, interestingly, 7.5 percent of respondents indicated that they are now using phased retirement programs in order to retain older workers, and I believe we will see more of that in the near future.

In the IT industry, one of our contacts who sits on five company boards is reporting optimism and capital expansion plans at all of them. Plans at Comcast, HP, and TriNet are at all-time highs. All are forecasting double-digit earnings growth, and they are reporting wage

increases. Previously, much of the earnings growth was coming from shrinking costs, but now much of it is forecast to originate from revenue growth.

Nonmanufacturing activity remains healthy in our region, but employment growth continues to lag the nation significantly, growing at roughly one-third the national pace. Residential construction remains modestly healthy, with the primary growth in multifamily units. We are definitely seeing a significant compositional change in our housing sector in the District and particularly in Philadelphia.

Our region's banks are also doing well, with loan growth moving up at a brisk 9.3 percent. Growth is especially noticeable in the commercial real estate end of the market. One of our banking contacts saw organic loan growth of 13 percent in 2016 and anticipates double-digit growth in 2017. Another contact indicates that the environment is good for community banks, with classified assets at an all-time low. Overall, it is hard not to notice a significant rise in optimism.

Now, regarding the nation, my economic outlook, like that of others, is pretty much unchanged since December. I am still anticipating growth of 2.3 percent this year, declining to 2.1 percent in the outyears of my forecast, and I have yet to factor in any prospective change in fiscal policy. To me, there is still too much uncertainty about the scope and timing to attempt that undertaking.

Contacts have told us that corporate tax reform is a very high priority, with Republican leadership intent on getting a bill on the floor before the end of this summer. And if I see this as likely to occur, then I will incorporate the fiscal changes into my forecast, but I really want to see a bill that has a high probability of success before I do that. With respect to unemployment, I

still project an unemployment rate falling to 4.4 percent by year's end and remaining there in 2018.

Now, despite Friday's very strong report, my forecast remains unchanged. My reasoning is based on some new work by my staff on labor force participation. Although the series is only mildly pro-cyclical, some cyclicalities are evident with regard to the reported disability status among prime-age males. During the last recession, prime-age males reporting disability as the reason for being out of the labor force initially rose and then declined, and we are seeing a similar pattern occurring right now.

All else being equal, we calculate that we could see as much as a 0.1 to 0.15 percentage point increase in the overall labor force participation rate over the coming year, which implies a roughly 0.2 percentage point rise in unemployment. This cyclical response in participation pretty much offsets the strong employment growth and eases the downward pressure on the unemployment rate in my forecast.

On the inflation front, I am pretty much in line with the staff in forecasting 1.9 percent for headline inflation this year and in projecting that inflation will reach its targeted rate in 2018.

Finally, with respect to monetary policy, I continue to view three rate hikes as appropriate this year followed by four rate hikes in 2018 and then three additional hikes in 2019, bringing the funds rate up to 3.13 percent, which is slightly higher than my long-run neutral rate. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. The Tenth District economy expanded in recent months despite some continued weakness in those areas dependent on energy and agriculture. Our manufacturing contacts reported substantial improvement over the past three

months, with activity now above year-ago levels after contracting for much of 2015 and 2016. Many District contacts also anticipate higher levels of employment, sales, and production in the coming months. The survey's measure of expectations for future activity is now at its highest level.

Services-sector activity likewise expanded in February, according to our District contacts and our services survey. But even as surveys show high levels of optimism, I noted several of my business contacts since the previous meeting expressing more caution and even concern for potential trade policy changes and health-care reforms. In some cases, capital expenditures were being shelved until government trade policy was clarified, and those in health care reported potential significant challenges to their business model. For our states with a significant federal government workforce or private contractors with government contracts, the hiring freeze and potential for funding cuts loom large.

Energy activity has picked up and is expected to provide some boost to the District economy in 2017. As U.S. supply is increased, the OPEC-led production cuts kept range-bound crude oil prices above year-ago levels. And although rising inventories recently pulled prices lower, the higher prices compared with a year ago are supporting continued drilling activity in the District, and several contacts noted significant difficulty rehiring rig workers even with substantial wage premiums.

In the ag sector, low commodity prices continue to weigh on farm income. To date, loan delinquencies have been manageable, as producers sell stored grain inventories to keep their loans current. Farm land values, an important source of collateral at ag banks, continue to edge lower, but valuations remain quite high by some benchmarks, given cash rent-to-price ratios.

Even though manufacturing and energy activity are recovering, the slowdown in these sectors over the past few years and ongoing headwinds for ag have put several District state budgets in a bind. In addition, exports declined in almost every District state last year. On account of the strength of the dollar and potential changes to trade policy, some of my contacts continue to have concerns about export activity.

Turning to the national economy, my SEP forecast is largely unchanged compared with last December. I continue to see the national economy growing at a trend-like pace, and the risks associated with the real GDP growth outlook appear to be roughly balanced. I expect first-quarter real GDP growth will show softness that is largely driven by weather-related weakness in utilities consumption and the first-quarter pattern that has been described as residual seasonality. There may also be some temporary near-term softness in consumer spending due to the expected delay this year in issuing tax refunds.

As we look through these temporary factors, the economy seems to be on solid footing. Last Friday's jobs report showed continued strength in labor markets, bringing employment growth to just under 200,000, on average, per month over the past six months. New orders are up strongly in both of the domestic ISM surveys, and the global growth outlook has brightened. For example, the Citigroup Economic Surprise Index for the G-10 rose to its highest level in almost four years.

I agree with the Tealbook's assessment that downside risks appear to be less pronounced than in the past, but I find gauging upside risks associated with the prospects of tax and regulatory reforms or infrastructure spending still murky. Because of that, I have yet to incorporate any fiscal effects in my outlook without more specifics.

January's inflation reading reinforces a continuing move toward strengthening price pressures. Other measures confirm this upward momentum. The New York Fed's median increase in consumer expectations three years ahead rose sharply in February, and the Philly Fed's Survey of Professional Forecasters' median expectation for the next 10 years ticked up to 2.1 percent in the first quarter. In addition, the Atlanta Fed's survey of businesses showed a sharp increase in the first quarter in the mean expected increase in unit costs over the next 5 to 10 years. Finally, market-based measures of inflation expectations also moved up in the past several months, especially for 5- to 10-year-ahead TIPS compensation. Thank you.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. Incoming data since the January–February meeting continue to support the outlook of 2 percent growth in real GDP, a labor market that is close to full employment and still tightening, and inflation moving gradually up and ever nearer to 2 percent. My SEP is little changed from December. I have written down, again, three rate increases, although the continued strength of the job market does put four in play for me if this strength continues going down the road.

Real GDP has expanded at around 2 percent over the past two years, and I see very similar prospects for 2017. The increase in the last two years can be fully accounted for by increased personal consumption, which has been supported by above-trend increases in employment, moderate wage gains, and rising wealth. These same factors should continue to support consumption this year.

In addition, the upbeat readings on consumer sentiment provide some upside potential, although this improved sentiment has not left much of an imprint so far. In fact, real PCE fell

0.3 percent in January, much of that reflecting fluctuations in energy services due to warm weather. With the strong fundamentals, I assume that the January softness will prove fleeting.

Private fixed investment, the other component of PDFP, was flat in 2016, providing no support to growth. Business investment was held down in part by the lagged effects of falling oil prices, a factor that is reversing itself now. Both the stock market and business surveys suggest that a brighter outlook will produce moderate growth in business investment this year.

Meanwhile, residential investment looks to be solid at the moment, with some risk that rising interest rates may hold back construction and home sales this year. All told, I see the economy as evolving close to the Tealbook forecast, albeit with a lower rate path. I guess I would recharacterize the alternative view on page 24 of Tealbook A—rather than saying the staff forecast is too strong, I would say the staff forecast is about right, except the rate forecast is too high.

A range of labor market indicators suggest that we are near full employment, including moderate increases in real wages and compensation (in line with lackluster productivity gains), survey evidence from households and businesses about the availability of jobs and job candidates, and inflation moving up toward trend. It's also quite possible that the natural rate is lower than current estimates or that trend participation is higher than current estimates. I did, in fact, lower my estimate of the natural rate by one-tenth, to 4.7 percent. Employment is still growing at above-trend rates, which over time will drive unemployment lower unless participation improves further. Over the past two years, participation has been trending up among nearly all age groups, and perhaps that will continue as the labor market tightens further and as growth picks up.

While the economy is close to full employment, still-modest wage growth suggests to me that there is probably some additional slack either in participation in those working part time for economic reasons or in the form of a lower natural rate. As a result, I continue to see it as appropriate that unemployment fall modestly below current estimates of the natural rate and remain there for a while.

Inflation has continued to move up gradually to 2 percent. I expect this pattern to continue and inflation to reach 2 percent next year and remain around that level. I see only small risks of materially overshooting the inflation target as long as inflation expectations stay anchored despite undershooting the natural rate of unemployment. This view receives support from simulations shown in the Risks and Uncertainty section of the Tealbook over the past year. Persistently high inflation is only generated in scenarios in which inflation expectations are not anchored. Plain vanilla demand shocks simply do not generate much inflation. You have to go back to the late 1960s when inflation did take off, but that was a different time, with a steep Phillips curve and unanchored expectations and before global supply chains emerged and began to hold down wages and prices.

Finally, I see the risks to the outlook as, overall, fairly balanced. Risks from abroad have diminished over the past year as economic conditions have broadly, if modestly, improved. Global risks do remain to the downside, with political uncertainties in Europe and the continuing saga of rebalancing in China. The domestic risks seem to me to be more to the upside—in particular, the chance that tax cuts and upbeat sentiments, as reflected in surveys and ebullient equity markets, will produce stronger demand. I also continue to think that there is a clear risk of a correction in equity markets at these levels. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. The Fifth District economy strengthened since the previous FOMC meeting, according to our surveys and reports from our contacts. Our manufacturing survey continued to indicate solid expansion, with a composite index improving for a fourth consecutive month and matching a six-year high. Preliminary numbers for March suggested that a fifth consecutive improvement is in store. The increase in the composite index has been driven by gains in new orders and shipments, with the new orders surging to a seven-year high. Service-sector activity also expanded at a solid pace since the previous meeting.

The outlook from business contacts and directors was quite optimistic, on balance, but with pockets of apprehension. Discussions with manufacturers, for example, indicated the outlook for 2017 was generally solid to strong, but they were concerned that labor availability or changes to trade policy could negatively affect their business.

A representative from a trade association for makers of manufacturing equipment reported that after two years of weakness, activity turned a corner in the fall of last year. Orders for December were the strongest in many years, he said, and quotes for February were described as “phenomenal.” He is expecting solid growth over the next two years, although he reports concerns that tariffs or taxes could create supply chain challenges.

Not all manufacturers shared these fears, however. A steel fabricator expressed optimism regarding potential trade policy changes and reported that they were as bullish as they have been in years, having seen a strong increase in shipments, a surge in quotes for new orders, and the largest backlog in the company’s history.

And not all manufacturers were as optimistic about the outlook. A maker of film and textiles that services the auto, aerospace, heavy equipment, and medical industries was less

sanguine about 2017 as a result of rising costs and uncertainty regarding product markets. He is not projecting growth in 2017.

Comments from our service-sector contacts were generally positive. A Baltimore-based IT firm reported that 2016 was their best year on record. December 2016 was their best month, and demand remained firm in January and February. They were able to raise their rates 10 to 15 percent without losing customers. Margins remained under pressure, however, due to rising labor costs. A staffing firm reported a surge in activity in January and February. The firm is hiring at a rapid pace. They were able to meet their first-quarter goal by mid-February and keep their rates higher, improving margins. And we continue to hear from a number of service-sector contacts that labor is difficult to find and that they face wage pressures. In some cases, contacts indicated that the lack of adequate workers is restraining output. One feature of my retirement that I'm looking forward to, by the way—and perhaps you are, too—is not having to repeat this observation every six weeks about the difficulty of finding workers. [Laughter]

On the national economy, my projection is almost identical to my December submission. With unemployment slightly below its long-run value, the natural forecast starting point is that real GDP is likely to grow at its trend rate, which I, like many others, pegged at about 1¾ percent. Nothing in the data flow has altered that view. I have again written down a ¼ point upward bump for expansionary fiscal policy, but, like the Tealbook, I've moved it back from 2017 to 2018. Otherwise, growth is 1.8 percent for this year through 2019, the same as in my previous submission.

The latest data from the job market might seem inconsistent with trend GDP growth. After all, payroll employment has risen over 20,000 jobs per month over the past three months, well above the number needed to simply keep up with population growth in various age cohorts.

In addition, labor force participation has risen in recent months rather than falling in line with the demographically driven trend. The reconciliation, of course, comes from low productivity growth, and I'm expecting that to continue in the foreseeable future. I still expect payroll employment growth to decline over time, however, and fall below 100,000 jobs per month, eventually converging to trend.

The strength of the labor market data makes the Tealbook's forecast of robust consumer spending highly plausible, in my view, so it's reasonable to look through the weak PCE data for January. Indeed, as the staff presentation noted, Q1 spending was held down by important transitory factors that are unlikely to affect spending over the rest of the year. The fundamentals of a strong job market—solid income growth and rising wealth—should continue to support robust consumer spending in the year ahead.

There is notable uncertainty about the outlook, however, particularly regarding domestic economic policy. An array of high-profile policy initiatives are under consideration, obviously, and many of these could have material macroeconomic effects. It is hard to know which will come to fruition, though, and for many, the devil is in the details. On the one hand, the breadth and intensity of positive business sentiment is quite remarkable. I have been struck by the abrupt change in tone of many business contacts since the election and the sharp upswing across a broad range of sentiment indexes, and that has been reflected in the comments we have heard around the table here today.

I recognize that sentiment and actual spending are two different things. I think the lingo today is “hard” and “soft” data. The upward move in capital goods orders since last summer and the sharp climb in ISM and regional new orders indexes suggest to me that at least some

improvement in sentiment is translating into actual outlays, and that could pose an upside risk for investment spending.

Some executives appear to be apprehensive about the policy outlook, though. Corporate tax reform is perceived as likely to generate losers along with winners, and some firms seem particularly vulnerable to supply chain disruptions that might result from more-restrictive trade policy. They would have good reason to delay hiring and investment commitments for a time, and this suggests caution about raising the investment forecast.

After taking account of all of these effects, it appears as if domestic policy ambiguity has supplanted last year's global growth concerns as the driver of uncertainty for the economic outlook, only this uncertainty seems much more two sided. So I'm not wedded to my forecast and will be open to changing it as the policy outlook firms.

Although much of the data flow since December has been in line with expectations, a notable surprise was the strength of consumer inflation in January. The fact that headline inflation is now virtually at our 2 percent target means that this is an important transitional meeting. The long-running inflation shortfall has come to an end, and I believe this has important implications for our statement, particularly how we talk about inflation. I think we need to be exceptionally careful because formulations we adopt now could be with us for quite some time.

I circulated a letter yesterday. This used to be a much more common practice among us. In it I spelled out a couple of constructive suggestions, and I hope we can have a thorough discussion during our policy round tomorrow morning. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. I wanted to begin by thanking you for the very generous remarks you made this morning at the beginning of the meeting. In line with your observation about my interest in labor markets, I further wanted to thank you for the many Friday afternoon conversations we had that ended up circling back to the labor market.

And on my way out the door, I also wanted to give the strongest possible compliment to the labor economists at the Board. I'm not sure whether those of you from the Reserve Banks appreciate how good this group of people is—not just that they're hard working and produce the data for us and all that, which you'd expect, but I've been struck by the number of times when I've spoken to very prominent academic economists with whom I am having discussions about the labor market and I say, "Well, you know, who should I talk to to get more on that?" And they'll think for a second, and they'll name somebody here at the Board and say, "That's probably as good a person as you're going to find."

So, in line with Janet's comments, for my last set of remarks in an FOMC economic go-round, I wanted to abstract from many of my comments over the past eight years in an effort to identify a few key questions whose answers could have an important bearing on future monetary policy. But I'm going to hold that just for a second, because I can't resist one final opportunity to put a couple of glosses on some comments that have been made about labor market issues already in this go-round. They're very brief.

My first observations is that, on wage increases, what has been notable to me, at least, is that they have been concentrated in lower- and middle-wage industries over the past several months. I think the examples that President Kaplan gave brought that home, and somebody at that end of the table had similar observations. They are not yet disbursed across the range of industries in a manner you would expect if we were seeing general, sustained upward wage

pressures. On the other hand, for a period last year, we saw it mostly in higher-wage industries and not so much in lower-wage industries. So it's not as if one segment has been obviously lagging, but they're not all moving in unison.

The second observation is that, to date, at least, to the degree that wage pressures are being felt within industries and employers are raising wages, the effect seems to be less on rising prices than on reduced profits, and that profit margins are actually down some in a fair number of the industries that have a preponderance of lower- and middle-wage workers—again, echoing something that somebody said already about what may happen with stock valuations. We may see that in the future as well.

I'd like to turn now, though, to those questions which I think may be of relevance in the longer term. The first question is: In future, will the unemployment rate provide the best general measure of labor market slack? In the pre-crisis years, this might have seemed like a feckless question, but it seems quite clear now that the unemployment rate has not been the best measure of labor market slack during the long and gradual recovery. In particular, a lower-than-trend labor force participation rate and high levels of part-time employment for economic reasons revealed considerable slack, a good bit of which has subsequently been removed. This was illustrated most clearly during the period of more than a year in which job creation was substantially above the levels needed for new labor market entrants but the unemployment rate stayed essentially flat at around 5 percent.

Obviously, if the answer to the question is “yes,” that a different form of measurement of slack is desired, there are implications not just for how we characterize the labor market in general, but for our technical purposes, such as the appropriate variable to use in Okun's law. But it is also possible that this circumstance was due precisely to the unusual nature of the major

recession caused by a financial crisis, and that the understatement of labor market slack by the unemployment rate will eventually prove to have been temporary.

That question leads directly to my second question: In what respects has the labor market changed? Of special interest are changes that might bear on this question of slack. Now, it's almost certainly too early to answer this question definitively, although I think some relationships that seemed as though they might be diverging during the depths of the recession are pretty clearly returning closer to familiar patterns. A good example is the relationship between long-term unemployment and short-term unemployment. As predicted by a number of Board economists, while this traditional relationship was harder to see in a context in which the ranks of the long-term unemployed had swelled substantially, it had not actually been transformed, and the historical, roughly parallel movement of the two now seems to have been restored.

On the other hand, it does seem pretty clear that something has changed with respect to the relationship with the announcements of job openings relative to the unemployment rate and hiring. Several of us, myself included, suggested several years ago that the Beveridge curve would loop back as the economy improved, which has not been borne out, at least thus far. As David Ratner and Andrew Figura—two of the people I was mentioning—have shown, this isn't necessarily because of increased structural unemployment, the conclusion that would have been indicated pre-crisis, but because the job-finding curve, which lies behind rather than on the Beveridge curve, has moved around. But just why is not clear.

Other questions, though, have not even been presumptively answered to date. Most important, I think, is that of labor force participation. A few years ago there was debate, including debate within this room, as to whether the decline in the labor force participation

rate—beyond the downward trend associated with population aging—was essentially structural or whether it would reverse as cyclical conditions improved. In the intervening couple of years, the labor force participation rate has not only rebounded, but now seems to be exceeding the trend estimates of Board staff and many outside economists. This development, of course, is one of the principal factors supporting the observation that the unemployment rate has not been as good a measure of labor market slack during the later stages of recovery as has conventionally been assumed.

But some, perhaps much, of the improvement has occurred less because of the intuitively appealing dynamic by which people, particularly prime-age people who have left the labor force, return as conditions improve and wages rise. Though it's a little hard to see through the gross flows data, some have plausibly argued that the improvement has been due rather to the higher proportion of people within particular demographics who decide to stay in the labor force longer.

So, at this point, we're left with some important unresolved issues. Will this subtrend, as it were, of declining exit rates from the labor force among some groups continue, or has it been more of a one-shot counterbalance to some of the unusual decline in the labor force participation rate that took place during the recession and the earlier stages of the recovery? And what of that intuitively appealing narrative of people being attracted back into the labor force? Might it still occur as wage increases accelerate? Presumably not for people who have taken permanent disability status, but perhaps for others, although maybe the Federal Reserve Bank of Philadelphia research is going to shed a little bit more light on that. Or perhaps, in Alan Krueger's evocative term, are we witnessing the "Kramerization" of at least parts of America? And would this, in turn, suggest that some hysteresis has, in fact, occurred over the past eight or nine years, a circumstance that would itself have implications for monetary policy? These

questions are of obvious importance insofar as certain possible answers would suggest that the labor force participation rate is, to some degree, endogenous to monetary and other macroeconomic policies rather than simply an exogenous constraint, which I think has been the more conventional understanding.

The third, and in some sense overarching, question is the obvious one with which we have wrestled frequently in recent years: How useful is the Phillips curve in making monetary policy? Or, to state the matter more broadly, what is the contemporary relationship between the labor market and inflation? None of you needs me to remind you of the question, but I did want to make a couple of points as we continue to search for its answer. First, while debate will, I'm sure, continue, recent work seems to be confirming that the Phillips curve does accurately reflect a continuing inverse relationship between inflation and unemployment. The same work suggests that the current relationship is more like the original Phillips curve than the accelerationist variant that seemed more accurate in the high-inflation period of the '70s. But that work also confirms that the slope of the curve has been flat for a couple of decades. Olivier Blanchard put it nicely: "The U.S. Phillips curve is alive. I wish I could say 'alive and well,' but it would be an overstatement: The relation has never been very tight."

I think the state of the academic work mirrors what most of us have found ourselves doing, which is to say, continuing to embrace some variant of a New Keynesian model for monetary policymaking while not being able to find too much guidance beyond the basic direction of the unemployment–inflation relationship. This has left everyone to their predispositions or intuitions on things like the risk of overshooting or whether some nonlinearity might someday return. What I think some of us have been searching for is one or more metrics

to supplement what is now just the very rough direction that the Phillips curve provides. In the coming years it will be useful to test how some of the candidates for this role have fared.

My other point about the Phillips curve is that the flat Phillips curve, in leaving everyone with a lot of uncertainty as to inflation dynamics, has brought us right back to the issue of inflation expectations. In the scholarly back-and-forth concerning recent research, one factor prominently mentioned to explain the change in the Phillips-curve relationship is the anchoring of inflation expectations. Of course, if this is correct, then not only is it less likely that tight labor markets are the primary drivers of inflation at any given moment, but it also means, as Governor Powell was pointing out earlier, that anchored expectations should help push inflation down after some external shock without as much monetary tightening as older variants of the curve would have indicated.

All of this returns us to the fact that, for a phenomenon on which current monetary policy relies so heavily, inflation expectations remain pretty undertheorized. Expectations seem to have been working in a fairly predictable way for quite a while now, though perhaps not as well as we would have liked in bringing inflation back closer to target more quickly. But we don't really agree on the mechanism by which inflation expectations work, and, more importantly, as I and others have said a number of times here, we don't have anything like a consensus working theory of how expectations could change, though if the idea has validity, it seems as though it would take quite an extended period of inflation above target to effect the change.

The issues related to the Phillips curve point back to the persistence of basic questions about inflation expectations and underscore what seems to me, after eight years—and this is indicative of the broader uncertainty about inflation dynamics—a somewhat uneasy position

from which to be conducting monetary policy. But it's still the best we have right now. Thank you, Madam Chair.

CHAIR YELLEN. Thank you very much. President Kashkari.

MR. KASHKARI. Thank you, Madam Chair. The Ninth District economy continues to grow moderately. The latest Minnesota state government estimates indicate the state may have lost jobs in January, but unemployment remains low at around 4 percent. The owner of several staffing offices in Wisconsin and Minnesota said January job orders were a little bit sketchy, but February seemed to pick up. North Dakota seems to be generally slowing, though a modest rebound in the oil patch continues.

Anecdotal evidence suggests wages in the District are rising at about a 3 percent rate, and manufacturers remain optimistic. We have asked all of our directors and their contacts and our other contacts if the market's optimism is translating into actual real economic activity and changes in investment. And like many of you have articulated, the answer is "no"—it is more just excitement, but no follow-through yet.

In terms of the national economy, not much is new. The expansion continues, but growth remains pretty disappointing. As others have indicated, the labor market continues to show strong employment gains, with those gains mostly coming from rising labor force participation rather than declining unemployment. I think, as Governor Brainard mentioned, prime-age labor force participation is now at 81.7 percent—up from a low of 80.6 percent in September 2015 but still significantly below pre-recession levels of around 83 percent.

In my view, it is very uncertain how much labor slack remains. I have only been on the Committee for a little over a year, but I keep hearing us declare that we're at the natural rate of unemployment, and that this labor force participation story is just temporary and it can't

continue, yet it keeps continuing. And I don't know how much longer it can continue. I have been studying prior tightening cycles over the past three or four decades with my staff, and it is very hard for the Committee to know what the level of maximum employment is, and the Committee is often wrong. It often overestimates the natural rate of unemployment only to find out that unemployment can go lower without triggering inflation. And that may well be happening again, I'm not sure.

In terms of inflation, again, not much has changed since our previous meeting. There was little change in core PCE inflation over the intermeeting period—as others have indicated, a strong January at 0.3 percent, but the prior January was also strong. On a year-on-year basis, core PCE has barely moved. I find it interesting that so many of us are declaring victory that we are back to our inflation target largely because energy prices have gone up. We ignored energy prices on the way down. Why are we declaring victory on the way back up? Core PCE inflation basically hasn't moved.

What about the inflation outlook? It's a mixed bag. Survey and market-based expectations remain low by historical standards, the dollar remains stable, and nominal wage growth largely remains stable. Now, it is possible that expansionary fiscal policy may push up inflation, but that doesn't look like it's happening anytime soon. Financial markets—no change in long-term rates since the previous meeting, no change in the value of the dollar. Stock markets continue to rise, and prices do seem high relative to standard valuation measures.

As others have indicated, uncertainty remains high. Risks to the upside: lower taxes, lower regulation. And to the downside: protectionist trade policies, restrictionist immigration policies. How that uncertainty is resolved will affect the outlook and the appropriate path of rates.

So, in conclusion, little real change since the previous meeting. The economy is headed in the right direction, very slowly. It's too soon to declare victory on the inflation front, and it seems like the job market may still have some slack left in it. Thank you.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. My views have evolved a bit over the past few months. I'm now a bit more confident that the economic expansion will continue at a slightly above-trend pace over the next few years and more confident that we will in fact get back to our 2 percent inflation objective over that same period. To that I add the prospect of fiscal stimulus, which in my mind tilts the risks to the forecast somewhat to the upside, recognizing that we still have no clarity on size, composition, or timing. Finally, it strikes me that the global outlook has also improved, so when I put it all together, I think the stage has been set for a slightly faster pace for removing monetary policy accommodation and an earlier decision to commence runoff of our large balance sheet. That's reflected in New York's SEP submission.

Although we haven't changed our modal growth and inflation trajectory materially from December, we now have three rate hikes of 25 basis points each for 2017, up from two previously, and we added an additional rate hike in 2019. Also in our SEP we now have a slight overshoot of our 2 percent inflation objective in the longer term, and, with the federal funds rate path now somewhat steeper, we have the federal funds rate in 2019 climbing slightly above our estimate of the long-run federal funds rate, which we still have pegged at 2½ percent. We haven't raised our long-run federal funds rate because we don't see any evidence that r^* is moving up. I also believe that demographics and modest productivity growth will keep r^*

depressed well below the 2 percent level that has applied historically, so we continue to have the lowest long-term federal funds rate projection among the Committee participants.

With respect to the growth outlook, I would argue that the news has, on balance, become a bit more favorable. While it's true that the bulk of the data don't indicate any meaningful change in trajectory, indicators that may be more forward looking—like household and business sentiment, business-activity indicators like the ISM manufacturing index, and some of the regional Federal Reserve indexes—have improved recently. I think to that list I'd add last Friday's payroll employment report, which I thought was quite strong in most respects, recognizing that the weather undoubtedly played a role in pushing up the headline payroll figure. The effect of all of these softer indicators, as some have put it, can be seen in the Federal Reserve Bank of New York nowcast estimate for the first-quarter real GDP growth, which, as of last Friday, was at 3.2 percent. That's well above most judgmental forecasts, including the Federal Reserve Bank of New York's GDP forecast.

Now, I suspect that real GDP growth in the first quarter will be considerably below this 3.2 percent nowcast estimate. After all, most judgmental real GDP forecasts in the first quarter appear to be clustered around 1½ to 2 percent. So, following President Williams's discussion at the previous meeting, our staff did an analysis of the Q1 seasonality issue. What they concluded is that the data are sufficiently noisy so you can't actually reject the null hypothesis that there is no seasonality issue, but the point estimate that they found for the first quarter suggests that the seasonal-adjustment problem was actually quite sizable—a lot of variance, but the point estimate was pretty big, around 1 percentage point. So what that means, if you take that literally, is that 3 percent growth might look like 2 percent growth when you actually get the first-quarter numbers.

Another thing I would like to stress is the easing of financial conditions. I find this quite noteworthy. On balance, the rise in equity prices and the narrowing of credit spreads has outweighed the rise in long-term Treasury yields and the relatively flat trajectory of the U.S. dollar. It's a bit unusual that financial conditions have eased despite a shift in expectations about us moving a bit faster than earlier anticipated. A number of private-sector analysts have cited the easing of financial conditions since our December FOMC meeting as important. In particular, one investment bank recently pegged the easing in their well-known financial conditions index over the past few months as equivalent to a reduction of 40 to 70 basis points in short-term rates. Speaking for myself, I do judge the easing to be important. After all, financial conditions drive activity much more powerfully than the federal funds rate.

With respect to the international outlook, there are still plenty of places in which things could go badly awry. In general, however, I agree with most of the rest of you that we are seeing considerably less stress in the system—for example, compared with early 2016, when commodity prices were plunging, which was putting significant stress on many commodity exporting nations. Also, Europe does seem to be making more progress towards its inflation objectives, and, at least for now, China seems quite stable. I thought it was interesting that last month's Chinese foreign exchange reserves actually rose, which suggests that either the restrictions on their capital outflows are working, or that confidence in the Chinese economic outlook is improving, or maybe both. With respect to the stability of the global financial system, I'm also glad to see that Deutsche Bank is planning to raise \$8 billion of equity capital in the near future.

Of course, there still are significant political risks. The most important near one is the French presidential election. Although Emmanuel Macron is viewed as the overwhelming

favorite, there is still some risk that Marine Le Pen could win. If that were to occur, that would raise huge questions about the sustainability of the euro, given her wish to have France abandon the currency. The runoff date—and people do expect a runoff—is May 7, and that is just a few days after our next FOMC meeting.

On the inflation side of the ledger, I also think the prospects for a relatively early return to an underlying inflation rate of 2 percent continue to improve. That's because the economy continues to grow at an above-trend pace and the labor market continues to tighten. Also, the flattening out of the dollar's upward trajectory and the relative stability in energy prices also suggests that some of the more transitory factors that may have played a role in holding inflation down in recent years may, for the time being, have dissipated.

Finally, I just want to point out that the New York Fed's Survey of Consumer Expectations, which came out yesterday, is starting to show a gradual updrift in one-year and three-year inflation expectations. The three-year reached 3.0 percent this last month. That's the highest level since mid-2015. We think it's a pretty good measure of inflation expectations—it basically declined, and now it's recovered and is on a slight upward trajectory. When I put all of the facts together that I see, I think it really does point strongly toward raising our federal funds rate target at this meeting. And we will talk about that tomorrow.

CHAIR YELLEN. Well, my thanks to everyone for an interesting discussion of the economic outlook. I know it's been a long day, but I hope you won't mind if I finish up with a few observations of my own on recent data and implications for the outlook.

My first observation is that we have clearly made further progress on our employment and inflation goals, and that labor market conditions have continued to strengthen, with payrolls rising almost 210,000 per month, on average, over the past three months. The participation rate

has edged up since the fall and, on balance, has been roughly flat for the past three years despite demographic factors contributing considerable downward pressure. This development indicates that the economy has had more “room to run” than we had earlier surmised. Employment has thus continued to expand faster in recent months than its longer-run sustainable trend without reducing the unemployment rate, which remains close to my estimate of its longer-run level.

Other indicators also suggest that the labor market is more or less back to normal but not overheating. For example, the U-6 measure has not changed, on net, since our December meeting and is still somewhat elevated. Measures of wage growth remain subdued, and reports of difficulties in finding qualified workers in certain sectors and occupations are about what you would expect to see in a healthy labor market.

On the inflation front, the latest data show overall PCE prices up 1.9 percent over the previous months as compared with less than 1 percent during the summer. In addition, the staff estimates that recent increases in energy prices will temporarily push inflation a bit above 2 percent in the next few months. That said, we should be careful not to overstate the progress we have made in reaching our inflation goal. Core inflation has been running close to $1\frac{3}{4}$ percent since the summer and remains somewhat below our longer-run 2 percent objective.

My second observation is that the progress we have seen has been in line with expectations, not notably stronger, and the outlook for real activity and inflation has not changed materially. Recent spending and production indicators do not suggest that overall activity is accelerating. If anything, real GDP growth seems to be coming in a little on the low side this quarter, although that reflects a slowdown in consumer spending that is probably temporary. More revealingly, if we smooth through the quarterly ups and downs, real GDP appears to have

increased 2 percent over the past four quarters, about the same moderate pace that we have seen for quite some time.

The fundamentals shaping the outlook for real activity are also little changed since our December meeting. Monetary policy remains on track to tighten gradually this year and beyond. I conditioned my outlook on no change in fiscal policy, although I adopted this assumption as a placeholder until the Congress's intention is clarified. It now seems highly unlikely that we will see additional fiscal stimulus before 2018 at the earliest.

Weak foreign activity and an elevated dollar are continuing to hold down net exports and restrain U.S. growth. Ample existing capacity, slow trend growth in output and sales, and relatively modest returns to investing in the energy sector still limit firms' willingness to boost capital spending. Restricted access to mortgage credit and regional supply constraints continue to restrain the recovery in housing; this situation is exacerbated by rising interest rates. And while consumer spending is likely to resume rising at a solid pace in coming months, recent increases in stock market wealth, if they persist, should provide only a modest boost to spending this year.

Consumer and business confidence have moved up noticeably since the election, and I agree with the Tealbook that this development represents an upside risk to the outlook. But, as many of you have noted, we have yet to see much evidence that this exuberance is actually translating into stronger spending: Motor vehicle sales for January and February were down sharply from their fourth-quarter level, real PCE spending outside of motor vehicles fell in January, and orders and shipments for capital goods have picked up only modestly from the unusual weakness last year.

Inflation developments are also essentially in line with expectations. As expected, inflation has moved up markedly in recent quarters as the restraining effects of earlier declines in prices for energy and imports dropped out of the 12-month change. But while headline PCE inflation is now somewhat higher than I anticipated at our December meeting, that surprise reflects a rise in consumer energy prices, the effects of which should fade later this year. Core inflation, in contrast, has come in close to my expectations, and the 12-month change has been running close to 1¾ percent since last August. And inflation compensation and survey-based measures of expected inflation are little changed.

My final point is that I continue to view the risks to the outlook as roughly balanced. During much of last year, a sequence of events—turbulence in global financial markets, a slowdown in Chinese growth, persistently weak business investment, the alarming May labor market report, and Brexit—heightened concerns about the near-term outlook here and abroad. In response, we appropriately held off from tightening and waited for the situation to clarify. Since late summer, however, these concerns have receded substantially, and the last few statements thus characterized the risks to the outlook as roughly balanced. Some might argue that the risks have now shifted to the upside in light of the post-election rise in sentiment, recent stock market gains, and the ongoing discussion of new tax and spending initiatives. But the likelihood of near-term fiscal stimulus has, if anything, diminished in recent months, and although equity prices are up, valuations have become quite “rich.” We could well see a market correction. And there remain downside as well as upside risks pertaining to the global economy. For example, the upcoming elections in Europe could well have disruptive effects. Finally, our ability to ease in the event of a downturn in the economy is still quite limited and will likely remain so for some time, and that asymmetric constraint helps offset any upside risks we may face.

Inflation risks also strike me as balanced. As I indicated, there is nothing particularly puzzling about recent price developments, and the effects of past declines in energy and import prices have proven transitory, as we expected. The evidence continues to suggest that the Phillips curve is now fairly flat. As a result, the risk seems quite low that a further modest tightening in labor market conditions would lead to a marked pickup in inflation, particularly as indicators of inflation expectations remain quiescent.

We need to bear in mind that our estimates of the sustainable rate of unemployment and labor market utilization are highly imprecise, and that we may have yet more room to grow than we currently judge. Anticipating tomorrow's discussion, what are the policy implications of these three observations? Given the progress that we've continued to make toward our employment and inflation goals, as well as the likelihood that moderate growth will continue, raising the target range another 25 basis points at this meeting seems appropriate to me. Moving now will also give us greater flexibility to adjust the timing of additional adjustments to the stance of policy later in the year if necessary.

Looking beyond this meeting, my assessment that the outlook is little changed and that the risks remain balanced implies that it will likely be appropriate to continue gradually removing accommodation and at a pace similar to what I anticipated at our December meeting. Of course, the actual course of policy will almost certainly need to be adjusted over time in response to changes in the outlook and associated risks.

Okay. So let me stop there. I think we have time now to move along to Thomas's briefing on monetary policy alternatives.

MR. LAUBACH.⁸ Thank you, Madam Chair. I will be referring to the handout labeled "Material for the Briefing on Monetary Policy Alternatives."

⁸ The materials used by Mr. Laubach are appended to this transcript (appendix 6).

The key questions for the Committee at this meeting are whether the available information warrants raising the federal funds rate and whether the economic outlook and associated risks indicate that the funds rate path suggested by recent FOMC statements remains appropriate or call for signaling a somewhat different path of rate hikes. The three draft alternatives differ in their answers to these questions. In my remarks, I will briefly discuss how the draft alternatives address recent inflation developments and then turn to how your recent communications appear to have affected the public's understanding of "gradual increases in the federal funds rate." I will close with an update of an analysis shown in the Monetary Policy Strategies section of Tealbook A that applies optimal control simulations to the median SEP outlook.

As you know, recent inflation developments called for adjustments to the inflation language not only in paragraph 1, but also in the paragraphs concerning the economic outlook, the policy decision, and the policy outlook. These adjustments were intended to address two issues. First, the revised language recognizes that headline PCE inflation on a 12-month basis has now moved close to the 2 percent objective and may well rise above 2 percent over coming months, but the substantial increase of headline inflation over recent months contrasts with the stability of core inflation. Furthermore, as shown in the upper-left panel, the staff projects that headline inflation is likely to drift below 2 percent in the second half of this year, and that core inflation will not move materially closer to 2 percent this year. Your SEP submissions suggest that many of you agree. Accordingly, the language in paragraph 1 of alternative B explicitly distinguishes between headline and core inflation to convey that the job of returning inflation to 2 percent on a sustainable basis is not quite complete—a view apparently shared by several private-sector forecasters, as shown in the upper right. The same thought is conveyed by highlighting, in paragraph 3, the Committee's intention to foster a "sustained" return to 2 percent inflation.

The second issue is how to convey that, with headline inflation having moved close to 2 percent, the fact that monetary policy cannot perfectly stabilize inflation at that level should not be construed as a lack of commitment to your 2 percent inflation objective. While the previous diction, in paragraph 2, that inflation will "rise to" 2 percent indicated the desired direction, paragraph 2 in alternative B now expresses the expectation that inflation will "stabilize around," not "at," 2 percent over the medium term. However, to signal that persistent deviations in one direction or another would be a concern, paragraph 4 in Alternative B now points out that the inflation goal is "symmetric." Alternatives A and C include some but not all of the language changes in alternative B in various combinations.

Regarding policy expectations, as Simon noted in his briefing, a rate hike at this meeting is now fully priced in by markets. The fact that the markets were rather slow to come to this conclusion may mean that market participants had become accustomed to observing the "gradual" language in combination with a very slow pace of rate increases. Now that the message has been better understood, the middle-left panel shows that the market-implied probability distribution of the federal funds rate at the end of the year has shifted to the right, with most of the odds now on two,

three, or four hikes this year, rather than on one, two, or three at the time of your previous meeting. However, as indicated by the parallel shifts of the lines in the middle-right panel, the expected number of rate hikes in 2018 through 2020 has not changed. In addition, from the perspective of the staff's OIS-based term structure model, which takes the effective lower bound into account and which incorporates information from survey forecasts of the federal funds rate, some of the shift in the market-based path reflects a slightly less negative term premium rather than an upward revision to the expected funds rate path.

Of course, the public will continue to look to the SEP for information about how to interpret “gradual increases in the federal funds rate.” One question you may ask is how your individual projections for the appropriate path of the federal funds rate compare with some notion of an “optimal” interest rate path. To answer this question, we need three ingredients: a criterion for optimality, a baseline outlook for the economy and the federal funds rate, and a model that governs how changes to the federal funds rate path translate into changes of your goal variables. In the Monetary Policy Strategies section of the Tealbook, we regularly show you the results of this exercise using the *staff's* projection, using FRB/US and a variety of loss functions, each corresponding to a different notion of optimality. In this Tealbook, we applied optimal control to a baseline outlook consistent with the December SEP medians, and in the bottom two panels of my exhibit, I update this analysis using the March SEP medians as the baseline. The black lines show the medians of your federal funds rate and unemployment rate projections, interpolated to a quarterly frequency and extended beyond 2019 to converge to their median longer-run values. I am omitting the inflation rate; as you can see in the chart on page 96 of Tealbook A, the optimal control simulations applied to the SEP baseline induce minor changes to the inflation paths.

The red dashed lines show the optimal paths for the federal funds rate and the unemployment rate when optimality is defined by the loss function that places the same weights on deviations of the unemployment rate from its median longer-run value, deviations of PCE inflation from 2 percent, and changes in the federal funds rate. As is the case when applying this definition of optimality to the *staff* baseline, the prescribed path of the federal funds rate is above the median SEP path because, with inflation already close to 2 percent, the optimal control policy aims to reduce how much the unemployment rate undershoots its longer-run normal value. But in the SEP, this undershoot is substantially smaller than in the Tealbook projection, and, accordingly, the path of the federal funds rate runs only modestly above the SEP median by about 25 basis points, on average, through 2022.

The blue dash-dotted lines present the results when the criterion for optimality is modified so that undershooting of the unemployment rate below its longer-run value is not penalized. In this case, because the median unemployment gaps in your current projections are all negative and thus are ignored by the loss function, and with these unemployment gaps having small effects on inflation in FRB/US, the optimal policy is primarily driven by the desire to minimize fluctuations in the federal funds rate. This results in a nearly straight federal funds rate path with a slope of about 40 basis

points per year, roughly half the pace through 2019 in either the SEP median or the equal-weights simulation. While you may see some appeal to the notion that modest undershooting of the unemployment rate is not socially harmful, you may be concerned that the magnitude of the projected undershooting of the unemployment rate, combined with such a shallow federal funds rate path, could run the risk of leading to inflation outcomes that are less benign than those predicted by this simulation.

Thank you, Madam Chair. That completes my prepared remarks. The February statement and the draft alternatives and implementation notes are on pages 2 to 12 of the handout. I will be happy to take questions.

CHAIR YELLEN. Great. Questions for Thomas? President Bullard.

MR. BULLARD. Thank you, Madam Chair. In these simulations in the last two panels—does this take into account possible visits to the zero bound?

MR. LAUBACH. No. There is no explicit consideration of the lower bound or any sort of aversion toward hitting the lower bound. This is just straight-up minimizing this quadratic loss function.

MR. BULLARD. So it's not optimal control in a full sense about possible visits to the effective lower bound. It's just optimal control in kind of a local sense—so no big shocks, no recession.

MR. LAUBACH. If you want to define it that way, yes, that's right.

MR. BULLARD. I guess with different objective functions.

MR. LAUBACH. Correct.

MR. BULLARD. Thank you.

CHAIR YELLEN. Other questions? Okay. Well, I guess we're ready to call it a day for today and to resume at 9:00. I want to turn it over to Brian, who is going to talk a little bit about logistics.

MR. MADIGAN. Just a quick announcement about transportation. There should be shuttles downstairs, out that door on C Street, not down in the Board garage, back to your hotel.

So, again, they should be out there now on C Street, so you just go down the steps and out the door to get the shuttle back to your hotel. There is a 7:30 and 8:00 a.m. shuttle tomorrow morning from your hotel. That's all I have.

MR. WILLIAMS. Wait, wait. Yes. We have a meeting at 8:00, right?

MR. EVANS. Yes.

MR. WILLIAMS. Is the 7:30 shuttle that—I guess it can fit all of us?

MR. EVANS. It will be fine.

VICE CHAIRMAN DUDLEY. It beats the 7:30 shuttle flight.

MR. WILLIAMS. It will hold all of us. It's big enough.

MR. POWELL. Do we start at 9:00 tomorrow?

CHAIR YELLEN. We're starting at 9:00.

VICE CHAIRMAN DUDLEY. Yes. And we finish at 9:30. [Laughter]

MR. LACKER. Hardworking presidents are getting started earlier. [Laughter]

CHAIR YELLEN. We'll serve a boxed lunch.

[Meeting recessed]

March 15 Session

CHAIR YELLEN. Good morning, everybody. Let's get started. I first want to turn to Bill Wascher and ask him to talk about this morning's data.

MR. WASCHER.⁹ Thank you, Madam Chair. We received two pieces of hard data this morning: retail sales and the CPI. Let me start with retail sales. They were basically flat in February but were revised up in January. I'm referring to the data for the Census retail sales group, which excludes auto and motor vehicle dealers, building material and supply stores, and gasoline stations. That's the category that the BEA uses to estimate PCE. Retail sales were flat—zero, basically. They were unchanged in February but were revised up to show a 0.9 percent increase in January.

Looking at the details for February, it does look like there's something to this delayed-refund story that President George and First Vice President Gooding mentioned yesterday. There was weakness in both electronics and clothing—that's discretionary spending—and it seems consistent with the fact that these delayed tax refunds were holding down spending in February.

We get weekly data from the Treasury on the refunds, and it looks like the shortfall in February was mostly made up by the first week of March. We'd be inclined to put in a bounceback in March reflecting that. And I think adding to our March forecast and the upward revision to January will leave our real PCE forecast for growth roughly unchanged in both Q1 and Q2. So there's some timing shift in terms of February and March, but I don't think there's any real information here about the underlying pace of spending.

⁹ The materials used by Mr. Wascher are appended to this transcript (appendix 7).

There's a handout for the CPI that shows what the BLS published for February. The data were very close to our expectations. The total CPI rose 0.1 percent in February. The core index rose 0.2 percent. Over on the right-hand side, you can see the latest estimates of the 12-month changes. They're down a little bit from what we had in the Tealbook, mainly because the core CPI was just a few basis points lower than we'd expected. We had a 24 basis point increase, and it came in at 21 basis points—so, really small.

I don't know the implications for the PCE prices at this point. We have to look at the detail and run it through our programs to calculate how much it would matter for PCE prices. But given how close we were on the CPI, my guess is that it won't have any major, material effect on our PCE price forecast. Thank you.

CHAIR YELLEN. How big is the differential at this point between CPI increases and PCE or core CPI and core PCE?

MR. WASCHER. Right now, the 12-month change in core PCE prices is about $1\frac{3}{4}$, so it's about $\frac{1}{2}$ percentage point at this point.

CHAIR YELLEN. So that's what you consider to be normal?

MR. WASCHER. I think that's a little bit higher than normal, but it's been running at that—recently. David?

MR. LEBOW. Right. The historical average is 0.3 to 0.4. This is a little larger. Housing has a larger weight in the CPI, and housing prices have been rising a little more rapidly. And medical prices have a larger weight in PCE, and those have been relatively low.

CHAIR YELLEN. Okay. Are there any other questions for Bill? [No response] Okay. Then I think we're ready to begin our policy round, and President Lacker is going to start us off.

MR. LACKER. Thank you, Madam Chair. I support raising the funds rate target 25 basis points today. My comments will be focused on communications, and I'll review the recommendations in my letter. I have one additional recommendation that's relatively minor. I left it out of the letter but don't want to forget it.

As we come into this meeting, headline inflation is 1.9 percent. Core remains at 1.7, as was just remarked, and we appear to be well within the range of estimates of maximum sustainable employment. In crafting a statement for this meeting, the critical challenge stems from the fact that the extended deviation of headline inflation below our target has come to an end. When I say that, I'm not declaring victory—I'm just stating a fact. Inflation was well below 2 percent for a long time, and now it's not.

In December 2015, with our first rate increase, we added the following sentence to the statement: "In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal." Now, we always monitor inflation carefully, of course. So at a superficial level, this might sound awfully uninformative. But some of the most forceful central bank communications come via the choice of which obvious things to select to actually state outright, and I think this is one of those cases. By saying we would carefully monitor inflation, we signaled our heightened concern and dissatisfaction with inflation having run below 2 percent for so long. Now that headline inflation is virtually 2 percent, the phrase "current shortfall" is clearly no longer appropriate. One-tenth of 1 percentage point is not a material shortfall. But if we retain the "carefully monitor" language, we would be continuing to signal heightened dissatisfaction with inflation, consistent with our introduction of that phrase.

Given the addition of language to paragraph 1 calling out the fact that core has run below 2 percent, the natural inference to draw is that our dissatisfaction is with the low rate of core inflation rather than the small miss in headline inflation. Obviously, we don't care about core inflation per se—only about the information it contains regarding future headline inflation. So the dissatisfaction is presumably motivated by an assessment that headline inflation is likely to gravitate toward 1.7 percent rather than remain around 2 percent.

I'd ask the following question: Do we really want to justify a gradual pace of returning to more normal levels of the funds rate by citing a deviation of expected inflation from our target of 0.3 percentage point? And I think the answer is "no." First of all, a persistent 0.3 percentage point deviation is not what the Committee expects. The SEP numbers for this meeting do not show core inflation stuck at 1.7 percent. In fact, the median core projection is 1.9 percent for this year. Only one participant projects core inflation of 1.7 percent for 2017, and that's the lowest projection there is for this year. For next year, the median projection for core inflation is 2.0 percent. The lowest projection is 1.8 percent, and, again, only one participant submitted that low core inflation projection.

On top of that, the SEP does not provide any evidence of a heightened concern about downside risks to inflation. Now, there's a question about the balance of risks with regard to inflation. Twelve participants said that they thought that risks were broadly balanced, four said they were weighted to the upside, and one said they were weighted to the downside, and that's true for both headline inflation and for the core version of that question.

Second of all, this strikes me as an excessively ambitious degree of fine-tuning, and I don't think the evidence bolsters confidence in that degree of ambition. For example, as shown in the prediction intervals that are derived from historical forecasts that appear on page 77 of

Tealbook A—little historical forecast error plots—the width of the 70 percent prediction interval for 2016’s core is 0.5 percentage point. Now, it may seem odd to talk about a prediction interval for last year’s data, but that just reflects the magnitude of typical data revision. So we essentially can’t even be very confident that core inflation actually is as far as 0.3 below our target right now.

For these reasons, I think retaining the “carefully monitor” language is problematic. I think we’d be much better off with the version of paragraph 4 in the first draft of the statement, in which the entire “shortfall” sentence was simply eliminated. And I’d point out that the statement would still retain the sentence that comes after that, which states that the Committee expects “gradual increases in the federal funds rate.” We’re not backing off that commitment to gradual rate increases. I think that provides plenty of signal that we’re going to withdraw accommodation slowly. We shouldn’t be so fussy about the preceding sentence.

This leads me to a second related challenge that I think faces us in drafting the statement, which is how to characterize our inflation outlook. The second sentence in paragraph 2 used to say—and I’ll quote it here—“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 rise to 2 percent over the medium term.” So, clearly, “inflation will rise to 2 percent” is no longer appropriate, but what should replace that characterization? The first draft said inflation “will be at or near 2 percent,” and the latest draft says inflation “will stabilize around 2 percent.” But it’s worth pointing out that the 70 percent prediction interval for one-year-ahead inflation—that is, the inflation forecast for this year, 2017—is 1¼ percentage point. For the two-year-ahead forecast, it’s 2¼ percentage points wide.

So that essentially translates into a range from 1.1 to 3.3 percent for headline inflation and 1.2 to 2.7 percent for core inflation.

So substantial fluctuations in overall inflation around our target seem quite likely, if history is to be any guide, and that assessment is consistent with recent history. Headline inflation has been as low as negative 1 percent, and it's been as high as 4 percent. Obviously, energy prices drive a lot of fluctuations in the headline rate, but the core rate has been as low as 1 percent in recent years and as high as 2½ percent. In that context, I think it's problematic to say the Committee expects inflation to stabilize around 2 percent. Now, I can understand a statement like that about the Committee's expectation regarding inflation—that is to say, the Committee's point forecast for any given future period. But that's very different. I mean, the forecast may stabilize, right? The mean of our forecast may be a pretty stable number. But that's very different from saying that the Committee expects inflation to stabilize. And that formulation suggests we would expect to see only small deviations of inflation from 2 percent. That seems to me quite unlikely and quite likely to be refuted.

I'd also point out that the fan charts we're introducing in the SEP this meeting will highlight the very real possibility that inflation turns out to be temporarily higher or lower than we forecast. These new fan charts do not make it look like inflation will stabilize in a significant way. The 70 percent confidence interval for PCE inflation goes from 1.1 to 2.8 percent for 2017. The number is 1 to 3 percent for 2018 and 2019.

So, what I would recommend is that instead of saying “The Committee expects that . . . inflation will stabilize around 2 percent over the medium term,” we say “The Committee expects that . . . inflation will fluctuate around 2 percent over the medium term.” I think that's consistent with the characterization in our consensus statement. We actually use the word “fluctuate” to

characterize inflation, employment, and interest rates in the consensus statement. And it's consistent with the vision of the consensus statement that our object is to keep average inflation around 2 percent over time, but fluctuations will happen from time to time. I think the word "fluctuate" is much more likely to convey that even though our forecast is 2 percent, we do anticipate forecast misses from time to time. I think it's less likely to confuse audiences when juxtaposed with the new fan charts.

I have a third, kind of minor, suggestion. It has to do with the first paragraph. I don't mind mentioning core inflation in paragraph 1—it's a relevant fact. But the first paragraph has traditionally been reserved for descriptions of recent data. We've been careful to keep forecast-type language out of it. Accordingly, I would suggest that we change the tenses in that phrase. Instead of saying "inflation is little changed," we should say "inflation was little changed," and this is consistent with the way we speak about unemployment in the past tense in that paragraph. And instead of saying inflation "continues to run somewhat below 2 percent," we should, again, say inflation "has continued to run somewhat below 2 percent." That's consistent with language we use elsewhere in paragraph 1 as well. This would make clear we're just simply describing past data, and we're not making an implicit near-term projection.

Let me finish with a broad comment about communications. I think this is, as I noted yesterday, an important transitional meeting. Someone else called it "pivotal." The long-running inflation shortfall, as I said, has come to an end. The pace of policy normalization is picking up as well. We don't make significant changes in our statement every meeting. We don't do it often. We just use certain occasions to signal a bit of an inflection. But when we do, they tend to stick. So I think it's worthwhile to spend a little extra time making sure we get ourselves comfortable with what we're doing today. Thank you very much, Madam Chair.

CHAIR YELLEN. Thank you. Okay. Well, we have some important wording suggestions, and I'm going to ask that, as people go around with their presentations, they react, so we can come back to it. I'll just say my own view, for what it's worth, is that I do think it's important not to declare victory at this point on inflation. I think the sentence, to me, in paragraph 4 that President Lacker proposes getting rid of, about "carefully monitor," is important because we don't yet have inflation stable at 2 percent. We've had a long period in which inflation has been running below 2 percent. I think it's been an important objective to make sure that inflation does move up to 2 percent. That inflation expectations have been low and continue to be low, and emphasizing that it is a symmetric objective and we're committed to returning to 2 percent, to me, should be an important part of our communications. I think there are quite a number of people who think that 2 percent is a ceiling rather than a symmetric objective, and, to me, this is an important point that we should continue to make. But I look forward to hearing your reactions to that suggestion and the other wording changes. So let's continue. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. President Lacker has just provided a number of suggestions. I would say, as I was reading the statement and thinking about where we are relative to both elements of our dual mandate, that there probably is a point when we should reexamine the statement—but I don't know whether this meeting, on the fly, is the point when we should be doing it. A lot of the verbiage in the statement was designed in a period when we were missing on both elements of our dual mandate by quite a bit. We are now in a situation where, over the course of this year, in my own forecast, we will be right at both elements of the dual mandate—or possibly a little bit under for the labor markets. And I think the statement probably needs to change to reflect that.

I am a little concerned about making substantial changes on the fly. I'd rather do it outside of this room rather than wordsmithing, other than relatively modest changes. But I do think that President Lacker's comments do—I think we're going to have enough other changes that we have to make, particularly to the paragraph about reinvestments, that this may not be the meeting to make dramatic changes in the statement. But I think that we're coming to a point at which probably a complete “refresh” might be advised.

Let me get on with my regular statement. I support alternative B. Even after this increase, short-term real rates are quite negative and are not consistent with an economy likely to be approaching both elements of the dual mandate by the end of this year and likely surpassing them next year. If we want to avoid steeper and potentially more disruptive interest rate increases later, we need to raise rates gradually but much more regularly than last year.

While I'm not particularly enamored of following particular monetary policy rules, it is noteworthy that all of the simple policy rules discussed in the Tealbook imply a tighter monetary policy than the baseline assumption. I do think our approach and communication strategy need to change as we move beyond most of our estimates of full employment. For example, even with some desire to probe the lower side of estimates of the natural rate of unemployment, we are quickly approaching the point at which having the labor market strengthen further may not be desirable, as it may push us too far beyond full employment.

Similarly, while the economy seems roughly balanced now, I am not sure that the risks to the economic outlook are roughly balanced. In my forecast as well as that of the Tealbook, the unemployment rate goes significantly below most estimates of full employment. Consistent with this thinking, we need to change how we communicate our overall policy stance. In essence, our communications have engendered an assumption of unchanged interest rates unless the data

unambiguously confirm that conditions continue to improve. This is a result of the perception that the decision at every meeting depends on the fine points of the most recent incoming data. This does not seem consistent with the underlying strength in the economy, our proximity to our dual-mandate goals, and the risks of an undesirable overshoot. An implication of this strategy is that the bulk of the communication is being done not by the statement at meetings but rather by speeches as the next meeting approaches, after we have received the intermeeting data.

This is a risky strategy in an organization designed for presenting alternative views. I would prefer to move to an approach that makes an interest rate increase at every press conference meeting the policy expectation unless the economy proves significantly weaker or stronger than the forecast. The data will always be somewhat noisy, but unless the overall signal in the data is sufficiently different and significantly alters our forecast, we should also not alter our path of increases. And we need to promote that expectation among the public and financial market participants. We are now close enough to full employment and our inflation target, with interest rates still quite accommodative, that a persistent but gradual increase in rates should be presumed over the year unless the economy shows unexpected weakness or surprising strength.

I would also add that I think we should change the paragraph on reinvesting principal payments. As I discussed yesterday, I prefer starting to normalize the balance sheet relatively soon, possibly in the third quarter. I would employ a slowly tapering strategy that can be adjusted should the economy surprise us on either side. For that to be possible, we would need to move quickly to determine our balance sheet strategy and how we'll communicate that strategy, including in the last paragraph of the statement.

So my suggestions are all for future meetings, not for this meeting, but are all things that I think we should consider as we continue to evolve the statement. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. Given my outlook, the progress on our dual-mandate goals, and the risks regarding the outlook, I view an upward path to the federal funds rate as appropriate and favor a 25 basis point increase in the target range at this meeting as in alternative B.

Regarding today's statement language, I can support the language in alternative B but agree with Presidents Rosengren and Lacker that some changes be considered in future meetings. In that vein, I would like to make three points about the language for consideration at a later date. First, I'd prefer that we move away from the "gradual" language and simply be clear that, on the basis of our current assessment, we anticipate economic conditions will evolve in a manner that will warrant increasing the funds rate, although not necessarily at each meeting.

Second, I understand the intention of introducing the language in paragraph 3 about a sustained return to 2 percent inflation, but this innovation might be interpreted as our expecting inflation to move monotonically to 2 percent rather than to fluctuate around an upward path toward 2 percent. If the headline inflation numbers soften a bit over the next few months as expected, will the public think we will back away from our forecast and policy rate path?

Third, given that total inflation is likely to move down for a few months because of changes in energy prices relative to year-ago levels, I understand why the core inflation concept was introduced in paragraph 1. But doing so may be interpreted as a signal that we are switching our target to core inflation. Such shifts in focus have occurred in our history. For example, former Chairman Greenspan is credited with having shifted the FOMC's focus from total inflation to core inflation in the 1990s. But then in October 2007, the FOMC began releasing projections for total PCE inflation along with core PCE inflation. If the language in paragraph 1

is misinterpreted, we should be prepared to communicate that our goal remains 2 percent for total PCE inflation, consistent with our Statement on Longer-Run Goals and Monetary Policy Strategy, which we reaffirmed in January.

Let me conclude with a general observation. I believe current economic conditions and the outlook necessitate a change in our mindset. Much of the policy discussion over the expansion is rightly focused on the risks of moving rates up too quickly. We introduced the “gradual” path language to underscore that we didn’t expect to be raising rates at each meeting. The base case was no action, and the burden of proof lay on making a case for action. That was appropriate then, but now the economic situation has improved significantly: Real GDP growth continues at or above its trend pace; we’ve met our full employment goal from the standpoint of what monetary policy can do, and employment growth is well above trend; inflation is close to goal, and the risks to the forecast are broadly balanced. In this environment, with policy still quite accommodative, instead of focusing on the risks of moving rates up too quickly, we need to focus on the risks of moving rates up too slowly.

We may benefit if our internal discussion from now on starts with a base case of removing accommodation, with the burden of proof lying on the case for delaying such action. In other words, our internal discussion should be biased toward implementing actions when the accumulated incoming economic data and medium-run outlook are supportive. This does not imply action at every meeting, but it does mean a discussion focused on the reasons for inaction. I believe this shift in our discussion will help prevent us from getting “behind the curve.” Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. I support alternative B at this meeting. Keeping the rate unchanged in March would all but ensure that, given our “only gradual” language that we’re discussing now, there would be at most three rate increases in 2017. Hence, if there is some nonnegligible probability that four rate increases were to be deemed appropriate for this year, it makes sense for us to raise the funds rate at this meeting.

I do, however, also have concerns with the statement language. While I understand the reasons for the changes in alternative B, it doesn’t seem to me to make a compelling case for why we are raising rates. In fact, one could argue that the language in alternative B seems to present a better case for not raising rates than for raising them. The statement language suggests that economic conditions are not significantly different, and inflation hasn’t changed much since our previous meeting. That’s not the language that justifies a rate change. It seems to do just the opposite. Language in paragraph 1 of alternative C is more appropriate.

Further, a significant reason for my desire to raise rates at this meeting is that doing so represents a consistent response to what we have communicated about the likely path of the funds rate. In that regard, I would also suggest amending the first sentence of paragraph 3 to read, “In view of realized and expected labor market conditions and inflation, and consistent with the Committee’s intention to remove policy accommodation at a moderate pace, the Committee decided to . . .” et cetera. This would give the impression that we are following the guidance we have set out in past statements and in other communications. It also makes clear that we are on a path and not reacting to every data point.

Lastly, I am okay with retaining the sentence in paragraph 4 at this meeting but would suggest modifying or removing it in future meetings. And, like other presidents who have spoken before me, I don’t suggest wholesale changes to the language right now but offer these

suggestions as we consider significant changes to our language in subsequent statements. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I continue to think that this is a pivotal meeting for the FOMC. I think the Committee has turned quite a bit more “hawkish” on data that aren’t all that different, and I’m not that comfortable that we’re in good shape for the ramifications of the decision being made at this meeting.

Here’s a different way to think about what’s going on in the U.S. economy. There is actually very little cyclical movement and therefore very little reason to adjust the policy rate setting. For 2015, real GDP growth was 1.9 percent. For 2016, real GDP growth was 1.9 percent. The Tealbook forecast for real GDP growth in 2017 is 2.0 percent. That’s almost no cyclical movement at all.

The U.S. unemployment rate hit 5 percent in September 2015. In the two years before that, the unemployment rate had declined 2.2 percentage points, from 7.2 percent to 5 percent. In the past 18 months, since September 2015, the unemployment rate has declined just 0.3 percentage point. The Tealbook forecast has it declining just 0.1 percentage point from the current value to the end of this year. If that forecast materializes, it would mean two years of unemployment essentially fluctuating between 4½ and 5 percent.

On inflation, the Federal Reserve Bank of Dallas trimmed mean PCE inflation rate measured year over year in December 2014 was 1.58 percent; in December 2015, 1.62 percent; in December 2016, 1.84 percent; and in January 2017, 1.87 percent. It’s rising, yes, but ever so gently.

The bottom line is that there's been very little action in real GDP growth, unemployment, or inflation in the past 18 months in the U.S. economy. This all occurred against a backdrop of almost no change in the policy rate. In December 2014, the policy rate was 13 basis points; in December 2015, 38 basis points; and in December 2016, 63 basis points, which is its level up until this moment.

A natural conclusion is that nearly eight years after the end of the recession, the cyclical dynamics of the U.S. economy have played out almost completely, and the economy has settled into a type of near-steady-state outcome, which I'm calling a low-real-rate regime characterized by 2 percent output growth, low unemployment, a low policy rate, and inflation close to target. Given this situation, there seems to be little need to adjust the policy rate very significantly in order to continue to achieve our policy goals.

My concern with moving the policy rate today is not about today's move in isolation, but instead that today's move may set up an expectation of future policy rate increases that will be inconsistent with the equilibrium I have just described. I think a choice of alternative B today will make it difficult to push back against the idea of calendar-based quarterly rate increases during 2017 and 2018, instead of increases that would be more contingent on incoming data. I continue to think that the schedule of press conferences is overly dictating what the Committee can do in reacting to available data. The SEP has three increases in the policy rate in 2017 but, in my opinion, will be interpreted as leaning toward four, since some of the dots have moved up.

Making a policy move of this type and projecting that kind of a future path of rate increases did not work well for the Committee in December 2015. The Committee moved at that point and suggested that 2016 would be followed by essentially quarterly rate increases,

reinforced by subsequent communication, which led to a major reassessment in global financial markets. I don't think we want to get burned by that again.

I'm particularly concerned about the striking out in paragraph 4 of the word "only" in the proposed statement, alternative B. That is, "only gradually" becomes just "gradually." Removing this word may be read as "hawkish" by financial markets, in my view, and suggests that the Committee may not move gradually during the year ahead. I think we'd be better off not drawing attention to this phrase at this particular juncture, since we'll already have enough ammunition that will be suggesting that the FOMC has turned quite a bit more "hawkish." So I suggest not striking this word at this particular meeting and adjusting that language at some point later.

I'm also concerned about the inclusion of the language on core inflation in paragraph 1, and here some of my comments will dovetail with the comments of Presidents Mester and Harker before me. The new language in paragraph 1 plays down the recent increases in inflation because they are not as apparent in the core PCE inflation measure. This almost seems to suggest that inflation is not moving toward target, but that we are nevertheless planning a series of aggressive rate increases. So I think that that might also be interpreted as "hawkish" in financial markets. I agree with President Harker on this—that this sounds like a reason for us not to be setting up an aggressive set of rate moves instead of a reason to go ahead.

I'm also sympathetic to President Lacker's comments on alternative B in this regard. But I admit that I don't have any concrete alternative suggestion in paragraph 1 other than what President Lacker already suggested.

As I discussed yesterday, this type of statement by the Committee could be rationalized if we had a strong expectation for the U.S. economy for the remainder of 2017. But the Tealbook

2017 forecast is for growth, inflation, and unemployment to be nearly unchanged from last year. The SEP is not dramatically different in this regard.

All of these concerns have me leaning toward alternative A for today. That alternative would not move today and would not do too much to set up a May move. That would leave us having to set up May during the intermeeting period. However, since alternative A does not set up a May move, I could be persuaded to support alternative B for today. But I think we should be especially vigilant that this is not allowed to be interpreted as more “hawkish” than I think we really intend during the upcoming intermeeting period. This is especially so against a backdrop of a highly uncertain macroeconomic policy environment in the United States of a type that would have caused us to pause in previous years.

In summary, then, I think we should restore the word “only” in paragraph 4, as in “only gradual,” so as not to draw attention to this aspect of the statement at this particular meeting.

When discussing the decision, I think we should play to our strength. The reason we’re doing this is on the back of two unexpectedly strong jobs reports to start the year. I think that provides a sufficient rationalization for this move. We will have to downplay some of the crosscurrents that are working against us at this meeting, including Q1 GDP tracking, which makes it look like the first quarter will come in weak, as it has in previous years. We would also downplay the potential for a fiscal policy effect and year-over-year core PCE inflation. And what would be played up would be the recent labor market reports. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I support the decision specified in alt-B. We’re very close to attaining both our unemployment and inflation goals; the real interest rate will still be negative after we raise the rate; and there appears to have been an increase in r^* as a

result of the change in animal spirits, a change that, for its validation, still awaits policy actions consistent with the new set of expectations, but that has had a significant effect on stock market and other asset valuations. Further, the expected growth rate of the rest of the world's economy has risen. Of course, there are storm clouds on the horizon, particularly those related to potential political developments in Europe, in the critical round of elections that will continue until near the end of the year. But, on balance, I believe that it's time to raise the interest rate now, and that it's likely we will make further rate increases this year.

I would, however, like to raise one more issue related to the staff forecast and the SEP results presented to us yesterday. The staff forecast takes us to an unemployment rate of 4.1 percent in 2019. The staff estimate is that u^* —which is my language for the full-employment rate of unemployment—is 5 percent. So why are we heading off on a long journey—“long” meaning several years—to increase the divergence between the unemployment rate and the full employment unemployment rate before returning the very low unemployment rate to the full employment rate on a path that is hidden outside the range of the Tealbook baseline forecast?

After helpful discussions with the staff, I understand that we need that decrease in unemployment in part to get the inflation rate up to 2 percent. That makes arithmetic sense, but now suppose that we face the opposite problem, and that we currently had an inflation rate of 2.3 percent with an unemployment rate of 5.3 percent. We would need a higher unemployment rate in order to reduce the inflation rate and would presumably head off on a trajectory to 5.9 percent unemployment in order to get to the 2 percent inflation target. Would we think it makes sense to raise the unemployment rate to well above the full employment rate to get rid of 0.3 percentage point of inflation? I don't think so.

So, what could we do? I have five solutions. [Laughter] Well, the research guys think their job is over because we've met our targets. First, we could search for ways of steepening the Phillips curve, perhaps starting by revisiting a literature of the 1980s—for example, Michael Bruno and Jeff Sachs's book, *Economics of Worldwide Stagflation*, published in 1985. The interest then was in precisely the opposite of the problem we face now, but the analytic techniques are presumably the same.

Second, we could reconsider our loss function and ask whether, for instance, we truly believe in linear-quadratic models in which certainty equivalence obtains.

Third, we could try to take account of our ignorance—for example, by finding some way of recognizing a view, which happens to be mine, that the underlying economics that shows that inflation is costly is incapable of distinguishing between the cost of an inflation rate of 1.8 percent and that of an inflation rate of 2 percent—that is, to use a target range rather than a target number for the inflation target.

Fourth, we could look at episodes similar to those that would be implied by an economy behaving like the economy on page 4 of Tealbook A. Well, a large and talented team of Federal Reserve economists has done that, with results that I quoted yesterday, with the bottom line being “We're unable to draw clear conclusions.”

Now, I'll get to the fifth possibility in a while. Let me conclude by looking back and forward. Since 2009, this Committee's policy approach has been to normalize the economy and policy. To do that, we set out on a very long march to full employment and low inflation with targets that were partially specified numerically more fully in the middle of the march. Now we're close to our targets. I don't know to what targets other than those we have that we should be aiming at. And I began to think in terms of setting out some feedback rule or rules whose

prime function would be to keep us close to our targets—to what used to be called the “bliss point.”

It’s well known that the FOMC has in the past typically operated by tending to move the interest rate in a serially correlated way from one range to another. One can imagine that being an optimal approach, particularly when the distance from the target is large, as it was in 2009. But it is not clearly optimal when the distance from the dual-mandate targets is small.

So let me set out the fifth possibility. There used to be a concept called “opportunistic disinflation.” I guess there’s also a concept of stochastic opportunistic stability. That is, if the economy was close to target and you waited a while and watched how things developed and perhaps reinforced the self-stabilizing characteristic of the economy with a feedback rule that tries to move each variable toward target, then we’d find that that was probably close to an optimal outcome. Now, that happens not to put any weight on linear-quadratic certainty equivalence, and I think you’d better, because when you operate with linear-quadratic functions, you basically say, “All that stochastic stuff doesn’t matter in the least.” Well, it does. It’s what pulls our chain, so to speak, and it is what generates the dynamics that move us from one place to another. So my guess is, we ought to look at that because our policy actions will interact with that.

That’s all just intuition, but I think that when Don Kohn invented opportunistic disinflation—so it is said, at least in the literature, and it could have been around this table—he also didn’t exactly know how that would work out. So I think we need the Committee to consider how we’re going to best set interest rates in years to come in a way that does not necessarily include more long marches. And this stochastic opportunistic disinflation may be one way. Thank you.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. I agree with alternative B, and I will comment on the statement language at the end of my comments here.

I believe we're making good progress toward achieving our dual-mandate objectives. We are moving toward full employment. While it's not always reflected in the headline unemployment rate, I think other measures of slack, at least to my eye, are showing that we're making improvement.

The Dallas trimmed-mean inflation rate, as President Bullard mentioned, is now running at approximately 1.9 percent. And, as he said, it was running about 1.6 percent in 2015 and between 1.7 and 1.8 percent in 2016. For me, that movement gives me confidence, actually, that we're going to reach our 2 percent objective over the next couple of years.

Due to this progress, I believe it's appropriate to remove some amount of accommodation today. I believe, though, this progress is also consistent with a gradual and patient removal of accommodation during the remainder of 2017. My SEP estimate has not changed from December—three federal funds increases during 2017.

I have just a comment: While the wealth effect of the post-election stock market rally is certainly a positive and, as has been mentioned, has some positive effect on r^* , that by itself has not materially influenced my thinking regarding the path of rates. On that score, it would not surprise me at all if we had some correction in market valuations and a widening of credit spreads. If this was to happen, I might actually view it as a healthy adjustment in the markets.

As I mentioned yesterday, I continue to monitor potential fiscal and structural reforms. While they have the potential to provide upside to my forecast, I'll also be closely monitoring the potential negative effects of repeal of the ACA on consumers, as well as policies that could

affect the rate of growth in the workforce and trade policies that might directly or indirectly affect consumer prices and jobs, logistics, and supply chain arrangements and potentially lead to retaliatory responses from foreign governments.

Regarding the statement language that has been mentioned, I'll just make two or three points. First, I agree with statements that have been made that in the future, we should have a refresh discussion regarding the statement—not today, but in the future.

Second, of the comments that President Lacker made, the one I have the most conviction for is the insertion of the word “fluctuate” rather than “stabilize.” When I look at our inflation objective, we said we don't want inflation to run persistently above or below the 2 percent inflation objective. I think that's consistent with the word “fluctuate.” So I'm actually okay with that change.

On the other hand—this is the third point, and I'll just comment—regarding the “carefully monitor” language, I actually am glad that that stays in, because while I'm relatively confident about reaching our full employment objective, I must admit that, given globalization as well as the effect of technology-enabled disruption, as I've said before, I think these two forces are powerful and limit pricing power and are likely to have some downward effect on prices. So I am glad that we're going to continue to monitor inflation carefully. I think this may continue to be challenging. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. I can support alternative B today. As I mentioned yesterday, in my SEP I again assume two rate increases of 25 basis points in 2017. I see economic activity and inflation evolving pretty much in line with the forecasts I made in December and January, which also were predicated on this policy assumption. So, not

surprisingly, I don't see any great urgency for moving today. But since I don't see today's rate increase as a commitment to a much different policy rate path from what I currently assume will be appropriate, I can support the decision to raise the funds rate today.

I still think we could end up making just two moves this year, but I could imagine three increases as being appropriate if the data come in somewhat stronger than I currently expect. We'll just have to see, in my opinion. Even three increases this year would be a gradual funds rate path that gives some deference to risk-management considerations. We're still in close proximity to the effective lower bound. So I can support today's rate move.

Now, the changes in the statement language that occurred between the first and second drafts of the alternatives were big improvements, in my view, and make it much easier for me to go along with alternative B. The first draft came close to declaring victory on our price-stability mandate. That seemed pretty premature. Although the recent data have been good, core inflation is still 1.7 percent. And after some welcome increases in inflation compensation and expectations in the fourth quarter, we've not seen much further progress this year. Most measures remain well below pre-crisis levels. I know some might consider our current performance to be close enough to 2 percent to call it a day. I do think we should consider the fact that Governor Tarullo is going to finish eight years on the Committee without core inflation getting up to 2 percent, certainly not for more than a few months.

MR. TARULLO. Is there a causal relationship? [Laughter]

MR. EVANS. It's just a happy thing to say to support my argument. [Laughter] We can't ignore our history of eight years of running below target and the risks to the credibility of our symmetric 2 percent objective if we end this inflation cycle without actually achieving our

target. I think there is a risk that 2 percent could be viewed as pretty close to a ceiling for the Federal Reserve, and I think that that would have negative consequences.

Regarding the kinds of alternatives that Governor Fischer was talking about, with 5.3 percent unemployment and 2.3 percent inflation, I can understand how the symmetry of that might seem problematic. But for me, the larger issue is the fact that eight years of running below our 2 percent objective leads to a credibility risk that people think that this is a ceiling. I think that's the part that we truly need to actively fight against.

The following were welcome edits—paragraph 1, recognition that core inflation continues to run below target. I took note that President Harker and President Bullard made comments about alternative C language and alternative A language as perhaps being better. With regard to inflation, I thought that alternative A was pointing out that, well, inflation has gone up, but that's largely because energy prices are responsible—that was probably closer to something that I would prefer if you were choosing one or the other. I think alt-B is a reasonable middle ground to be in this place for me.

The paragraph 3 addition that monetary policy is aimed at supporting a “sustained” return of inflation to 2 percent—that's a welcome addition.

The reappearance in paragraph 4 of the Committee's careful monitoring of “inflation developments relative to its symmetric inflation goal” is also welcome. I hope events will transpire in a way that we will soon be able to move to language closer to that in the original statement draft, but we're not there yet.

President Harker also made a comment that, in paragraph 3, perhaps we could have some language that indicates that there's an intention to remove accommodation, and others put that as the null for that. I think that's too much for my views. As I mentioned, I've got only two rate

increases this year. So I think it's much more important to ratify an increase in inflation expectations as the big driver for why inflation is likely to move up on a sustainable basis. And I would view any change in language that gets in the way of that as quite difficult to accept.

Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Gooding.

MS. GOODING. Thank you. The accumulated progress to date on both the employment and inflation objectives supports another step in the direction of removing monetary policy accommodation at this meeting. Therefore, I support the policy recommendation of a 25 basis point increase in the target range for the federal funds rate that is in alternative B.

Outside the employment picture, however, the hard data on real activity that we have in hand has been somewhat weaker than is consistent with our GDP forecast for the year as a whole. While we do not discount the possibility that first-quarter GDP will begin to look better as more data come in, so far, an increase in business and consumer optimism has not turned into much action. In addition, the prospects of significant fiscal policy stimulus this year are, if anything, fading. So before signaling any lean to a more rapid removal of policy accommodation than already embedded in the market expectations, I think it's prudent to accumulate a bit more information about fiscal policy, about the underlying pace of GDP growth, and about the sustainability of the recent inflation momentum.

Regarding the language questions, comments by others about the pivotal nature of this meeting lead me to agree that careful consideration of language change is needed, and I agree with the suggestions made by Presidents Rosengren and Harker to consider changes outside this meeting rather than trying to make such changes here.

As I said in my comments yesterday and as was discussed further by President Rosengren this morning, I would also support adding language affirming the key elements of the Policy Normalization Principles and Plans, signaling that the Committee is turning attention toward the reinvestment plan to reduce the balance sheet.

I could also support the wording changes that President Lacker suggested in paragraph 1, with the verb tense changes; I also like the change to the word “fluctuate” rather than “stabilize.” That concludes my comments. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. I support alternative B as written. I’ll come back to the specific language at the end.

Since our January meeting, the data have shown solid momentum. Job gains remain well above their sustainable pace even though we are at, or even maybe a little beyond, full employment. The slow but steady uptrend in inflation has brought us closer to our 2 percent goal as well.

Against this strong backdrop, it’s appropriate to take the next step in removing accommodation. The statement does a good job of making clear that we don’t view the recent readings on overall inflation as indicating “mission accomplished” on that front. To reinforce our credibility regarding our symmetric inflation target, we need to achieve a sustained period of inflation around 2 percent, and we’re not there yet. And the language used in paragraphs 2, 3, and 4 appropriately underscores that point.

On this issue, I want to really add to President Evans’s remarks. I think the literature on inflation expectations—although we don’t have really good models of inflation expectations, the evidence is that inflation expectations depend critically on actual past inflation, not on a quarter-

to-quarter basis but more of an underlying average. So regarding this idea that you're missing your target year after year after year is going to eventually erode inflation expectations, I think we're seeing that in some of the data—in the survey data and somewhat in breakeven inflation, or at least the risk of that.

To my mind, the most important thing that we can achieve in terms of monetary policy is maintaining well-anchored inflation expectations. And I think that means absolutely reaching our 2 percent goal—not getting close to it, not getting around it, but reaching it, maybe overshooting a little bit because that will make sure that we get there, and keeping inflation around there. I also think using words like “sustain” and “stabilize” actually reinforce that point—that what we want is inflation to be right around 2 percent. Sure, it's going to be higher or lower from month to month or year to year, but we should really reinforce this point that 2 percent is what we want the average to be and what we want to see happen. So, to my mind, if we were in a situation in which inflation had been running 2 percent over the past 10 years, that would be just a different circumstance from that we're in today, which is one in which we have been undershooting the target for a long time.

I also think, as President Kaplan referred to, that inflation is our number one issue. Sure, we're not that far from the goal. I am optimistic. I'm definitely in the camp that thinks we should be removing accommodation. But that is the one thing on which we still need to make further progress. And in this global economy, given what's happening around the world, it has proven very hard to move inflation by three-tenths. So I think we should realize that and keep our focus on that.

That's why I really do like the language in paragraphs 2, 3, and 4 even though I am very sympathetic to the perspective that President Lacker expressed in his comments. And I do agree

with President Rosengren and many others who said that, as we get closer to this inflation goal and as we get further progress on and certainty about our achievement of the maximum-employment goal, this language needs to shift from “We’re trying to get to some place” to something more about “How do we sustain the economy’s strength?”—the maximum employment and price stability once we are essentially at that. But that’s not a decision for today. I think the language should evolve in the future, as President Rosengren said.

I do think taking action today provides scope for continued gradual adjustment of the funds rate, assuming economic conditions unfold as I expect. It also preserves our policy optionality. A number of people pointed this out. We still have a lot of uncertainty about what’s going to happen in the economy for the rest of the year, particularly regarding fiscal policy, so there are potential surprises on both sides. I think moving today gives us the ability to speed up the pace if things go better than we expect. Of course, it also gives us the optionality to slow the pace of rate increases this year. And we’ll have ample time to adjust to the new data coming in and anything else we learn regarding fiscal policy or global developments.

I want to go back to this a little bit more, responding to Governor Fischer and some other remarks about “fluctuate” versus “stabilize.” I completely agree with the point that we know that inflation will not be 2.00. I think “fluctuate around” sounds like something near 2 percent is okay. Actually, “fluctuate around” is reasonable. I think “stabilize around” captures this idea of an expectation that we’re going to get 2 percent inflation on a sustained basis, plus or minus whatever those fluctuations are. I just think it’s a stronger version.

I do care deeply about the symmetry of the goal. I continue to be worried about this view that our goal really is a maximum in terms of what we’re willing to accept. So I think that going to language of a range for our inflation goal doesn’t work well when I think there is a view that

we really do see 2 percent as the highest we'll accept. So if we say "1½ to 2½," I'm afraid that the market participants who follow the Federal Reserve will read that as, "Well, really, 1½ to 2, means 1¾." That's my concern, given the history here. If we had a history in which we'd been at 2 percent for a long time, then I think I'd be a little bit more comfortable with a range of 1½ to 2½—around 2.

In terms of the language that President Lacker mentioned in paragraph 1, he's right. This is a mix of tenses, and I don't think that's good. I think the tense should always be—okay, so I did grammar. Wait a minute. It's either the past tense or the past participle?

MR. TARULLO. Past participle.

MR. WILLIAMS. The past participle is, I think, what we prefer to use in paragraph 1. So I would switch the sentences on inflation. I think it does create what I always dislike in our writing—when we repeat phrases over and over. We'll say "was little changed" or "has been little changed" twice. But I do think that sentence should be in the past participle.

My last comment is about Governor Fischer's remarks, which I was following very closely. I think that the argument you make about inflation overshooting the mark and needing to raise unemployment to 5.9 percent actually doesn't apply. And the reason is that—I'm going to speak on behalf of the way I understand the staff forecast, which is, they actually have assumed or built into that forecast that, currently, long-run inflation expectations are below 2 percent. The reason why we need to juice the economy for so long is not only to raise wage and price pressure, but also to move inflation expectations back to 2 percent. So there are two battles we're fighting to get inflation back to 2 percent. If we had inflation expectations back at 2 percent and we got some shock to push inflation up, then we wouldn't need to be fighting that

battle. And there the ability for inflation to come back to 2 percent with relatively minor movements in unemployment would be in place.

So I think that it's not right to apply the same symmetry—that we need this huge period of really tight labor markets to get inflation up a few tenths, because it's really about inflation expectations being anchored at the wrong place. That's all I've got. [Laughter] Thank you.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I will support alternative B as written for today. I see today's decision as well supported by the data. Since I wrote down three rate increases in the December SEP, the data have come in about as expected or a little better, particularly the January and February labor reports. We're near full employment, and labor markets are still tightening. Inflation is approaching 2 percent. Equity markets are booming, which is adding accommodation as the Committee is seeking a gradual withdrawal of it. Overall, financial conditions are actually looser than they were a year ago. There's a high likelihood of tax cuts, both personal and corporate, as well as a possibility of some policies that could be harmful to longer-term growth. Downside risks from abroad are roughly balanced by upside risks here at home.

The Committee has been patient, and that patience, I believe, has served us well. I see no real economy data that suggest that we are “behind the curve,” but the chances that we will fall behind have clearly risen. And here I would just point out that I see it as a challenging and highly inconvenient fact that the past two cycles have ended not because of high inflation, but rather because of overheating financial conditions. While I don't see that happening today—you don't see high credit growth or high leverage appearing—it's not hard to think of financial markets as moving smartly in that direction. So that's something to keep in mind.

Policy, meanwhile, is still accommodative, with the real rate perhaps 1 full percentage point below the neutral rate. So, taking all of that on board, for me, as long as the economy moves along this path, it will be appropriate to remove accommodation gradually but steadily. I would like to see policy getting back to roughly neutral within about a year, which I see as consistent with the median SEP path. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. I support alternative B, given progress toward our objectives. With the changes we've seen in inflation, I think the statement changes are appropriate, but I share some of the concerns raised by President Lacker about those changes and would look forward to future discussions about the statement.

I want to make just a brief observation on something a little bit different, and that is the reintroduction of core inflation into paragraph 1 as an alternative measure to looking at the distance we are from the longer-run headline inflation objective. I do recall that in the past, we've had to deal with some public reaction to talking about core inflation in our communications, and I'm always sensitive that we could be potentially sending a message to the public that we are discounting food and energy prices that, in fact, affect people's cost of living. So my preference had been the construction we had been using when energy prices were pushing down. We noted that those were temporary. And I think that in this instance, it would also be appropriate to say there are certain things that are temporarily boosting headline inflation in the same way so that we have a consistent expression. I think if we hang on to core inflation, that could create some difficulties for us down the road with the public. Again, I'm not suggesting we have to change that today, but I think that could come up. Thank you.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. Here, as with the economic go-round, my comments are a little broader than just this decision and, again, reflect my effort to review what I've said here for the past eight years, notwithstanding my failure to get inflation up to target during that period.

I wanted to explain, first, why I think a funds rate increase is appropriate in the near term; second, why today is actually the right moment to do it; but, third, why I think a continued embrace of the gradualist concept by the Committee is also important for the future. So, first, why is a move appropriate? Well, here I'm trying to channel President Mester a little bit. I think, for all of us, when you approach monetary policy, you've got to have a view, or at least an implicit, rudimentary model, of how you think things are working. I think that when we get into these meetings, sometimes we end up debating about the deltas from the previous meeting and what the significance of that is and lose sight of the fact that this really is a medium-term game that we play.

I think we all start with the proposition that monetary policy operates with a lag. Thus, if you've got a situation in which you're providing a fair amount of accommodation, you can't wait until you've achieved your goals in order to start removing at least some of that accommodation. That's about as basic as it gets, but it is an important premise—or it's axiomatic, really.

I think the debate or the disagreements over the past several years have been over, how do we know when we are at the point at which that trajectory is steep enough that we've got to begin taking that preemptive action? And that's where some of my skepticism over the past several years has been expressed—on questions about how much the Phillips curve really tells us and questions about some other efforts to invoke past correlations, which is why I spent so much time torturing Bill Wascher's staff to try to identify data series or metrics that might actually

suggest that we are at the point at which some of that trajectory was more assured than it had been before.

I won't repeat what I've said in the past several meetings as to why I think we're at that point or have come to that point, but I think we are there. Again, I think one can't just be against rate increases. One has to be for a model or an approach that would say when a rate increase was appropriate, and that—I think not totally successfully—is what I've tried to do. And I do think we crossed the point, at least by the metrics that I had adopted.

Now, second, why today? There's nothing in what I just said or what I believe that would suggest you have to move in March. But I do think this is a good moment to do it for a couple of reasons: One, there is a widespread view on the Committee that rate increases—plural—are going to be warranted this year, and, two, we've seen in the past that things happen that make the Committee reluctant at a particular moment in time to increase rates not because it thinks the trajectory of the economy has changed, but just because it doesn't want to give a signal when you may be having financial instability in Europe. So there's a desire—I think a justifiable desire—to hold back at that particular moment.

Well, if that's the case and you look forward to the rest of 2017 and identify a number of meetings at which things may be going on that might inhibit the Committee from wanting to move at that moment—not, again, because of the economy, but because of a sense of, gee, does it upset markets when they're fragile? Then I think you do have to take an opportunity when things are looking relatively decent right now. And you can do it in the context of saying, "The expectations articulated in December are being realized," which I, by the way, think is exactly what the statement is trying to do—not to ramp up and say, "Boy, things are even better than we

expected.” The whole point of this is, the expectations articulated earlier have now been realized.

But now, why do I think it’s important to maintain a posture of gradualism? Well, the first reason is the one Charlie already articulated with the continuing validity or importance of risk management. The second is, I think, John’s very persuasive account of why, given history, you have to make sure that the world believes that 2 percent really is the inflation target. And after all of my time here, with inflation not having been at 2 percent, if there is a viable theory of inflation expectations, that’s got to be a relevant factor.

The third thing I would say, though, is that the uncertainty associated with estimates of r^* is, I think, actually pretty important here—and this is another John Williams point, although he didn’t invoke it this morning. So at any point in which the Committee is on an upward path of the federal funds rate, there’s obviously uncertainty as to whether its expectations regarding the economy’s direction will be realized. So you can’t say, “Well, there’s uncertainty. Therefore, we can’t raise rates.” Or, “We have to embrace a posture of gradualism.” But in an environment in which not only don’t we know necessarily all of the bumps along the way, but also there’s more uncertainty about what the destination is than has been the case in the past, that this is when a mindset of gradualism is really important, because it’s telling us that we’ve got to be continually testing the hypothesis that this is the right path to be on, and we’ve got to be giving ourselves a chance to see whether the effect of our actions is about what one would have expected. And given that there is a lag to monetary policy—that first premise—it’s going to take a little while to see what the effects of the December and now March rate increases are going to be.

Now, let me say, that's not an argument against all of you necessarily raising rates again in June. I really do mean this not as a quantitative thing, but as a mindset. And I think it's important to continue to project that, which is why I think the language that is in the statement now is important to retain at least for a while, until you feel you're in the position in which you can revamp the approach, as somebody said earlier.

Getting to the language, I think the comments several people have made already about why today is not a good day to do that—it's both not only not a good idea to do it on the fly, but also not a good idea to do it until the economy has moved and people's views have moved enough and there's enough of a consensus that you really are articulating a different approach, given John's goal, for example, of making sure that people's belief in the 2 percent target has been achieved.

The one thing I'd say, though, Madam Chair, is that if we keep “stabilize around” today, which I'm fine keeping, I don't think it would be a great idea for the Committee to shift to “fluctuate” in the next couple of meetings, because that's just going to set off this classic CNBC “What does that shift mean?” and all of the rest. So if we stay with “stabilize around” today, my strong advice would be to keep that until you get to the point at which you're revamping the statement, and then you may still want to keep it, or you may want to say something else at that time. But if you want to change to “fluctuate,” I'd do it now rather than doing it incrementally at some future meeting. Thank you.

CHAIR YELLEN. Great. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Madam Chair. I support alternative A today. It was a close call for me. I don't think the 25 basis points is really going to slow down the economy all that much or impair the labor force. But, on balance, I was more comfortable with alternative A

and not raising the federal funds rate, and I'll give you my reasons. Number one, which I talked about yesterday, was a labor force participation story. None of us really know how much longer this can go on. We've been surprised for the past year. It may go on for a while longer.

I've been focused for most of the past year on three different data points to tell me when that story is running to a conclusion: core PCE inflation moving up on an annual basis, inflation expectations moving up, and/or the headline unemployment rate coming down as some way of signaling that labor force participation has gone as far as it's going to go. And, basically, they're all moving sideways, so I'm not seeing a compelling reason to move. Data dependency means something different, probably, to each of us. For me, that's what data dependency means—I want to see those data actually move, and I'm prepared to raise rates when I see the data actually move. I know 200,000 jobs a month exceeds what is sustainable, so I know we're using up slack. I just don't know how much slack is left yet, and 200,000 a month doesn't tell us how much slack is left. It just tells us that we're using it up.

By the way, Pat Harker's comments actually resonated with me. When I read the language in the first paragraph of alternative B, I think the language is accurate, but I do think it begs the question, "What's the impetus for moving today?" So I feel like the language in alternative B, the first paragraph, resonates with my view, but that begs the question of why we're moving.

Next, some others have made this comment. I would think that, as a Committee, to the extent that we make forecast errors, we would want half of our errors to be too "hawkish" and half to be too "dovish"—randomly distributed over time. But if we look at the past six years, 100 percent of the SEP inflation errors have been too "hawkish." One hundred percent of the medians have said inflation is right around the corner, and yet we keep making the same mistake

over and over and over again. How is that rational? Why aren't we reacting to those errors and adjusting our process? Well, I thought about it. If you're driving down the highway and you're driving along a cliff, you're going to make one-sided errors away from the cliff because if you go over the cliff, you go over the cliff, and you're dead.

In this context, I think the Committee is treating 2 percent as a ceiling, as others have said, and that explains one-sided errors. John, I was surprised at your comments today. I agree with your comments today, but I think you and others have talked about nonlinearity reintroducing when we cross 2 percent or the Phillips curve reemerging when we cross 2 percent. Forgive me if it wasn't you, but it seems like members of the Committee think that really bad things happen if we cross 2 percent. And, again, if we think 2 percent should be a ceiling, I'm not necessarily opposed to that. The ECB has it. But let's decide it, let's announce it, and then let's live by it. I am opposed to us having an announced target but then behaving as though it is a ceiling, which I think is what we're doing right now.

Relatedly, some people question the dual mandate and say we should have only a single mandate, because they can be in conflict. If we have high inflation and high unemployment, how do we make decisions? Well, today we have the opposite situation. We have consistently low inflation, and we may still have slack in the labor market. I'm reminded of that old joke of an economist who won't pick up a \$20 bill because it can't possibly be real, and I feel like there are \$20 bills and we are reluctant to pick them up.

Finally, for the reasons I articulated yesterday in regard to the balance sheet, I do view an announcement of the balance sheet as somewhat of a substitute for a federal funds rate hike, because I think that an announcement of our plan for the balance sheet will lead to some monetary tightening. So my personal preference, all things being equal, would be for the next

tightening to be with that kind of an announcement once the data support it. And once we get that behind us, we can go back to using the federal funds rate as the data warrant. Thank you.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. With full employment within reach, signs of progress on inflation, a favorable shift in the balance of risks, and easier financial conditions, some further removal of accommodation is warranted today. These developments reinforce my sense that the macroeconomy is at a transition, and monetary policy, too, is approaching a transition, when it will be appropriate to begin to allow a gradual runoff of the balance sheet.

Even with today's action, however, the stance of monetary policy will remain accommodative, which seems appropriate given that 12-month core PCE inflation, a good gauge of expected future inflation, remains short of our target and has been persistently below our target for eight years—the “Tarullo era,” as I've been reminded throughout this meeting.

[Laughter] Although the amount of accommodation is modest, assuming that expected inflation is close to the 12-month change in core PCE inflation and that the real neutral rate is around zero, as most estimates suggest, following today's meeting, the federal funds rate will be only a few hikes short of its neutral level.

If, as I expect, the economy continues to make progress in the months ahead, we should see further movement to a neutral stance and the start of balance sheet normalization. However, given the gradual pace of expected improvement, the past persistent shortfall of inflation from our target, the asymmetric risks associated with proximity to the effective lower bound, and the modest amount of remaining accommodation, I expect the appropriate pace to be gradual, similar to the median path in the SEP.

At this point, it's important that we continue to communicate our expectation of gradualism in paragraph 4 in order to assure the public of our commitment to a symmetric 2 percent target. In addition, the gradualism of that rate path is premised in part on assumptions about the timing and pace of balance sheet normalization, which will become clearer to the public in the weeks and months ahead with the release of the minutes and subsequent communications.

At this stage, suggesting a shift to a more rapid removal of accommodation would be premature. It's fair to ask, given the continued progress we've made and the emergence of credible upside risk to demand, what developments might lead to a more rapid removal of accommodation. One possibility that Governor Powell has mentioned would be rising evidence of an increase in risk appetite and stretched valuations in financial markets, together with strong credit growth. I would expect that in this case, our first line of defense would be macroprudential policy—both relying on the strong through-the-cycle safeguards we've put in place pursuant to Dodd-Frank and using the additional countercyclical tools and guidance that we currently have at our disposal.

Another possibility would be one in which inflation was to surprise to the upside. If, contrary to the Tealbook forecast, stronger inflation was to persist, with a 12-month change in core rising to 2 percent, and if stronger inflation was accompanied by signs of stronger momentum and activity, then it would be appropriate to consider adjusting our communication. But that is not the circumstance that we confront today. For that reason, I disagree with the suggestion of my esteemed colleague from the Richmond bank to delete the sentence in paragraph 4, and I think I would associate myself with comments that have now come from Presidents Evans, Kaplan, and Williams; Governor Tarullo; and President Kashkari.

I have to believe that if inflation was persistently above 2 percent by 0.3 percentage point or more over eight years, the Committee would want to emphasize that it is carefully monitoring actual and expected inflation developments, because there would be concern about inflation expectations having moved above 2 percent. Indeed, with the modifications in alternative B, the sentence is entirely neutral and would apply as well to inflation being either above or below the target.

I like the three added “s” words—“stabilize,” “sustained,” and “symmetric”—and I hope those will be retained. Any alternative, I think, would signal that we are engaged in the aforementioned “victory dance” on the basis of one month of data, which would suggest that 2 percent is, in fact, a ceiling, not a target.

For those reasons, I support alternative B as written. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I support alternative B. I’ll have some comments on the language in a bit.

As I see it, the grounds for gradually removing monetary policy accommodation are very much in place. We’re relatively close to our employment and inflation objectives at a time that the federal funds rate is still very low and we judge monetary policy as still being accommodative. We further expect that the economy will continue to grow at an above-trend pace, and, despite our actions to make monetary policy less accommodative, financial conditions have become easier. All of this points to a removal of accommodation at today’s meeting. I would expect that the decision today will be of little surprise to anyone, given our recent efforts to align market expectations more closely with our views.

I want to talk just briefly about yesterday's discussion. I was very pleased by the discussion we had on reinvestment and the balance sheet. I think there's more to do there to develop a coherent strategy among the Committee, and I just would strongly encourage us to do that at the next couple of FOMC meetings, because I think we really want to get that wrapped up so we're ready to go as soon as, potentially, the third quarter. So I think we're making good progress, but we need to continue to move on that path.

In terms of language, on paragraph 4 and President Lacker's suggestion to remove that sentence, I think that's too far. I think that declares victory on inflation, and I don't think that's appropriate with us still being below our 2 percent objective. I really do think we need to spend some time at or above 2 percent before we can actually declare victory.

On paragraph 2, President Lacker suggested the word "fluctuate" rather than "stabilize." I think "fluctuate" is actually probably more accurate than "stabilize," so I'm certainly open to that suggestion, but I don't feel strongly about it. I don't think it's a big deal. The key word in that sentence is "around." That's really the key word rather than the word "stabilize" or "fluctuate."

In paragraph 1, I certainly agree that the tenses should be the same. I guess I would say that if you want to be parallel to the sentence on job gains, you should say "inflation was little changed and continued to run somewhat below 2 percent," as opposed to "was" and "has continued." I think we want to have the tenses consistent across the paragraph, not just in that single sentence. It's a very small point.

As far as President Harker's suggestion to put in language in paragraph 3—"and consistent with"—I don't think that's necessary. I think what we're really trying to signal at this

meeting is that we're removing monetary policy accommodation because the economy is evolving in the way we expected—no drama—so I don't think we need that emphasis.

Finally, as this is Dan's last meeting, I think it's proper for me, as the Vice Chairman of this Committee, to say a few words. I want to recognize all that he's done for the Federal Reserve and the FOMC. Although I didn't coordinate my comments with the Chair, unlike in the case of some other recent matters, my remarks are very much in a similar vein.

Dan, you've always come very well prepared to the FOMC meetings. You made many meaningful contributions on monetary policy and its execution in your eight years on the Committee. I agree with Eric—I much preferred when you were on my side rather than in opposition. When you were in opposition, you were a very worthy advocate, and we had some pretty good debates. You more than held your own in debating and discussing the outlook with all of these Ph.D. economists, myself included, and that's quite an achievement at the Federal Reserve.

While this will be a mere coda in your Federal Reserve career compared with your role in changing how we supervise large systemically important firms, how we've implemented the CCAR process, and how we pushed through the regulatory overhaul that was surely necessary following the financial crisis, you also deserve considerable credit on the monetary policy side for taking your role here seriously and making many important contributions. Thank you.

CHAIR YELLEN. Okay. Let me just start by saying that I've heard many of you around the table suggest that, as we come close to achieving our goals, perhaps we rethink the structure of the statement. I'm more than open to doing that, and we will work on that and try to get back to you.

I do want to go through one by one now the various suggestions that have been made for changes. Starting in paragraph 1, on the tense issue, I've heard the suggestion and take the Vice Chairman's modification that we might change the tenses in the clause beginning "excluding energy and food prices . . ." to say "inflation was little changed and continued to run somewhat below 2 percent." President Lacker.

MR. LACKER. Yes. I'd point out that "has continued" appears three times in the first three sentences, rather than "continued."

VICE CHAIRMAN DUDLEY. We go back and forth throughout that paragraph.

MR. LACKER. Well, we use it three times. And in past statement-drafting rounds, we've changed initial drafts that weren't in agreement with the tense that's established at the beginning of "has continued." It would be more consistent to say "has continued" rather than "continued," don't you think?

VICE CHAIRMAN DUDLEY. Well, I guess what I was coming back to is the sentence "Job gains remained solid and the unemployment rate was little changed in recent months." I feel like this is a parallel sentence to that sentence, and that earlier sentence is all in the past tense. That's all. I don't think it's a big deal. I could go either way.

CHAIR YELLEN. Does anybody else have a strong view about this?

MR. TARULLO. It's definitely not a big deal.

CHAIR YELLEN. Okay. Let's go with "continued." Is that acceptable to everybody? Okay.

Then, in paragraph 2, we have the issue of "stabilize around" or "fluctuate around." I heard opinions on both sides. I'd say my personal preference is for "stabilize around" for the reasons that President Williams expressed, but "fluctuate around" is an alternative. So let me

see. How many people would prefer to stick with “stabilize around”? [Show of hands] Okay. And “fluctuate around”? [Show of hands] Okay. I think I see more support to stick with “stabilize around,” so I will propose we just stick with “stabilize around.”

The next thing I noted was President Harker’s suggestion that we add language in paragraph 3 saying “consistent with the Committee’s intention to remove accommodation at a gradual pace.”

MR. HARKER. Madam Chair, I withdraw that for now because I do think it should be part of an overall package of changes that we consider in the future.

CHAIR YELLEN. Okay. Good. So we’ll pass on that. Let’s see. Then President Lacker suggested omitting the sentence about carefully monitoring. I did hear many strong expressions of support to keep that in and, I think, enough strong suggestion of support that I would not propose removing that.

The one last thing I will mention is the wording change in paragraph 4 concerning “in a manner that will warrant only gradual increases.” We have crossed out “only.” President Bullard suggested that that’s an important change and we keep “only,” and I think that’s worth a moment of discussion. I will say that it was intentional to cross out “only,” and I think it is a way of emphasizing—and this maybe captures a part of what President Harker was driving at in his proposal—that we do see ourselves, if things continue in the manner they’ve been going and in line with our expectations, as making some further gradual upward movements in the funds rate. These would obviously be data dependent. Obviously, if the economic outlook changes, that might not happen. Something different might happen. But it is switching the emphasis to saying that the Committee expects gradual increases. So let me make sure that people are comfortable with that. Is there anybody who wishes to keep “only”?

MR. EVANS. I don't really have a strong opinion. It's a subtlety that, frankly, is completely lost on me. If I had seen only the construction the way it is this way, "in a manner that will warrant gradual increases"—what do we think "only gradual" is really doing? I guess "only gradual" means we absolutely won't do a 50 basis point increase.

CHAIR YELLEN. "At most" is what it means.

MR. EVANS. Whereas with "gradual increases"—well, we might do more than "gradual."

VICE CHAIRMAN DUDLEY. It's a slight difference of emphasis.

CHAIR YELLEN. It's very slight, but I think it is maybe emphasizing an expectation that we think we're on a mild, gradual path.

MR. EVANS. But it's opening up a 50, isn't it? I mean, "only gradual"—that's why it's a subtlety that's lost—

MR. FISCHER. It depends on whether you're measuring it in units of—

VICE CHAIRMAN DUDLEY. It's still based on expectations. The expectations could change, so I don't think it's really binding us very much.

CHAIR YELLEN. President Williams.

MR. WILLIAMS. I think my view was, we got into that one-rate-hike-a-year thing, and people started maybe interpreting "gradual" as really gradual. And most of us don't think one rate hike is the right thing. That's how I interpreted it—but not about 50 basis points.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Yes. I think it is a subtle matter, but we are playing a hairsplitting game, and I think that the trajectory is much more important than the move today. So I think there would be—potentially, anyway—a lot of focus on this. In previous tightening cycles,

we've gone as much as 300 basis points in a year. Even in the 2004–06 tightening cycle, we moved at every meeting. So what you're doing here is at least putting some probability that you might do something more akin to what we've done in the past, whereas I think the “only gradual” has shut that down. It is saying something about, well, potentially we'd go faster.

CHAIR YELLEN. President Kashkari.

MR. KASHKARI. Yes. I would just say, all things being equal, I would rather keep it. I agree that the distinction, just purely looking at the language, is very subtle. But the striking of it will be absolutely noticed, and I think it will be interpreted as a very “hawkish” development—maybe overinterpreted. So maybe this kind of a change could be wrapped into the broader changes that we consider at a later date.

CHAIR YELLEN. Governor Fisher.

MR. FISCHER. There will come a day when we have to reduce the rate by 50 basis points. We don't want to rule that out, do we?

CHAIR YELLEN. We're not ruling anything out.

MR. FISCHER. No, but—I mean, I'm in favor of “gradual.”

CHAIR YELLEN. “Gradual” or “only gradual”?

MR. FISCHER. No, “gradual”—because otherwise, we could only go down 25 basis points per meeting.

MR. EVANS. It says “expect,” so—

VICE CHAIRMAN DUDLEY. Yes, it's already qualified.

CHAIR YELLEN. Okay. Let me just ask for a show of hands.

MR. EVANS. Can I ask a flippant question, though?

CHAIR YELLEN. Yes.

MR. TARULLO. Now that I'm leaving.

VICE CHAIRMAN DUDLEY. No. [Laughter]

MR. EVANS. If I found myself in public and somebody asked me the question “Hmm, what does taking ‘only’ out do?” would it be wrong for me to say, “Well, if you look at other places, the grammar police came in and made some adjustments, so it was—”? That would be wrong? I'm getting that that's wrong.

MR. TARULLO. No, I think you can't say that. You could say what John just said.

MR. EVANS. What did John say?

MR. TARULLO. That “gradual” may mean more than one increase a year.

MR. EVANS. Gee, we've already got SEPs that have way more than one increase.

MR. TARULLO. And have for some time.

MR. EVANS. It just opens up discussions that kind of take you far afield, it seems to me, but—okay.

MR. WILLIAMS. That's the beauty of the dot plot.

CHAIR YELLEN. Governor Brainard.

MS. BRAINARD. First of all, I think some of the commentary is well anticipated. But, second, they're going to view it in light of the lack of changes to the SEP median forecast. So in that sense, I think it will be easy to explain that, in fact, the Committee just feels more confident about achieving that SEP. That's how I would say it.

MR. EVANS. Okay—“confident.” Thank you.

CHAIR YELLEN. Okay. So I guess, on balance, I'm hearing sentiment to leave it as proposed—get rid of the “only.”

Okay. Before we vote on the statement, I'd just like to say a few words about communications. Assuming that we are going to vote to raise the target range today, I intend to emphasize in my press conference remarks that this action reflects ongoing progress toward our employment and inflation goals. In doing so, I will note that conditions have been evolving in line with our expectations. I'll reference the median SEP numbers to help make the point that the outlook is not materially changed. I will also stress that today's action is consistent with our long-standing expectation that gradual increases in the federal funds rate would be warranted to achieve and sustain our objectives, and that our basic strategy remains unchanged.

Okay. Brian, would you tell us what we're voting on?

MR. MADIGAN. Certainly, Madam Chair. This vote will be on the policy statement for alternative B as shown on pages 5 and 6 of Thomas Laubach's briefing materials distributed yesterday, except for changes in tense to the penultimate sentence in paragraph 1. The final clause would read "excluding energy and food prices, inflation was little changed and continued to run somewhat below 2 percent." The vote will also be to approve the directive to the Desk as included in the implementation note on pages 11 and 12 of Thomas's briefing materials.

| | |
|----------------------|-----|
| Chair Yellen | Yes |
| Vice Chairman Dudley | Yes |
| Governor Brainard | Yes |
| President Evans | Yes |
| Governor Fischer | Yes |
| President Harker | Yes |
| President Kaplan | Yes |
| President Kashkari | No |
| Governor Powell | Yes |
| Governor Tarullo | Yes |

MR. MADIGAN. Thank you.

CHAIR YELLEN. Thank you. We now have two sets of related matters that are under the Board's jurisdiction: corresponding changes to the interest rates on reserves and discount

rates. I first need a motion from a Board member to increase the interest rates on required and excess reserve balances to 1 percent, effective March 16, 2017. Do I have a motion?

MR. FISCHER. So moved.

CHAIR YELLEN. And a second?

MR. TARULLO. Second.

CHAIR YELLEN. Thank you. Without objection. Finally, I need a motion from a Board member to approve establishment of the primary credit rate by the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, Kansas City, Dallas, and San Francisco at 1½ percent, effective March 16, 2017. It will also encompass approval by the Board of Governors of the establishment of a 1½ percent primary credit rate by each of the remaining Federal Reserve Banks, effective on the later of March 16, 2017, and the date such Reserve Bank informs the secretary of the Board of such a request. The secretary of the Board would be authorized to inform such Reserve Banks of the approval of the Board of Governors on such notification by the Reserve Bank. Lastly, this vote will also encompass establishment of the rates for secondary and seasonal credit under the existing formulas specified in the staff's March 10 memo to the Board. Do I have a motion?

MR. FISCHER. So moved.

MR. TARULLO. Second.

CHAIR YELLEN. Thank you. Without objection. Okay. Well, that completes our work. The date of our next meeting is Tuesday and Wednesday, May 2 and 3. As was the case at our previous meeting, the staff has arranged to have two luncheon options. Boxed lunches are now available for those who want to leave soon or take something back to their office, and there'll also be a small buffet lunch available at 11:30 for those who will still be here. If you

want to watch the press conference in the Special Library and will be here, there'll be the usual TV setup. And we look forward to seeing you in May, if not sooner.

END OF MEETING