

**Meeting of the Federal Open Market Committee on
May 1–2, 2018**

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, May 1, 2018, at 1:00 p.m. and continued on Wednesday, May 2, 2018, at 9:00 a.m.

PRESENT:

Jerome H. Powell, Chairman
William C. Dudley, Vice Chairman
Thomas I. Barkin
Raphael W. Bostic
Lael Brainard
Loretta J. Mester
Randal K. Quarles
John C. Williams

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine,
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari, Presidents of the Federal Reserve
Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse, Secretary
Matthew M. Luecke, Deputy Secretary
David W. Skidmore, Assistant Secretary
Michelle A. Smith, Assistant Secretary
Mark E. Van Der Weide, General Counsel
Michael Held, Deputy General Counsel¹
Steven B. Kamin, Economist
Thomas Laubach, Economist
David W. Wilcox, Economist

Kartik B. Athreya, Thomas A. Connors, Mary Daly, Trevor A. Reeve, Ellis W. Tallman,
William Wascher, and Beth Anne Wilson, Associate Economists

Simon Potter, Manager, System Open Market Account

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

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

Margie Shanks, Deputy Secretary, Office of the Secretary, Board of Governors

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

Antulio N. Bomfim, Special Adviser to the Chairman, Office of Board Members, Board of Governors

Joseph W. Gruber and John M. Roberts, 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

Eric M. Engen and Joshua Gallin, Senior Associate Directors, Division of Research and Statistics, Board of Governors

Stephen A. Meyer and Joyce K. Zickler, Senior Advisers, Division of Monetary Affairs, Board of Governors; Jeremy B. Rudd, Senior Adviser, Division of Research and Statistics, Board of Governors

Jane E. Ihrig and David López-Salido, Associate Directors, Division of Monetary Affairs, Board of Governors

Stephanie R. Aaronson and Norman J. Morin, Assistant Directors, Division of Research and Statistics, Board of Governors; Robert Vigfusson, Assistant Director, Division of International Finance, Board of Governors

Eric C. Engstrom, Adviser, Division of Monetary Affairs, and Adviser, Division of Research and Statistics, Board of Governors

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

Dana L. Burnett and Rebecca Zarutskie, Section Chiefs, Division of Monetary Affairs, Board of Governors

² Attended through the discussion of developments in financial markets and open market operations.

³ Attended through the discussion on financial stability issues.

Marcelo Rezende, Principal Economist, Division of Monetary Affairs, Board of Governors

Ron Feldman, First Vice President, Federal Reserve Bank of Minneapolis

Michael Dotsey, Geoffrey Tootell, and Christopher J. Waller, Executive Vice Presidents, Federal Reserve Banks of Philadelphia, Boston, and St. Louis, respectively

Spencer Krane, Paula Tkac, and Mark L.J. Wright, Senior Vice Presidents, Federal Reserve Banks of Chicago, Atlanta, and Minneapolis, respectively

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

Richard K. Crump, Assistant Vice President, Federal Reserve Bank of New York

Anthony Murphy, Senior Economic Policy Advisor, Federal Reserve Bank of Dallas

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May 1 Session

CHAIRMAN POWELL. Good afternoon, everyone. As usual, today's meeting will be conducted as a joint meeting of the FOMC and the Board, and I'll need a motion from a Board member to close the meeting.

MS. BRAINARD. So moved.

CHAIRMAN POWELL. Second?

MR. QUARLES. Second.

CHAIRMAN POWELL. Without objection. Before turning to the formal agenda, I'd like to note that there will be a reception and dinner this evening, beginning at 5:00 p.m., in the West Court Café.

Let's turn to our first agenda item, and we'll turn to Simon and Lorie for the Desk report. In addition to the usual material, there will be a discussion of the background memo reviewing options on realigning the level of the IOER rate relative to the target range for the federal funds rate. We'll also discuss the annual swap line renewals. Over to you.

MR. POTTER.¹ Thank you, Mr. Chairman. Over the intermeeting period, broad measures of financial conditions tightened somewhat further from their recent record post-crisis accommodative levels. U.S. equity prices are lower, the U.S. dollar is modestly stronger, and nominal U.S. Treasury yields have risen to multiyear highs. As reflected in the top-left panel of your first exhibit, this is true for both financial conditions indexes that allow for the recent widening in money market spreads, such as Bloomberg's, and those that do not, such as the indicator produced by Goldman Sachs.

I will begin the briefing by discussing the factors that have affected asset prices over the intermeeting period. None of these factors appears to have caused market participants to shift their expectations regarding the path of monetary policy materially. I will then take stock of what higher term money market rates might mean for financial conditions. I will conclude with a few updates on operational matters.

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

Lorie will continue the briefing with a focus on developments in overnight money markets.

The S&P 500 index declined roughly 2 percent over the intermeeting period and remains 7 percent below the all-time nominal high reached in late January. The dark blue line in the top-right panel shows that U.S. equity market-implied volatility remains elevated relative to levels seen for much of last year, though far below the extreme levels reached in early February.

Desk contacts have cited several factors as contributing to higher equity market volatility over this intermeeting period than most of the past year. One is uncertainty regarding the outlook for trade relations between the United States and other major economies, particularly China. Another has been an increase in the perceived risk that some of the S&P's largest technology companies—the so-called FAANG stocks—might in the future face additional government oversight, which could have negative implications for those companies' earnings.

Another factor reportedly contributing to recent asset price movements is foreign economic data signaling some moderation in global real growth momentum. As Beth Anne will discuss in her briefing, since early February economic data across most major foreign advanced economies have been disappointing compared with market expectations, while U.S. economic data have generally come in closer to market expectations over the same period.

The effect of these factors on implied asset market volatility outside the equity market appears limited so far, as shown by the U.S. rates and developed and emerging market currency series in the top-right panel. Additionally, we continue to hear that recent price trends and levels of volatility in U.S. equity markets have not been sufficient to cause the bulk of the largest quantitative investment strategies—such as trend-following commodity trading advisors and risk parity—to adjust their long-equity positions significantly. As we reported last cycle, an adjustment of this kind could lead to more severe risk asset price declines and greater spillovers.

Last week, the nominal 10-year Treasury yield exceeded 3 percent for the first time since 2014, with the most recent move up largely accounted for by an increase in breakeven inflation rates. Contacts attributed the rise in inflation compensation to the continued firming in realized U.S. inflation data, as well as the roughly 10 percent rise in crude oil prices over the period, this rise being in part the result of geopolitical concerns.

Yields in other advanced economies did not move higher with U.S. yields. This difference reflected the aforementioned weaker-than-expected foreign economic data and the perceived potential for this to delay the process of monetary policy normalization by foreign central banks, as detailed in the middle-left panel.

The rise in U.S. yields to multiyear highs coincided with a slight rebound in the exchange value of the U.S. dollar over the intermeeting period, with the broad trade-

weighted index rising about ½ percent. As shown in the light blue bars of the middle-right panel, the U.S. dollar's appreciation over the period was pronounced against more volatile emerging market currencies, such as the Brazilian *real*, which have in the past exhibited particular sensitivity to increases in U.S. Treasury yields. Many EM equity price indexes also declined sharply during the intermeeting period.

With regard to U.S. policy expectations, as shown in the bottom-left panel, recent developments have had little effect on the market- and survey-implied paths of Fed policy. No rate hike is expected at this meeting, and a 25 basis point increase in the fed funds target range at the June meeting is almost fully priced into futures contracts. Looking further out, there is still a substantial difference between modal and mean expected paths of the federal funds rate, with mean paths, such as those reflected in the Desk survey and market prices, implying little further tightening after this year. Thomas will further discuss the flatness of the curve in his briefing.

More broadly, despite ongoing changes to the composition of the FOMC, Desk survey respondents characterized the Committee's communications over the intermeeting period as clear and consistent. When asked to rate the effectiveness of Federal Reserve communications provided since the Desk's survey in March, respondents assigned the second-highest rating since the introduction of Chairs' press conferences.

Although expectations of the federal funds rate path are little changed over the intermeeting period, most short-term funding rates continue to trade a good deal above the corresponding expected average level of the effective federal funds rate. As shown in the bottom-right panel, the spread between three-month LIBOR and equivalent-tenor expected future federal funds rates, as measured by overnight index swaps, or OIS, is near its highest level since 2009.

Recall that, in the Desk's March surveys, when asked to rate the importance of various factors in explaining the elevated level of the three-month LIBOR–OIS spread, on average, respondents assigned the highest importance to Treasury bill issuance, followed by repatriation of foreign earnings by U.S. multinational corporations.

The LIBOR–OIS spread has narrowed slightly from its peak in early April, coincident with a partial retracement of the Q1 surge in U.S. Treasury bills outstanding. However, the narrowing has been smaller than some anticipated. Many attribute this outcome to ongoing implications of foreign corporate earnings repatriation and the sweeping changes in the U.S. corporate tax system. Others are registering some puzzlement regarding the continued firmness in term rates relative to OIS.

In the May Desk surveys, respondents, on average, continued to revise slightly higher their estimates of the U.S. fiscal deficit as a percent of GDP, as shown in the top-left panel of your second exhibit. The higher deficit is expected to be financed in

part by increased bill issuance and suggests that the LIBOR–OIS spread could remain elevated.

While Lorie will discuss recent developments in bill issuance and its effect on overnight rates in a moment, I want to take stock briefly of what wider money market spreads might mean for financial conditions.

First, it is important to note that, in our March Desk surveys, nearly all respondents rated bank credit risk as an unimportant factor in the widening of the LIBOR–OIS spread, a view we continued to hear from market contacts this period. Even so, the widening represented an unanticipated increase in borrowing costs. As shown in the top-right panel, the spread realized in mid-March exceeded what money market futures had priced in at the end of last year by 35 basis points.

As discussed in the Tealbook, recent upward pressure on short-term funding rates does not appear to have appreciably affected the borrowing costs or capacity of most U.S. households and businesses. However, higher U.S. dollar funding costs directly affect offshore dollar markets. One place we have seen this effect recently has been in Hong Kong, whose local currency is pegged to the U.S. dollar. With U.S. dollar LIBOR increasing, the spread between LIBOR and the Hong Kong interest rate, HIBOR, widened further, as shown in the blue line in the middle-left panel. This elevated differential in turn put downward pressure on the exchange value of the Hong Kong dollar. The Hong Kong dollar reached the weak end of its convertibility band in mid-April, prompting the Hong Kong Monetary Authority—or HKMA—to intervene in FX markets to support its currency peg. From April 16 to April 20, the HKMA sold 6.5 billion U.S. dollars in foreign exchange reserves, reducing the aggregate balance of liquidity in the banking system about 30 percent, helping to narrow the LIBOR–HIBOR gap.

Higher U.S. dollar funding costs should tighten financial conditions in Hong Kong under the exchange rate peg. More significant is the amount of offshore U.S. dollar debt linked directly or indirectly to LIBOR and other short-term U.S. dollar interest rates. As shown in the middle-right panel, the staff estimates that U.S. dollar bank loans (in U.S. dollars, not from U.S. banks) to non-U.S. residents that could be directly or indirectly affected by U.S. dollar LIBOR—the sum of the three columns in the panel—totals more than \$10 trillion, a significant portion of which is in developing economies. The staff will be monitoring for any indications of stress associated with the increase in dollar rates either via an increase in the federal funds rate or a rise in LIBOR relative to OIS.

I will conclude with updates on three operational matters. Although LIBOR rates have widened relative to OIS, the cost of dollar funding via the FX swap market has increased by less because of reduced foreign demand for both U.S. dollar funding and hedging via the FX swap market. This has contributed to a decline to multiyear lows in the euro–dollar and dollar–yen three-month FX swap basis spreads, as shown in the bottom-left panel. As reported in the appendix, recent usage of the standing U.S.

dollar liquidity swap lines has been relatively low, also consistent with a lack of bank credit risk being the source of the increase in LIBOR.

Relatedly, as discussed in the memo sent to the Committee on April 18, Steve Kamin and I request that the Committee vote to renew the standing liquidity swap lines with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank. We also ask that the Committee vote to renew the North American Framework Agreement and applicable related agreements, or NAFA arrangements, with the central banks of Canada and Mexico. Foreign central bank counterparts support the renewal of these arrangements.

The swap lines promote financial stability and confidence in global funding markets in times of stress. Importantly, reauthorization does not constitute automatic approval of any request to use the lines. All drawings related to U.S. dollar liquidity swap lines are subject to the approval of the Chair, while all drawings on foreign currency liquidity swap lines, and those related to the NAFA arrangements, require FOMC approval. The FOMC may terminate participation in the liquidity swap lines and the NAFA arrangements at any time with six months' written notice. If the Committee chooses not to renew its participation in the NAFA arrangements, the related agreements would cease when they are currently set to expire on December 12.

Regarding the SOMA portfolio, the Desk continues to reinvest receipts of Treasury and agency security principal in excess of the Committee's announced redemption caps. Market contacts have not reported any significant effect on Treasury yields or MBS spreads arising so far from the increase in caps.

Reflecting the increase in caps and expected receipts of principal payments, the decline in securities holdings and reinvestment activity is accelerating. According to baseline projections, as of last week, SOMA MBS purchases will cease altogether later this year, as shown in the bottom-right panel. Of course, due to the prepayment option embedded in MBS, the pace of decline and the time when MBS purchases cease are highly uncertain and depend on the future path of interest rates, among other factors. And, even after initially ceasing, MBS paydowns could exceed the cap in some months as factors driving prepayments fluctuate for seasonal and other reasons. The staff will circulate a memo before the June meeting with a detailed analysis on how in the money MBS purchases will be after this summer and options for maintaining operational readiness.

As planned, the New York Fed began publishing three new repo reference rates on April 3. Recall that the Alternative Reference Rates Committee selected the broadest of these rates, the Secured Overnight Financing Rate, or SOFR, as its recommended alternative to U.S. dollar LIBOR. Shortly after publication began, we received feedback noting that the bilateral repo volumes—a large component of the transactions included in SOFR—appeared to be higher than some had expected. Following a thorough review with the data provider, it was found that the provider incorrectly included forward-settling overnight Treasury repo transactions in the

source data transmitted to the New York Fed. The data provider addressed the problem within a few days.

A summary of the small-value exercises conducted over the intermeeting period, along with a list of upcoming exercises, including a test TDF operation, is shown in the appendix. I will now turn the briefing over to Lorie.

MS. LOGAN. Thank you, Simon. I'll start on exhibit 3 and highlight recent developments in money markets. Then I'll discuss factors contributing to increases in the effective federal funds rate relative to the IOER rate and the top of the Committee's target range and conclude with potential policy considerations that were outlined in a staff memo on this topic.

As Simon noted in his discussion of LIBOR–OIS, the pace of Treasury issuance and stock of bill supply continue to be cited as dominant drivers of money markets. As shown by the dark blue line in the top-left panel, while net bill issuance fell over the intermeeting period, it is expected to pick up again, and the overall stock of bills outstanding is expected to remain significantly larger than it had been in recent years. At the same time, as illustrated by the light blue line, the spread between bill rates and comparable OIS rates has edged lower from its recent highs but continues to be tight by historical standards.

Similarly, as shown by the light blue line in the top-right panel, the spread between overnight triparty repo rates and the overnight RRP offering rate remains elevated compared with last year. Looking ahead, the gray dashed line shows that, according to the Desk's surveys, repo rates are expected to stay at this higher spread to the overnight RRP rate.

Reflecting the attractiveness of bills and repo as investment alternatives, overnight RRP take-up remained very low over the intermeeting period, as shown by the middle-left panel. This was the case even over quarter-end, when take-up totaled only \$33 billion, significantly lower than the average \$345 billion in take-up on quarter-end dates over the past year.

Quarter-end also saw more muted changes in unsecured markets than has been typical in recent years. In particular, as highlighted in the middle-right panel, the effective federal funds rate declined only 1 basis point compared with an average decline of 9 to 10 basis points on recent quarter-end months. We also observed a more muted decline in the effective rate on yesterday's April month-end.

Additionally, in a notable departure from past quarter-ends when volumes typically declined along with rates, federal funds volumes actually increased \$14 billion on the March quarter-end. As you can see in the bottom-left panel, analysis by the staff suggests this was driven mostly by an increase in borrowing by banks primarily motivated by IOER arbitrage—that is, banks that borrow below IOER in order to deposit those funds in their Federal Reserve accounts and earn the spread—and that these IOER arbitrage volumes typically decline on quarter-ends.

I should note that, in practice, it's difficult to identify the underlying motivation for federal funds trades with precision, and banks may have multiple motivations for borrowing. The breakdown shown here is based on market outreach as well as staff analysis of trading activity using the detailed FR 2420 data. Although the classification is somewhat speculative, we think it can help the interpretation of recent market developments and may also provide insight into how federal funds activity might evolve.

It's not clear why arbitrage-related borrowing would have increased at the time of the March quarter-end, but it's possible that the general decline in such activity over recent months might have lessened the need to pare back borrowing in order to reduce their balance sheets for quarter-end reporting. Indeed, as shown in the bottom-right panel, other than at quarter-end, federal funds volumes have fallen since late January, with most of the decline coming from firms we classify as borrowing for IOER arbitrage, represented by the light blue area. Meanwhile, volumes for firms that appear to borrow primarily for reasons other than IOER arbitrage, such as to manage funding needs or as a way of meeting their liquidity coverage ratios, have been relatively steady, as shown by the dark blue area.

We think the broader reduction in federal funds transactions for IOER arbitrage is stemming from the fact that Federal Home Loan Banks (FHLBs), which provide about 95 percent of federal funds loans, cut back on federal funds activity and increased their investments in repo because of higher repo rates. Recall that a primary reason why the effective federal funds rate trades below IOER is because FHLBs can't directly earn IOER. If more attractive alternative investments become available to the FHLBs, they become less willing to lend federal funds at low rates.

In the top-left panel of your fourth exhibit, you can see that the volume-weighted median rate paid by federal funds borrowers motivated by reasons other than IOER arbitrage—again, in dark blue—is slightly higher and more variable than the median rate paid by those primarily motivated by IOER arbitrage. The rates for both groups have been increasing lately. This may be because of FHLBs negotiating higher federal funds rates across all types of borrowers.

The top-right panel puts the recent moves in volumes and rates together and shows that the effective federal funds rate—the volume-weighted median across all borrowers—has been ticking up within the target range since late last year, driving the spread between the effective rate and IOER from 9 basis points to 5 basis points, as shown by the red line.

To provide more context on how the distribution of trades that underlie the effective rate has evolved, the middle-left panel shows the distribution of federal funds volumes at rates relative to IOER over a handful of different time horizons. On the far left, in light red, is the distribution for 2017. The other sets of circles show that the distributions during the weeks before and after the spread between the effective rate and IOER narrowed this year from 8 to 7, 7 to 6, and then 6 to 5 basis points this intermeeting period. As you can see, trading occurs at a wide range of

rates, and the bulk of trading volumes occurs around the median, which has adjusted gradually. This may suggest that the risk of a sharp move in the spread between the effective rate and IOER may be low. That said, the distribution has become more dispersed, and we don't know how it might evolve should volumes continue to decline and the spread to IOER continue to narrow.

As I discussed earlier, spillover coming from higher repo rates appears to have been the main driver of the recent rise in the effective federal funds rate. An increase in the effective rate that is a result of FHLBs finding more attractive investment opportunities is not necessarily an indication of reserve scarcity, and, indeed, we don't see any evidence yet of impending reserve scarcity. As we look ahead, however, a range of factors are likely to exert further upward pressure on the effective rate, including the ongoing normalization of the balance sheet and the resulting reduction in the supply of reserves. As shown in the middle-right panel, most respondents to the Desk surveys expected the spread between the effective rate and IOER to continue to narrow but for the effective rate to remain below IOER through the end of next year. However, a few respondents did expect the effective federal funds rate to exceed IOER in 2019.

Survey respondents were also asked to rate the importance of various factors in influencing the change in the spread through 2019, as summarized in the bottom-left panel. Changes in reserve balances and Treasury supply dynamics received the highest rating on average, though, according to anecdotal reports, most market participants have not cited reserve scarcity as a factor for the recent narrowing. As shown in the bottom-right panel, reserve balances have not declined significantly over the past year, but declines are expected to accelerate as balance sheet normalization continues.

While there is considerable uncertainty around this, the staff expect an overall gradual upward trend in the level of the effective rate relative to IOER, stemming in part from higher rates on other money market instruments, ongoing balance sheet normalization, and potential changes to FDIC assessment fees. Under this expectation, and taking into account potential upward pressure arising from other factors, your final exhibit outlines a few policy considerations that were discussed in the memo.

First, the memo discussed a potential technical adjustment to the setting of administered rates relative to the target range: “Specifically, lowering the interest rates on excess and required reserves—or IOR rates—to be 5 basis points below the top of the target range while keeping the ON RRP offering rate at the bottom.” By setting IOER below the top of the target range, you would make it possible for the effective federal funds rate to remain within the target range even if it moved above IOER.

Second, the memo noted that such an adjustment could be made “in conjunction with an increase in the target range”—in which case the IOR rates would be increased by a smaller increment than the target range and the overnight RRP rate.

Alternatively, this adjustment could be made “at an FOMC meeting when there is no change in the target range, in which case the IOR rates would be reduced by 5 basis points.” Lowering the IOR rates at a nontightening meeting could help to signal that the adjustment is solely technical, aimed at realigning market rates with the target range to reduce the risk that the effective federal funds rate would move outside the target range. However, as this adjustment is expected to initially lower the effective federal funds rate up to 5 basis points, you might not like the optics of taking an action that deliberately lowers its policy rate during a tightening cycle. If this outcome were a concern, the adjustment could instead be made at the same time that the target range is increased. This approach could still be communicated as a technical adjustment and would have the advantage of moving all rates in a direction consistent with a firmer stance of policy.

Third, the memo noted that “policymakers can communicate their anticipated action in advance of any adjustment through a discussion of the issue in the minutes.”

Finally, the memo highlighted the consideration that “policymakers might wish to revisit the language in the Desk directive” at some point “to provide more clarity on when it would be appropriate for the Desk to conduct open market operations to keep the effective federal funds rate in the target range.” The current language could be read as directing the Desk to undertake open market operations in the event that the effective rate breaches the target range. However, in many circumstances in the current environment, policymakers might conclude that it would be more appropriate to adjust administered rates to move the effective rate back into the target range rather than conduct open market operations.

Thank you, Mr. Chairman. That concludes our prepared remarks. We would be happy to take any questions.

CHAIRMAN POWELL. Thank you, Simon. Thank you, Lorie.

Let’s start with general questions about the Desk briefing and hold off for a moment on comments and questions about the level of IOER relative to the federal funds rate target. Any general questions about the Desk briefing? [No response]

If there are none, then let’s turn to questions and comments on options for realigning the level of the IOER rate relative to the target range for the federal funds rate. Vice Chair.

VICE CHAIRMAN DUDLEY. Thank you. I’m completely on board with what the memo was recommending. I do favor making the technical adjustment to push the effective federal funds rate down within the target range. I very much would prefer to do it at a time when

we're actually raising interest rates rather than having this weird situation that we're not making a change at the meeting but we're seemingly lowering the IOER rate. So I would support doing this sooner rather than later.

Assuming that we're actually going to tighten monetary policy at the June meeting—assuming that stays in train, not prejudging that—then I would prefer to do this at that time. I think there's a pretty small risk of the federal funds rate trading above the range, but I prefer to take that small risk off the table completely.

And with respect to the last issue about if the federal funds rate were to trade outside the range what would I like the Desk to do, I would much prefer to adjust the administered rates than have the Desk engage in open market operations.

CHAIRMAN POWELL. Thanks. President Harker.

MR. HARKER. Thanks. I just want to add some thoughts of the Philadelphia team. We've been doing a lot of work. I know they've reached out to the Desk to talk. I just want to put some thoughts on the table not for immediate action, but maybe for some future action.

With respect to federal funds rate trading near the top of the range, we worry about it to the extent that it increases the probability that the funds rate will systemically trade above the top of the target range, which is currently bounded, obviously, by the IOER rate. I agree with Vice Chairman Dudley that it's not an excessively likely event. But we should avoid its occurrence, because letting the funds rate depart from the targeted range would cast doubt on our ability to implement policy accurately. And I think that's an important aspect of this. It may force us to adjust the IOER and the ON RRP rates reactively. The latter could be done at the Desk's discretion, as was mentioned, but the former does require Board approval. It may also require frequent changes as conditions in money markets change. Operating in this manner would

involve a tremendous communications burden, and I think it would be very difficult for us to communicate. It would be definitely better to be proactive in this sense.

The memo raises a number of important issues related to our operating procedures in general. The first is if regulatory and market forces make it increasingly difficult to operate a floor system, we may wish to reconsider a corridor system. Currently, the levels of excess reserves are just simply too large to operate policy in this way effectively. However, work jointly carried out by the Philadelphia and New York Fed economists indicate that the transition to the corridor environment could occur at fairly high levels of reserves—not as high as their current levels, but maybe higher than we have previously thought.

The second is that if these same forces continue to erode the federal funds market, it may be desirable to carry out monetary policy by operating in a broader money market, for example, the overnight RRP market itself. That would require, in my mind, much more study and preparation, but perhaps we should start to put some careful work and thinking into that matter. So my inclination is to continue operating in the funds market. But, in order to guarantee an active market, we may eventually wish to change our operating regime to a corridor system. As the balance sheet continues to normalize, that decision will ultimately confront us.

Fortunately, current conditions in the funds market appear to be manageable using the two instruments we have on hand, IOER and ON RRP, but with slight adjustment with where they are set. The current funds rate behavior seems to be driven by a run-up in government debt, which has raised rates on overnight repos, making them a more attractive asset for GSEs. With a lower supply of credit in the federal funds market, the effective funds rate has risen as well. The IOER rate may need to be set, as Vice Chairman Dudley and others have said earlier, a few basis points below the top of the target range. But I worry that reducing the IOER rate may shrink the

federal funds market further, as GSEs will face lower rates and banks will have smaller margins. One possibility that we'd like to put on the table would be to lower the ON RRP rate commensurately—a move that may help prevent a further decline in the volume of trades.

As I mentioned, there may come a time when we will need to consider if it's desirable to change the manner in which the Desk implements policy, but we are not there yet. So I am in favor of dropping the IOER rate 5 basis points at a time when we do raise the federal funds rate and indicating that this is a technical adjustment made to ensure that the federal funds rate trades near the midpoint of the target range and doesn't exceed the top of the target range. It may be helpful if we also lower the overnight repo rate 5 basis points. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Bostic.

MR. BOSTIC. Thank you, Mr. Chair. I actually am going to start where I was going to end. I agree with President Harker in the sense that I think it's useful to have a conversation about whether we use a floor or corridor framework. And I'm looking forward to having more conversations on that.

I will say, for the Atlanta team, that this memo left us confused, and then it left me scared. I do want to say that, to me, the larger question here is that this doesn't feel like an innocuous technical adjustment. It seems like we are using small actions to address something that's fundamental in the nature of the policy, which is that current money market conditions will affect how we implement monetary policy, and as those conditions change, then we have to be reactive or proactive, however you want to put it. And the thing that scared me, and left me nervous, was the notion that money market conditions are going to change all the time. And without having a clear sense of what those dynamics are likely to be, it is not clear to me that whatever action we take today or in June or whenever we do will be sufficient to prevent us from

having to act again or again and again—which then has the potential to introduce a lot of questions about the stability of our policy and how we’re going to go about implementing it. I worry about the communications challenge of having a continual change in direction that happens as conditions evolve.

For me, this is one of the reasons why I do think coming back to this framework question and trying to make sure that we have a framework that doesn’t look like we are tinkering at the structural level on a continuous basis is really important.

VICE CHAIRMAN DUDLEY. A two-hander. There’s a broader question about whether we should really be targeting the federal funds rate as our key instrument of monetary policy when the federal funds market is becoming less and less significant. I think there’s a broader question of potentially saying, “Look, we’re not targeting the federal funds market, we’re targeting money market rates, and our tools are IOR and the overnight RRP rates.” That’s a broader question worth having a conversation about.

MR. BOSTIC. I agree with that.

CHAIRMAN POWELL. Esther, then Lael, then Randy.

MS. GEORGE. I wondered if, either Vice Chairman Dudley or the staff would talk a little more about why they believe this should be a one-time adjustment, as opposed to having this happen again, and why they are averse to doing open market operations versus this option.

MS. LOGAN. Just to go back to the first question, I don’t think that lowering the IOER rate would change the probability of federal funds volume going away. I think the dynamics that are going to drive the federal funds volume to decline are irrespective of lowering IOER. I think those dynamics are about what is happening in money markets. And money market conditions

could evolve and could push the federal funds rate up to or slightly above the IOER rate if we make the change or if we don't make the change relative to the target range.

I think the key issue here is that it's natural for the effective federal funds rate to potentially come to the IOER rate or slightly above, and I think the challenge was just that the ceiling of the target range was set at the IOER rate rather than being set slightly above it. If it's set slightly above, then the federal funds effective rate can evolve naturally, slightly above or below, and you wouldn't have to make any adjustments. So I think it was just because that initial setting was set at the IOER rate when technically rates should trade slightly above the IOER rate in a floor system. If we have the right setting of the range relative to the administered rates, it should be a one-time adjustment.

MR. POTTER. And the open market operations issue is one of whether it would be effective in bringing the federal funds rate down. So, remember, we transact in the repo market only. And if we had a small amount of volume in the federal funds market and it was banks that were short of reserves, it's possible it would filter through to them. But, with \$2 trillion of reserves in the system, you've got to ask, why hasn't the supply of reserves filtered through to them at that point? Adding a typical open market operation—it might be \$8 billion in the old style—is very small percent, and you could try and do open market operations of a larger amount. However, I'm concerned our understanding of how to do an open market operation of that amount, and counterparties' willingness to be involved, would be something we'd have to learn over time. So the first time we did it, we might look quite clumsy in trying to achieve the outcome that we want.

CHAIRMAN POWELL. Thanks. Governor Brainard.

MS. BRAINARD. Yes. I think going back to our discussions leading up to the Normalization Principles and Plans that we released in September of 2014 and the addendum that we released in March of 2015, there was a lot of discussion recognizing that it was likely the effective federal funds rate would move closer to the top of the target range. And, in fact, that was viewed as something that would be a sign that we were establishing effective monetary policy control with the new framework.

I appreciate the staff alerting us to the likelihood that as part of that process the effective funds rate could actually move to or above the top of the range in a way that I think would be confusing to the public. And by alerting us to it early, it provides us a useful opportunity to address the risk in advance. The proposal to reduce the level of the interest rate on reserves 5 basis points below the top of the target range seems like a sensible approach to me on its face, and I favor our taking action proactively. And I think it will be very useful to provide a window into our thinking in advance, through the description of today's discussion in the minutes of this meeting.

Of the two options that are presented—either lowering the interest rate on reserves at a meeting when there is no adjustment to the target federal funds rate or at a meeting when the entire target range is shifted upward—I prefer the latter. Otherwise, as the memo points out, the Committee could be misinterpreted as introducing a small rate cut in an environment in which it has led the public to expect continual gradual increases in the path of rates. By contrast, at a meeting with an increase in the target range, it should be easier to explain to the public that this is a small technical adjustment.

I presume the necessary change will entail a simple revision to the March 2015 addendum language in which we essentially said that we would set the IOR rate equal to the top

of the target range, and so we'll need to adjust that. That said, I think once we move forward with this, the question that President Bostic and Vice Chairman Dudley have put on the table about whether we should continue to target the federal funds rate range—is an ongoing issue that I don't think will be put to bed by this small technical adjustment.

CHAIRMAN POWELL. Thank you. Governor Quarles.

MR. QUARLES. I had not expected this discussion to be so interesting. [Laughter] But despite all of the interesting things that have been put on the table, I do think that this is a fairly technical adjustment. I support it being done. I support it being done sooner rather than later. I think that the explanations and response to President George's questions actually were very helpful to me. I thought I understood it before. I now think I understand it better.

As for whether it should be done at a meeting at which there's a hike or a meeting at which there isn't a hike, I actually think that the most important thing is that it should be done at a meeting where there's a press conference in which the Chair can explain it. Now, in our current universe, that's the same thing, and because I think that it should be done sooner rather than later, it will be the same thing. But the principal issue is that of communications, and I think this could be communicated when not accompanied by a rate hike, but it has to be communicated, and so I'm supportive of doing this soon and when the Chairman can talk about it.

CHAIRMAN POWELL. Thank you. President Mester.

MS. MESTER. Thank you. I want to align myself with others who said that we should be thinking about the framework sooner rather than later. I think there are a lot of market participants who are interested in what our framework is going to be.

Regarding the technical adjustment, I'm okay with it. The memo laid out some reasons why you might want to do it when you're raising rates, and I align myself with those. But another reason to do it at a meeting at which we're going to raise the target range for the federal funds rate is a governance issue. I think it's really important to underscore that point. What we've said in the past is true, that our monetary policy is set by the FOMC—by setting that target range—and then the IOER rate, which of course is a tool set by the Board of Governors, will be adjusted to get the funds rate within the target range. So I have a strong preference that we take advantage of that and underscore the governance.

I guess I would be a little bit reluctant, perhaps, not to use open market operations for that reason. I would rather do that than adjust the IOER rate. But I do think that the broader question of what our ultimate framework is going to be is something that we need to think about. And I would rather we do it sooner rather than later, because I think there are a lot of issues involved that may seem like a technical discussion, but are more than a technical discussion. Thanks.

CHAIRMAN POWELL. Thank you. President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. I found the IOER memo actually very clear. I'm going to say very much the same things as the Vice Chair, Governor Brainard, and Governor Quarles said—I see the primary issue to be one of clearly and consistently demonstrating control of the effective funds rate. That is our target rate at the current time.

The original design—a 25 basis point range bracketed by the rates on overnight reverse repos and IOER—served us extremely well in that regard. And, like Governor Brainard, I would also like to go back to those discussions in which we were very focused on making sure that we were communicating to the markets and to the public that we have control over short-term interest rates. That whole design, in the environment that we were in, was basically to guarantee

that we could show that we could raise rates when it was appropriate and control rates in a reasonable fashion. And it has been a complete success. As Governor Brainard pointed out, we also thought that the right way to set up these ranges or these relative positions of these administered rates would depend on market conditions and would evolve over time. So now, with the effective funds rate likely trading very high in the range for the foreseeable future and even in danger of reaching it, it's eminently sensible to lower the IOER rate somewhat below the top of the range as suggested in the memo.

Now, from a communications perspective—and I agree with everybody that this is probably the most important part—I do think this is easier done at a meeting when we're raising the target range and when there is a press conference to describe this action. And I agree with President Mester about the importance of aligning, as we have, the idea that the FOMC is setting the policy rate and that the administered rates are set in order to achieve the FOMC's decision. That's what all this is about. The FOMC says we want the funds rate to trade in this range. These administered rates are set in a way that best achieves that consistently over time.

To avoid a potentially confusing, unintended breach of the target range down the road, we should not delay taking this step too long. In particular, I think it makes sense to raise the rate on IOER 20 basis points in conjunction with our anticipated 25 basis point increase in the target range at our next meeting. Of course, this assumes that we don't see a reversal in the pattern of the funds rate trading high in the range in the meantime. Again, it will be important to communicate to the public that this is a purely technical modification in the execution of our monetary policy framework, which we laid out in these earlier documents, and that additional modifications like this may be necessary as conditions in money markets evolve, especially in the context of a shrinking Federal Reserve balance sheet. In terms of which is the better tool to

achieve this goal of supporting the execution of monetary policy, I think that adjusting over time the administered rates is a more effective and less expensive way to do this than trying to use open market operations.

The last thing I'll just mention is that I don't see this as something that we would be having to modify frequently. These changes in money market conditions are relatively slow-moving—I hope. [Laughter] But again, going back to our discussions of a few years ago, I think we understood that the success of this was going to see the funds rate trading at or a little bit above the IOER rate. And if you remember these discussions, it was somewhat surprising that this floor was as soft and permeable as it proved to be at the time.

If you look at the Desk survey, I think market participants—and my own views are aligned with this—expect that, as we shrink the balance sheet and as other market conditions evolve, we may need to make one or two more of these adjustments. But, again, I see it as a predictable part of the execution of the policy we laid out back in 2015.

Now, I, like others, will chime in that I do think it's getting to be time for us to have that more significant, deeper discussion about the long-run policy implementation framework. But I view that as separate from this technical decision that really is just made in support of the execution of the framework that we are following now. Thank you.

CHAIRMAN POWELL. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. Let me add my agreement to pretty much everybody's comments so far. I agree that we should make a technical adjustment in the IOER rate, and it would be best to do it at a time when we're increasing the funds rate.

For the target range, I agree with Vice Chairman Dudley's comment that we should change the language of the Desk directive so that it points more toward changing rates rather

than open market operations. And I think that we should dust off the relevant analyses produced during the long-run framework discussion so that we could be better prepared if nonarbitrage trading in the funds rate market dominates too strongly, and we might have to revisit this framework. We should be proactive in that regard. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Kashkari.

MR. KASHKARI. Just a follow-up question. President Williams, you said in your comments that you support making this adjustment in June. I think you said “assuming it doesn’t reverse itself between now and then.” But what are the odds of that? Is it possible that a month from now, or three months from now, we’re going to regret having made this decision?

MR. POTTER. So we started at 15 below. We’re 5 below. It hasn’t reversed itself so far. What Lorie was trying to point out is that some of the dynamics in the federal funds market do seem to be changing, so we’ve been looking at it each day. It came in at 169 basis points yesterday. That’s a monthly-end. That was a very small drop. It almost came in at 170 at that point. But in panel 21, we can attempt to show you that distribution of trading is moving up. Remember, the FHLB is at 95 percent of people selling into this market. And they’ve seen people prepared to pay very close to interest on reserves, so that bargaining power should stay there for a while. But there are other things that could happen in the regulatory environment. There are changes that might affect it. Most of what we had in the memo should really tighten the spreads, particularly the surcharge that they’re paying for the Deposit Insurance Fund. When that goes away, that would make big U.S. banks more competitive in the market.

MR. KASHKARI. What’s the downside? If some of this stuff unwound unexpectedly, it wouldn’t really make a difference. We’d still be in the range.

MS. LOGAN. Yes, I think it would because the overnight RRP has been a very solid floor. So if dynamics in the Treasury securities market were to take back all \$500 billion of those bills, by way of example, those rates could come down, but the overnight RRP is still a very solid floor at the bottom. So it wouldn't require any change. I think the issue we were just trying to deal with is that the federal funds rate should be, in theory, slightly above the IOER rate. And because of our financial system, that wasn't the case, and so we're just trying to create a little bit of room so that that could happen.

Now, it is possible that if all of the IOER arbitrage trading went away, the federal funds market could be very, very small and idiosyncratic, and that rate could jump really high, well above the range. But in that world, you'd probably be thinking about the way you were communicating the monetary policy stance, because the federal funds market would be so small at that point.

MR. KASHKARI. Thank you.

CHAIRMAN POWELL. President Rosengren.

MR. ROSENGREN. Yes. I would just like to follow up on Lorie's last point. So if you look at figures 17 and 18, and you just take out the light blue so that all you have is the dark blue, it's a market that basically doesn't exist, and we've tied our monetary policy to it. And it's a very small amount of funds that we're talking about; the end-of-the-quarter volume would be very, very small. I have no objection to the technical adjustment, but I do think that we should be having a more fundamental discussion about what happens if the federal funds rate trades above the interest rate on excess reserves, and all of a sudden this arbitrage goes away, and now, really, it is the administered rates that are determining monetary policy. So I think it's fine for

this set of meetings, but I think it's a bigger problem, and we probably should have a broader discussion of it at a future meeting.

CHAIRMAN POWELL. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I agree with much of what has been said around the table. This was a constructed system in which we wanted to stick to the federal funds rate as the announced policy rate. As President Rosengren just pointed out, and others have, too, it's a very thin market. And it was a difficult decision, I think, on the part of the Committee to stick with the funds rate, as opposed to going to some other rate as being the actual policy rate. But it's a matter of tradition, and so that's where we came down.

I would take it as good news that it is trading closer to the IOER rate, because the soggy floor problem was the one we were trying to address. A simple thing to do that I haven't heard mentioned here is that you could bring overnight RRP rate up closer to the IOER rate and have them all trade closer together. You could change the communication to say that this floor problem has gone away or, if it continues to go away, that we're not as worried about that as we were in the past, and we don't have this target range. And we're not so concerned about exactly where the federal funds rate trades, because it's a thin market, and it just trades somewhere around the IOER rate. That would be a perfectly fine way, in my mind, to run monetary policy. So there are a lot of options here. I have no problem with the technical adjustment. But as everyone has pointed out, there are a lot of issues here.

CHAIRMAN POWELL. Other comments or questions? [No response] I'll say that I do agree that it will be appropriate the next time we raise the federal funds rate to raise the IOER rate 20 basis points, which will have been carefully signaled in the minutes of this meeting as a technical adjustment—a point that we'll also stress when the increase happens.

Separately, I think, as is the case for a number of you, this memo and our discussion suggest that we probably should bring forward in time our discussion of a longer-run policy implementation framework—which I had been thinking wasn't going to be 2018 business and was something for which we had plenty of time. Actually, if you look at the level of reserves toward the end of 2019, it really does get just above \$1 trillion and in a range in which it could well be equilibrium. So I do think we will return to the longer-run framework discussion later this year or, at the absolute latest, early in 2019. Thanks for an interesting discussion.

If there are no further questions or comments, I'm now going to ask for separate votes on the renewal of the NAFA arrangements and the liquidity swap arrangements. Of course, only current FOMC members may vote. So we'll start with the NAFA arrangements, our standing swap lines with Canada and Mexico. Do I have a motion to approve?

VICE CHAIRMAN DUDLEY. So moved.

CHAIRMAN POWELL. Any comments? [No response] All in favor? [Chorus of ayes] Any opposed? [No response] The renewal of the NAFA swap arrangements is approved. Now for renewal of the liquidity swap arrangements. Do I have a motion to approve?

VICE CHAIRMAN DUDLEY. So moved.

CHAIRMAN POWELL. Any comments? [No response] All those in favor? [Chorus of ayes] Any opposed? [No response] The renewal of the liquidity swap arrangements is approved. Finally, we need a vote to ratify the domestic open market operations conducted since the March meeting. Do I have a motion to approve?

VICE CHAIRMAN DUDLEY. So moved.

CHAIRMAN POWELL. All in favor? [Chorus of ayes] Thanks very much. Next we will turn to the review of the economic and financial situation, including financial stability developments. Bill Wascher, would you like to start us off?

MR. WASCHER.² Thank you, Mr. Chairman. I'll be referring to the materials in the packet you have titled "Material for Briefing on the U.S. Outlook." In broad terms, the "takeaway" coming from our April Tealbook projection is not much different from what we've been forecasting for a while. The economy is projected to expand at an above-trend pace over the next few years, supported by expansionary fiscal policy and solid foreign real GDP growth. Tighter monetary policy is expected to weigh on U.S. real GDP growth over time, but resource utilization is nonetheless projected to be very high at the end of the projection period, helping to keep inflation at your 2 percent target.

The data that we have received since the March Tealbook remain consistent with this outlook. As you can see from panel 1 of your forecast summary exhibit, real GDP growth slowed in the first quarter, though by a little less than we were expecting. The blue dot on the chart shows the BEA's advance estimate, which we received after the Tealbook was closed. Its estimate, which is subject to revision, was 2.3 percent, about ½ percentage point higher than our April Tealbook forecast but relatively close to what we were projecting in March.

Regardless of the exact number, we continue to think that the deceleration in economic activity last quarter will prove to be transitory. In particular, the slowdown was concentrated in consumer spending, which had risen sharply in the fourth quarter of last year, likely boosted by replacement demand for motor vehicles and, more generally, a rebound in spending following the fall hurricanes. As a result, we expect to see real GDP growth pick back up to a 3 percent pace in the current quarter, which would put the pace of growth over the first half of the year at about 2¾ percent. Under our assumptions about potential output, this pace of first-half growth is sufficient to further widen the output gap and implies additional upward pressure on resource utilization.

With regard to the labor market, the March employment report was not as strong as we had expected. The pace of payroll job gains slowed to 103,000, and the unemployment rate held steady at 4.1 percent, which is where it's been for the past several months. That said, payroll gains for the first quarter as a whole were solid, and the aggregate labor force participation rate—not shown—moved up a touch in Q1, which, taking into account its declining trend, points to some additional tightening along this margin of labor market slack. As a result, our overall assessment is that the labor market continued to tighten over the first three months of the year.

² The materials used by Mr. Wascher are appended to this transcript (appendix 2).

We will receive the BLS's April employment report this Friday. As you know, however, we have been using the real-time firm-level data provided to us by the payroll-processing firm ADP to help provide a more timely and independent read on one aspect of the state of the labor market, the pace of employment growth. In this regard, the thin black line in panel 2 plots the ADP-based estimate of private job gains using employment counts for the first three weeks of April. The current estimate for April, at just 78,000, is notably weaker than our Tealbook forecast, though, as shown by the blue line, a pooled estimate using a Kalman filter model downweights somewhat this low reading, even in the absence of the BLS data for April. I would also note that the April ADP estimate follows some unusually high readings around the turn of the year, and the average pace of job gains implied both by these data and by the BLS's estimates in recent months remains well above the rate that we judge to be consistent with no change in resource utilization. Accordingly, with growth in overall economic activity expected to exceed its potential in the current quarter, we expect the unemployment rate to resume its downward trajectory in coming months.

As you can see in panel 4, the recent behavior of the aggregate unemployment rate has been broadly mirrored by the unemployment rates for various racial and ethnic groups. Indeed, the jobless rates for blacks and Hispanics are now generally below those seen in 2000 and are near the lowest levels since the BLS began reporting unemployment rates for these groups in the early 1970s. That said, these rates—especially for blacks—remain noticeably above the unemployment rates for whites.

Moving back up to the first panel: Our forecast of real activity over the medium term is just a shade weaker than the one we showed you in March, as we did take a little signal from the incoming data for the underlying trajectory of consumer spending. Nevertheless, real GDP is projected to increase at roughly a 2½ percent pace through 2019, supported importantly by fiscal policy—panel 5—before slowing to 2 percent in 2020, as further increases in the federal funds rate—panel 6—and a tightening in financial conditions more generally act to rein in spending and production. Hence, we continue to expect that real output growth will outpace potential growth—albeit to a diminishing degree—throughout the projection period. Accordingly, the unemployment rate—the black line in panel 3—levels out in 2020 at 3.3 percent, about ¼ percentage point higher than we were projecting in March.

As we reported to you on Friday, information received after we closed the Tealbook projection had little net effect on our medium-term outlook. Although we carried forward some of the higher-than-expected level of activity indicated by the first-quarter GDP release, this effect was roughly offset by the appreciation of the dollar over the past week or so, which implies a slightly smaller contribution to GDP growth being made by net exports in the second half of this year and in 2019 than in our Tealbook forecast.

In light of all of the changes in fiscal policy that have taken place over the past six months, I thought it might be interesting to take a step back and compare our current

fiscal assumptions with those made last September, when we first extended the medium-term forecast to include 2020. As shown by the blue bars in panel 5, at that time we had included a small placeholder to account for the possible enactment of an expansionary fiscal package, but nothing specific. As indicated by the black bars, however, the combination of the Tax Cuts and Jobs Act and the Bipartisan Budget Act, along with our assumption that the Congress will find a way to keep spending in 2020 from suddenly dropping back to the earlier budget caps, resulted in a much larger fiscal expansion than we had been assuming. There were other things going on as well, of course. But a relatively simple calculation suggests that the changes to our fiscal policy assumptions between September and now can account for most of the upward revision to the assumed baseline path of the funds rate shown in panel 6, which, as you know, we set by mechanically applying an inertial version of the Taylor (1999) rule.

Your next page of exhibits summarizes the inflation outlook. The recent data on PCE prices are consistent with our view that inflation was held down by transitory factors last year and will come in higher this year. As you can see from the black line in panel 7, according to the monthly PCE price data that we received yesterday, total PCE prices—the black line—rose 2 percent over the 12 months ending in March, with a corresponding increase in core PCE prices—the red line—of 1.9 percent. Both figures were basically in line with our April Tealbook estimates and represent a step-up of 0.3 percentage point from February, mainly reflecting the much-anticipated dropping out of last year's low March monthly reading from the 12-month-change calculation.

Looking ahead, we now expect the 12-month change in the core index to move just above 2 percent this summer and to remain in the neighborhood of 2 percent through the end of the year. Total PCE inflation is projected to reach 2½ percent briefly, boosted by some relatively rapid increases in consumer energy prices. We expect, however, that, by the end of the year, energy prices will have peaked and total PCE prices will be rising at about the same rate as the core index.

Beyond the near term, our inflation projection is little revised since March. Core inflation—panel 9—is projected to edge up to 2.1 percent in 2019 and to remain at that level in 2020, as a further tightening of resource utilization and a gradual increase in underlying inflation offset the effect of an anticipated deceleration in core import prices. Total PCE price inflation—panel 8—is expected to run a touch below core inflation in 2019 and 2020, as a small projected decline in oil prices over the medium term feeds through into consumer energy prices.

Finally, panel 10 shows four of the various measures of labor compensation growth that we follow, including our best guess—based on the advance NIPA data—of what the BLS will report for first-quarter hourly compensation growth in Thursday's Productivity and Costs release. On the whole, we see a bit of evidence that labor compensation growth is creeping up, though it's hard to be too certain, considering how differently these various series can behave and how volatile they can be from year to year. We put the most weight on the ECI—the black line—in

part because it is less noisy than the other available measures. Last week—and after the April Tealbook was closed—we received the ECI for March, which came in at 2.8 percent on a 12-month-change basis, about $\frac{1}{4}$ percentage point higher than we had anticipated and $\frac{1}{2}$ percentage point higher than its year-earlier pace. The recent behavior of the ECI appears broadly consistent with our view that compensation growth is evolving about as one would expect, in a situation of an increasingly tight labor market, relatively well-anchored inflation expectations, and continued lackluster trend productivity gains. I'll now turn it over to Beth Anne to talk about the international outlook.

MS. WILSON.³ Thank you. So it is just my luck to brief you on yet another holiday, May Day. In celebration of May Day, the traditional springtime festival, I bring you our benign foreign outlook. As presented in slide 1, we anticipate solid, broad-based foreign growth at close to 3 percent in the near term, edging down to potential. The strong performance in both the advanced and emerging market economies has been associated with a continued recovery in global trade from a mid-decade slump, importantly reflecting a resurgence in high tech and manufacturing.

As May Day is also an international day honoring workers, in your next slide it seems only appropriate to acknowledge that abroad, as well as at home, the economic expansion is characterized by buoyant labor markets, with unemployment rates near or below pre-crisis lows. Furthermore, though the development is not spectacular, labor and total factor productivity—to the right—are turning up a bit, and wages are showing hints of life.

That said, as discussed in slide 3, since your previous FOMC meeting, we have gotten indicators that make us wonder if the bloom is coming off the rose. PMIs, while still at levels indicating robust growth, turned down in the advanced foreign economies. And while it may be partially weather related, Q1 GDP data—including after the Tealbook closed—surprised us on the downside across the major AFE economies. More generally, vintages of our forecasts, shown to the right, reveal that the burgeoning pattern of upward revisions we saw last year, the green lines, seems to have been somewhat nipped in the bud so far this year.

In contrast, our forecasts of oil prices and the dollar have been springing up of late. As seen in your next slide, continuing their climb since early 2016, oil prices jumped about 10 percent over the intermeeting period. Against a backdrop of strong global demand, the implementation of OPEC production quotas around the turn of last year and sustained compliance since—witness the step-down in Saudi Arabian production shown to the right in green—have provided a considerable boost to prices. More recently, uncertainty surrounding renegotiation of the Iran nuclear agreement and a flare-up in tensions elsewhere in the Middle East further boosted prices. In our forecast, prices generally decline, importantly reflecting resurgent U.S. production,

³ The materials used by Ms. Wilson are appended to this transcript (appendix 3).

the black line on the right. Indeed, the United States is on track to become the world's largest producer of crude oil by the end of the year.

As seen on your next slide, in part as a result of the rise in oil prices, AFE headline inflation has risen too, but core remains subdued, and we see only gradual progress to sustainably hitting 2 percent. In consequence, policy rates abroad, shown to the right, are likely to considerably lag policy rates in the United States.

As for the dollar, the subject of your next slide, yes, we still expect it to strengthen. Much has been made of the weakening of the dollar last year despite U.S. monetary policy tightening, fiscal stimulus, and a strong U.S. economy. Our best guess is that the strength of the expansion abroad, reduced perceptions of downside risks, and the related anticipation of foreign monetary policy normalization help account for the dollar's decline. Over the forecast, we expect relative surprises in monetary policy, shown to the right, to reassert themselves as driving forces, leading to mild dollar appreciation as markets are surprised by the run-up in U.S. policy rates in our baseline.

Finally, I would be remiss if I left out the “Mayday! Mayday! Mayday!” portion of the briefing. [Laughter] Slide 7 presents our updated “International Financial Stability Matrix.” After reviewing conditions in 13 matrix countries across six risk categories, we assess the overall level of vulnerabilities as “Moderate.” We have seen mild improvements in foreign financial vulnerabilities, reflecting robust global real GDP growth and a positive foreign economic outlook, but not by enough to change our country assessments.

The market volatility earlier in the year has intensified focus on valuations globally. We find that “Notable” or “Elevated” valuation pressures are common across more than half the countries. Corporate bond spreads are historically low in most countries, equity valuations are stretched in a number, and, for some, housing markets are quite tight. That said, the experience is not uniform, and continued easy financial conditions have not translated into an overall increase in leverage in the private nonfinancial sector.

We also updated our “Prominence of Risks Assessments,” the last column, which captures well-defined, near-term events that represent salient risks. Political uncertainty continues to contribute to the prominence of risks in countries such as Italy, Brazil, and Mexico. For China, our assessment in this category moved from “Medium” to “High,” reflecting the multiple potential paths to financial crisis due to the country's elevated debt levels, particularly if current efforts to rein in credit growth misfire. In contrast, we have stepped down our concerns about risks on the Korean Peninsula.

In addition to country-specific risks, this round we have added two global shocks to our prominence of risks. The first is the possibility of a sharp, widespread reversal in asset valuations, explored in the “Global Tightening Tantrum” scenario in the

Tealbook. The second is a broad move toward protectionist trade policies. It is on this risk that I will focus the remainder of my remarks.

As discussed in slide 8, the past year or so has marked a significant shift in U.S. trade policy. The withdrawal from the Trans-Pacific Partnership, the renegotiation of NAFTA and the Korean Free Trade Agreement, the high-profile safeguard tariffs on washing machines and solar cells, the imposition of tariffs on aluminum and steel imports in the interests of national security, and proposed section 301 actions against Chinese imports and investment together signify a pivot to a more protectionist policy stance. The table provides some background on a number of these recent actions. Importantly, although there has been much back-and-forth, the actual measures, as currently enacted or as originally proposed, target a small fraction of our nearly \$2½ trillion in goods imports, assuming, as we do, that the ongoing NAFTA negotiations do not result in sizable tariff increases. Thus, the effect on output and inflation in our forecast is minimal.

As discussed on your next slide, however, we have seen a willingness to escalate both rhetoric and responses that has the potential to shake market confidence and increase investor uncertainty. The left chart presents an index of news searches on words related to trade policy and shows a staggering rise in references, capturing the attention on, and uncertainty about, trade policy of late. Because of the quickly changing landscape, it has been difficult to identify a sustained market reaction to recent trade developments. In the past, we have found evidence of a positive relationship between general economic policy uncertainty and the VIX. And, as Simon has suggested, trade policy uncertainty may be playing a role in higher volatility currently. In addition, although it is too early to see these concerns manifest in hard data, increasing references to “uncertainty” or “difficulties in planning” are showing up in manufacturing surveys. The latest Michigan survey reported a negative balance of opinion on tariffs, and even speeches by foreign central bankers are highlighting risks.

Two variants of these concerns, outlined in slide 10, seem particularly resonant of late—first, that the situation could escalate dramatically into a trade war, and, second, that heightened uncertainty about policy outcomes could weigh on confidence and investment, even absent an escalation. In order to provide some framework to these possibilities, we use an open economy model developed by the IF staff to analyze trade policy. In the first case, we assume over a period of time—in this case, a year and a half—that people become increasingly convinced that the United States and the rest of the world will enter a trade war, and that, at the end of that period, their fears are realized: Both countries set 10 percent tariffs on all imports lasting five years. In the second case, people perpetually anticipate a trade war, but the event never materializes.

Although stylized, these scenarios help illustrate the potential effect on the U.S. economy, shown on your last slide. In a trade war, illustrated by the green lines, the implementation of tariffs leads to a jump in prices for imported goods both here and abroad, reduced demand for exports, and some shift in production toward import-

competing industries. Inflation spikes and output growth slows markedly, as firms reduce investment in response to the higher costs of imported inputs and flagging profits. Higher import prices also weigh on the real incomes of consumers. Even in the case in which a trade war never happens, the blue lines, if firms and consumers anticipate a trade war and understand its costs, they will reduce investment today as they revise down their expectations about future output and profits. This “fear factor” will put a damper on growth as long as the uncertainty lasts. Furthermore, considerably worse outcomes could well materialize, including if the threat or existence of a trade war diminishes total factor productivity growth through reduced technology transfer and research and development, triggers a significant global market correction, or causes serious financial stresses in foreign economies heavily reliant on trade.

If this recitation has driven your spring spirits into a Maypole, I would like to remind you that these are risks, and our baseline is significantly cheerier. I turn it over to Josh and the uplift that only an assessment of U.S. financial stability can provide.

MR. GALLIN.⁴ Thanks, Beth Anne. I’ll be referring to the handout titled “Material for Briefing on Financial Stability Developments.” Our assessment is that the overall vulnerabilities across the U.S. financial system remain moderate—a situation in which shocks to the economy are neither unusually amplified nor unusually attenuated by the financial system.

As summarized in the first panel, we think that, overall, valuations are elevated relative to fundamentals, an assessment we have had for about a year. Valuations in equity and corporate bond markets have come down a little amid bouts of elevated volatility but are still high by historical standards. Valuations of leveraged loans and commercial real estate increased further from already stretched conditions. And, by our usual metrics, residential real estate appears to be only somewhat overvalued.

As you know, valuations for risky assets have been supported by low risk-free rates, which themselves are low because markets expect a moderate pace of monetary policy tightening, and, as can be seen to the right, the nominal Treasury term premium is quite low.

You’ve heard us say before that a jump in risk-free rates—due to a change in policy rate expectations or in the term premium—would cause a broad revaluation of asset prices or a further stretching of valuations. I’m going to linger a bit on the next two panels to describe one way that could happen.

The middle-left panel shows the correlation of stock prices and Treasury yields. As can be seen in the unshaded portion of that chart, stock prices and Treasury yields were negatively correlated in the 1980s and most of the 1990s. In contrast, since the late 1990s—around the time of the Asian financial crisis, the Russian financial crisis,

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

and the collapse of Long-Term Capital Management—stock prices have tended to be positively correlated with Treasury yields.

That positive correlation has meant that prices for Treasuries and stocks have moved in opposite directions, making Treasuries a useful hedge for stocks. Investors in Treasuries “pay” a premium for this hedge by accepting lower yields. This downward pressure on yields will abate or disappear if the yield–stock price correlation becomes negative again in a sustained way.

Although we can’t pin down precisely why the correlation changed sign, we can speculate about what could make it change back. In one plausible story—summarized to the right—the negative correlation before the late 1990s was driven by expectations that investors formed amid supply shocks, stagflation, and a changing monetary policy regime. A positive inflation surprise back then was generally considered bad news, driving Treasury yields up and stock prices down. Since the late 1990s, investors have been forming expectations, under a well-understood monetary policy regime and in an environment dominated more by demand shocks. The experience has been one of disinflationary recessions and financial crises in which positive inflation surprises have generally been considered good news that pushes both yields and stock prices up.

Could this pattern reverse? We’ve caught glimpses recently of inflation-as-bad-news again at center stage. For example, stocks fell sharply and Treasury yields rose the day of the employment report in February. Flight-to-safety flows pushed inflation fears back into the wings again soon after, but a more persistent return of that inflation dynamic would reduce the negative insurance premium on Treasuries and drive yields up, with potentially large effects on a broad range of risky asset prices.

Let’s pivot from valuations to leverage. We judge vulnerabilities associated with financial-sector leverage to be low, as banks and insurance companies, not shown, remain well capitalized. However, as you can see in the lower-left panel, leverage at hedge funds has been rising recently. That panel shows a relatively timely, but relatively narrow, measure of leverage—that provided by prime brokers for equity investing. Gross leverage is in black and net leverage is in red, and both have moved up notably in recent months through January. Those data are a bit stale and exclude leverage for other asset classes and leverage achieved using derivatives. Unfortunately, our most comprehensive data on hedge fund leverage is so stale—it’s from June—that I’m not showing it. But answers to the Senior Credit Officer Opinion Survey on Dealer Financing Terms, which is shown to the right, give us a peek at recent changes in leverage. The neutral readings for Q4 and Q1 suggest that leverage at hedge funds has flattened out recently after more than a year of increases. We aren’t yelling “fire” yet on hedge fund leverage, and certainly not for the financial sector as a whole, but it’s something to keep our eyes on.

If you flip to the next page, you can see in the first panel that real debt balances for households have continued to rise only for prime borrowers (shown in black). Balances have stayed remarkably flat for the near prime and subprime groups (in blue

and red, respectively). And although the relatively restrictive supply of credit to nonprime borrowers has boosted the financial resilience of the household sector, delinquency rates for some forms of consumer credit have moved up recently, suggesting rising strains among riskier borrowers. Overall, we view vulnerabilities arising from household leverage as being in the low-to-moderate range.

In contrast, as we have since mid-2015, we judge vulnerabilities due to leverage in the nonfinancial business sector to be elevated. As you can see in the panel to the right, net issuance of risky debt peaked at a very high level in 2014 and had decelerated through the middle of last year, but it picked back up again in the fourth quarter of 2017 on the strength of leveraged loan issuance. I'll note here that the GAO's determination that the "Interagency Guidance on Leveraged Lending" was a rule does not appear, as yet, to have affected lending. Leverage at speculative-grade and unrated firms—the middle-left panel—remains above historical norms. Should issuance of risky debt return to the elevated pace seen a few years back, vulnerabilities in this sector would intensify.

Indeed, as summarized in the middle-right panel, the April QS briefing included a stress test of nonfinancial businesses along those lines. The scenario—which is one among several—assumes that for the next three years, debt expands 10 percent per year, about what we saw from 2012 to 2015. Then the economy is hit with the CCAR Severely Adverse Scenario, and then we focused on the more adverse tail of potential outcomes. Our model's projection has defaults on high-yield bonds reaching about 20 percent by the end of 2022 and defaults on leveraged loans reaching 6 percent, about their respective levels during the Great Recession. Mark-to-market loss rates would also be significant—18 percent for high-yield bonds and 13 percent for leveraged loans.

As summarized in the lower-left panel, we continue to judge vulnerabilities associated with maturity and liquidity transformation to be low. Systemically important firms have significant holdings of high-quality liquid assets, maturity transformation at Federal Home Loan Banks has edged down, and there hasn't been significant growth in money fund alternatives or in outstanding levels of "runnable" securities. However, we cannot see all shadow banking activities, and, more broadly, we do remain somewhat concerned about market liquidity amid elevated volatility.

Your last panel provides a market-based assessment of firms' fragility and systemic risk by plotting CDS spreads (a measure of fragility) on the x -axis and CoVaRs (a measure of systemic risk) on the y -axis. Deutsche Bank, shown in orange, has the highest CDS spread of the group. However, Deutsche Bank also has a relatively low CoVaR, suggesting that its distress poses less systemic risk than would distress at the large global firms, shown in red. Of course, a low CoVaR relative to one of those red banks does not mean Deutsche Bank, or any of the firms in black for that matter, is not systemically important. Market-based measures of risk, and the models we use to interpret them, are imperfect. Markets may excel at aggregating information and sentiment, but investors—and central bank staff members—have been known to be too sanguine.

Our summary heat map is on exhibit 3 for your reference. Those are my prepared remarks, and Bill, Beth Anne, and I would be happy to try to address your questions.

CHAIRMAN POWELL. Thanks very much. Let's now turn to a Q&A on these briefings, and then, after that is completed, we'll have an opportunity to comment on financial stability issues. So any questions on those great briefings? Vice Chairman.

VICE CHAIRMAN DUDLEY. I had a question for Beth Anne and a question for Joshua. Beth Anne, we're talking about tariffs. What happens if we get quotas instead? I noticed that with South Korea, we end up in a quota world rather than a tariff world, and you can imagine that that could be where the negotiation leads us. How do you think about quotas?

MS. WILSON. You get less government revenues.

VICE CHAIRMAN DUDLEY. Yes, exactly. In some ways, it's actually a worse world.

MS. WILSON. Worse. I imagine that, to the extent that the quotas result in price increases, then you'd see the effects flow through as probably somewhat worse effects on consumption or government balances.

VICE CHAIRMAN DUDLEY. It seems to me like that's a possible outcome. Countries agree to quotas because they get the rents rather than we get the rents.

MS. WILSON. Right. Thinking about it in terms of a trade war would mean just an almost voluntary reduction, which is hard to imagine, but the effects would be negative, and I think you could think of them in that way.

VICE CHAIRMAN DUDLEY. Thank you.

MS. WILSON. As long as it goes through prices.

VICE CHAIRMAN DUDLEY. Josh, I had a question. I've noticed that the triple-B tranche of debt securities has been growing really rapidly relative to the other investment grades. Are we thinking at all about the risk of next recession? A lot of those triple-Bs become high

yield, The triple-B market now is much bigger than the high-yield market, and those cliff effects could actually lead to quite a bit of pressure on firms, because a lot of people can't invest in high yields. Their mandate doesn't support it. Is that a risk that the staff worries about?

MR. GALLIN. Yes. That's something that we have looked at. We've looked at the distribution of credit ratings of various bonds, and I've seen reports in the news along those lines. It's like a wall at triple-B, and is the water sort of piling up against it. It does look like there is some movement in that direction, certainly if you look at the bigger categories. Some of the people in the division—not me—looked at the more granular data, and, within that piling up, it doesn't actually look like we're really piling up right against that wall as much as it might seem if you look at those chunkier data. However, it is something that we're keeping an eye on.

VICE CHAIRMAN DUDLEY. Thank you.

CHAIRMAN POWELL. Thanks. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chairman. Bill, a question on the staff's outlook and forecast. You mentioned, and it's been in the Tealbook for a while, that the staff thinks that we're running above potential in terms of the labor market relative to trends. But in Tealbook A, we also look at manufacturing utilization. It's still low relative to the past 30 or 40 years. I'm just curious—you're the guy sitting there, so I'm sorry to pick on you, representing Tealbook A—how do you reconcile those two? Because I would have thought that if firms were really scarce workers, they'd be using all of the capital they possibly could, because they'd have no choice. And yet we see a gap in manufacturing utilization—or capital utilization. Is there a way to reconcile those two?

MR. WASCHER. One way is to think about the different sectors of the economy. I think one reason is that manufacturing has had some adverse demand shocks associated with the

strengthening of the dollar, in particular, and that's one reason that the growth in manufacturing has lagged the growth in the overall economy.

More generally, I think manufacturing has been on a long-run structural decline, and sometimes it takes a while for the capacity to be scrapped. So there probably is an excess capacity there that's not being used. But it's being offset, in our view, in terms of the overall economy, by tightness elsewhere in the labor market and in the economy.

MR. KASHKARI. But—correct me if I'm wrong—I thought the perspective was, manufacturing employment declines because of big productivity gains, but that we're still manufacturing goods whether domestically or around the world.

MR. WASCHER. I think, overall, that was certainly true for a long time, but maybe over the past decade or so the share of manufacturing output in overall output has declined as well. I think Norm Morin is in the back and may have something to add.

MR. MORIN. It's absolutely the case that the share of manufacturing employment has been trending down for decades and decades, and it's also the case that the manufacturing share of value-added has also been coming down. But I think Bill hit on the main point that one reason for a gap between capacity utilization and other measures of slack is that in the 2000s, with the China shock and so on, demand for manufacturing output has grown reasonably slowly, and in a number of industries capacity hasn't been shed as quickly as demand has declined. So you have a large number of industries in which capacity utilization is very low among other industries where capacity utilization is at more-normal levels.

In addition, there are a variety of hypotheses accounting for a secular decline in average capacity utilization across industries.. For example, with capital becoming cheaper relative to

warehouse space, there are changes to tradeoffs, and these changes work in favor of keeping additional buffer capacity over keeping higher inventories.

MR. KASHKARI. Thanks.

CHAIRMAN POWELL. Thank you. Governor Brainard.

MS. BRAINARD. Yes. I just wanted to ask about the analysis of term premiums and ask what your view is as to whether this period of very low term premiums seems likely to be consistent with a period when inflation is bouncing around 2 percent and we seem to be in the vicinity of full employment. Does that have any implications for your view about these correlations or for the sustainability of a zero term premium?

MR. GALLIN. Yes. The way I and people who do the research in this area have been thinking about this is, it just depends on steering between a liquidity trap or zero lower bound problems on one side and high inflation or stagflation on the other side. And if we're getting to full employment with inflation bouncing around the target of 2 percent, we're moving away from that liquidity trap area, and so you would expect the correlations to not be as positive as we saw when we were really worried about falling into that Scylla and Charybdis or something. I can't remember which one's the whirlpool, but that's the liquidity trap. And so I would expect that term premiums on Treasuries would move up, and that's actually consistent with the staff forecast.

CHAIRMAN POWELL. Thanks. President Rosengren.

MR. ROSENGREN. Question for Josh on the Deutsche Bank dot in your chart 2–6. How much comfort should I take from the CoVar if I think about financial instability in Europe as opposed to the United States? The set of institutions here are U.S. institutions. However, as the banking system in Europe never got as capitalized as we did and in view of the problems in

Italy that were highlighted in the international presentation, if you were to do a CoVar that was focused on European financial stability, do you have a different view of that dot, particularly in light of how far out it is on the CDS spread?

MR. GALLIN. Yes. Let me just start by making the broader point that CoVar is one measure that we look at. I think it is useful for looking at the cross-sectional patterns across these firms. But it is just one measure, and it's imperfect, like any other measure. And Deutsche Bank is a large, systemically important institution. So I'll get to your question for a second. I wouldn't even necessarily look at that low CoVar and say we don't have to worry about Deutsche Bank for the United States. Of course, then, if we're moving toward your question, what about globally or in Europe—I don't know what the CoVar would look like for Deutsche Bank if you did it against the European financial system. Presumably, it would be higher. I think it would be more concerning. Just to finish it off, one of the reasons why CoVar is relatively low for the United States—it's not because Deutsche Bank is in good shape. It's actually because Deutsche Bank's asset price movements relative to the U.S. financial markets—asset prices—aren't as big. So that translation of that distress, presumably, would be bigger in Europe.

MR. LEHNERT. I would add only one thing to that, President Rosengren, which is that we do have a staff process going on to look at some of the broader systemic consequences should something bad happen at the firm, and one of the key channels is the transmission of stress to other European firms. One could imagine it happening either for direct reasons or because they have similar business models or exposures. And there's a general sense that what happens to one child could happen to its sibling as well. So I'd say that's an area of active work at the moment.

MS. WILSON. And I would highlight the point that if something were to happen in Deutsche Bank, it would be a very big test for the nascent European institutions that are designed to deal with these bank restructurings, and so it could have implications for that as well.

CHAIRMAN POWELL. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I'm looking at "Material for Briefing on the International Outlook," page 5, the "AFE Policy Rates" picture. This is, I guess, a Taylor (1999) rule for the Fed. If we instead followed the market-based path, which is on the next page, what should I think about that? Would that mean that the dollar would not strengthen, that foreign economies would grow maybe more slowly, and foreign inflation would glow more slowly? Was that the idea?

MS. WILSON. Your question is, we have a big policy surprise if the United States unfolded as the market anticipates—what would that imply for the dollar?

MR. BULLARD. Right.

MS. WILSON. In our forecast, that would imply a weaker dollar than we have projected, although it would have to be considerably weaker not to have any surprise at all.

MR. BULLARD. Well, the next page shows the Committee going to 2½ percent or something like that. So if we followed that path, then there'd be no change in the dollar, I guess. Is that right? Because there'd be no surprise compared with what the markets are expecting.

MR. HARKER. If you can answer this, you'll be the only one on the planet who could.

[Laughter]

MR. BULLARD. In the forecast, what would it be?

MS. WILSON. Considering the design of our model, I would hesitate to say we would see no surprise in the dollar, because we've seen a surprise in the dollar between now and when we closed the Tealbook.

MR. BULLARD. Absolutely.

MS. WILSON. But the way that our model is structured, it is based on policy surprises both in the United States and abroad. You would need to have no policy surprises in either area.

MR. BULLARD. Okay. And, just also looking at this picture, what does the model say about the world neutral real policy rate? Because this says that we're going to be some 425 basis points above Europe at the end of the forecast horizon. Is there a global real interest rate that's halfway in between, or is it one for the United States and one for Europe, or what?

MS. WILSON. This is a long-standing question. We look at what we consider a neutral rate for individual countries, and the neutral real rate tends to be range either from 1 to ½ percent, depending on the country, which would put the nominal rate at between, say, 2½ percent and 3 percent.

MR. BULLARD. Oh, I see.

MS. WILSON. Even for the United States there's such a range of what you think is the neutral rate that we think that it would be difficult to come up with a very cogent point estimate of the world neutral rate.

One issue I'd like to mention here is that we're looking right now at about half the world. And if you think that productivity growth, real interest rates, and output growth in other parts of the world contribute to a world real interest rate, then you would see somewhat higher.

MR. BULLARD. Okay. I see. So, according to the model, the FOMC has to be very tight in order to control above-trend real GDP growth, which otherwise would lead to inflation. Thank you.

CHAIRMAN POWELL. Thank you. If there are no further questions, then let's begin the opportunity for comments on financial stability issues, beginning with Governor Quarles.

MR. QUARLES. Thank you, Chairman. We haven't had a go-round on financial stability since January. And at that time, that reminded us of an old Western, *The Lucky Texan*, starring John Wayne, who looked out and said, "It's quiet out there. Too quiet." [Laughter]

Now, I have to admit, I stole that line from Andreas Lehnert. We were exchanging our favorite movie lines. My favorite movie line, unfortunately, is from *Trading Places*, in which Dan Aykroyd keeps protesting, "It wasn't heroin. It was PCP." [Laughter] But I couldn't figure out any way to get that into the framework. [Laughter]

But, at that moment, the very low levels of volatility, obviously, were remarkable. And then, just as in *The Lucky Texan*, no sooner were the words uttered then came the ambush from the Clanton Gang. So investors that were betting on declines in volatility took significant losses. Attention was focused on the exchange-traded products that lost effectively all of their value in a single day. And then the mechanical rebalancing of those products amplified the rise in volatility. But, at the end of the day, only about \$5 billion was invested in those products. So the second-round effects coming from all of that were relatively muted. And, at the end of the day, I suppose it's not surprising that those second-round effects have not gone terribly far, because, at the end of the day, we haven't had much net revaluation. Asset valuations are still relatively high.

So what did all of that noise do to investor appetite for risk? We can go back and look at the surveys that Bob Shiller has been sending out to investors since 1987, and all of that's routinely summarized in what the Yale SOM puts out—its stock market confidence indexes. Among institutional investors, the percent reporting that they think the stock market is going to be higher in a year's time, which was 80 percent a year ago, is now at 63 percent. But that has been a steady decline. There wasn't really much change after the market volatility in February, suggesting that it didn't really fundamentally change the institutional investor's outlook. For retail investors, the story is a little different. Their confidence peaked at about 71 percent in January, and it has now fallen very dramatically to 62 percent, essentially as a result of the volatility. That sounds about right to me. Professional money managers were quietly ebullient a year ago, and they've been growing more cautious. Households, who appear to have been the ones who are primarily buying these volatility-linked ETFs, reacted a bit more. More broadly, we've been seeing a trend towards increased caution. Banks began tightening standards on CRE loans back in 2016. IPO volume is solidly in the middle of the range. The deep junk share of newly issued high-yield corporate bonds has been falling.

So, on balance, investors continue to have an elevated appetite for risky products, but none of the preceding facts suggests the signs of a self-fulfilling, speculative cycle where assets are being purchased on the expectation that you can sell them to a greater fool next year.

When investors have a strong appetite for risk, the financial system usually finds a way to satisfy it. So what are we seeing when it comes to borrowing? First, the relatively straightforward case of the household sector: Some signs of excessive borrowing—default rates on subprime auto and credit card loans have been rising a little bit, and student loan debt outstanding has continued to grow. But, overall, the picture doesn't suggest building financial

imbalances in the household sector. Only recently did debt growth in the household sector actually match income growth, finally. In addition, effectively all of the debt that's being added in the household sector is among borrowers who have very strong credit histories.

Of greater concern is the business sector, I think. In this recovery—as everyone here knows, there initially was a rapid increase in business borrowing that tailed off around 2015, but it left the sector quite leveraged. The ratio of corporate debt to GDP is at the upper end of its historical range. It's near levels that were reached in 2008, in the late 1990s, and in the late 1980s. The ratio of debt to assets is at a 20-year high. This leverage has been particularly true among speculative-grade, unrated firms. And, with investor risk appetite still high, conditions are in place that would permit a rapid reacceleration in debt growth among those firms. That said, the limited data we have over the past few months doesn't show a massive increase in lending in this sector. It's something to monitor in coming months. But this level of indebtedness is something that has existed for a while.

So what are the consequences of that business sector leverage? Even if you haven't had an acceleration of it recently, obviously, despite the historically high debt-to-income ratio, interest expense burdens are actually quite low, because rates have been so low. So if rates were to rise suddenly, loans would reprice upwards. Some of the staff work that has been done suggests that that shock wouldn't result in a particularly high level of interest expenses because interest rates are currently so low and because a substantial portion of the debt is fixed rate, mostly in the form of bonds.

If rates did rise against the backdrop of, particularly, an improving economy, I don't think we should expect to see a material amount of distress there. Of greater concern would be how would businesses react to a drop in their actual or projected revenues with such high debt

loads, right? Obviously, it's not unreasonable that they would pull back on investment or on their hiring plans more than would otherwise be the case. We might be surprised by the strength of that movement. And, certainly, it's likely that credit losses should be set to rise. High-yield bond default rates were unusually low at last year-end. So, if nothing else, just going back to the mean would mean that they ought to rise from where they are.

It's plausible that credit losses on loans to businesses would be higher than expected in a future downturn. And if the resulting surge in defaults was to some extent unanticipated, you would expect risk premiums on bonds and loans to widen as well, resulting in larger mark-to-market losses.

So the natural question, then, finally, is the extent to which financial institutions are exposed to outsized losses on loans to businesses. If those losses were to threaten their solvency, they might withdraw more than they otherwise would from the sector, resulting in a liquidity crunch, and cause an even more severe downtown. In that connection, banks appear well positioned to handle losses that would occur in a major business downturn. This year's stress test, for example—which both Governor Brainard and I talked about in our previous discussion of financial stability—effectively contemplates such an outcome. Stock prices, equity volatility, and corporate bond yields in the stress test hit levels that were last seen in 2009. Participating banks should be sufficiently capitalized against stress emanating from the business sector, so they won't be forced to curtail lending or pull back on other activities such as market making.

I should also mention what I see as the financial stability consequences of the recent actions on bank capital that the Board took: our stress capital buffer proposal and the proposed recalibration of the enhanced supplemental leverage ratio applicable to the largest banks. Some of you may have noticed that, with the leverage ratio action in particular, we managed to bring

off the singular feat of uniting the *Wall Street Journal* editorial page and Elizabeth Warren into pulsing harmony. Was she the singing coloratura above, like the Queen of the Night from *The Magic Flute*? I view these actions, however, as having important long-term benefits and as being cyclically neutral. So the stress capital buffer would combine our stress capital regime and our point-in-time capital regime in a way that results in a material simplification and, thus, a reduction in the administrative burden of the whole system of capital regulation without any material reduction in the level of capital. Some of our largest banks would actually have slightly higher capital levels. Some banks a tier below that would have slightly lower levels. Nevertheless, the change would be capital-neutral to the system as a whole.

The proposed change to the supplementary leverage ratio, or SLR, has a different type of benefit. As many of you know, our initial calibration of that capital requirement, which was applicable only to our largest banks, was materially higher than the Basel standard, about twice the level in much of the rest of the world. That had the result of making it the binding capital restraint for some of our largest banks. And a leverage ratio is an important backstop to the inevitable idiosyncrasies and misjudgments in any risk-based regime. But when it ceases being a backstop and becomes the effectively binding ratio, we have created a regulatory incentive for the system to add risk because we've told the regulatory institution your capital cost will be the same whether your asset is risky or safe, so they have an incentive to seek return without regard to risk.

The adjustment we proposed brought the enhanced supplementary leverage ratio, or eSLR, which is our third leverage ratio, into alignment with the Basel standard, returned it to being an effective backstop, and did so without a material reduction in capital in the system overall. The staff estimate is that the proposal would allow out of the banking system

\$400 million across all of our largest banks, which is 0.04 percent of the roughly \$1 trillion in capital that these banks had at the end of September. So it's really kind of the platonic ideal of policymaking. We had an important alignment of incentives without any reduction in the overall level of capital in the system.

In conclusion, on balance, the events of the past few months may have left the financial system actually slightly stronger. The volatility that greeted the Chairman on his first day on the job appears to have had the salutary effect of breaking a period of unnatural quiet, without an ambush by the Clanton Gang.

The business sector remains quite leveraged, and its balance sheet, if it doesn't improve before any future downturn, will expose investors to larger losses. However, while the financial system is exposed, it ought to be able to absorb such an outcome. But that would inevitably be difficult, and we should all be watching developments.

CHAIRMAN POWELL. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Chair Powell. At our previous financial stability discussion, I raised the issue of whether the countercyclical capital buffer should be set at zero, under current financial conditions. After the meeting, several staff members pointed out, quite correctly, that under the current weighting of risks, zero was appropriate and asked what I thought should be weighed differently.

Our current criteria place significant weight on the current amount of capital in banks, with little weight on how well positioned fiscal and monetary policies are to react to a negative shock. The last crisis was mitigated by substantial fiscal measures that significantly raised the debt-to-GDP ratio. In addition, because equilibrium real interest rates were higher, the Fed had more flexibility to lower rates than we have now. With reduced fiscal and monetary buffers

currently available, a greater weight for economic stabilization should be borne by regulatory buffers.

One of the principles set out by the FPC in the United Kingdom is that in a standard risk environment, a countercyclical capital buffer of 1 percent is consistent with the FPC moving the buffer up before risks become elevated. Following a standard closer to that used in the United Kingdom has the benefit of making it easier to lower the capital buffer as needed to help offset the effects of an adverse shock, consistent with good macroprudential policy, while still making sure that microprudential solvency standards are also met. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Chairman Powell. I just want to comment on one narrow question, which has come up—and it came up in our previous meeting—about whether there is still a significant risk of a February-type, quant-driven selloff happening in the markets. My own view of the most likely case is that the probability of this has actually been reduced, and I'll just go through a few reasons why. Then I'll go through the opposing view.

Obviously, as we talked in January, what happened in February came as a result of 15 months of historically low leverage. And, unfortunately, a lot of these vol-targeting funds and other forms of risk parity had been built up. As we sit here now, volatility is now persistently higher, and I think much more in line with what we would normally experience. In addition, the short end of the curve is now a viable investment option. It is even more so than it was in January because rates have moved up. Some of that is because of anticipation of the Fed. I think some of it is because of anticipation of a large amount of short-end supply from the federal government. But, for whatever reason, I think more investors feel they don't have to take risks. They can actually park some money in the two-year and the three-year or even in bills.

Some excess has been wrung out of the system. I think market participants today have a greater appreciation of risk. And on the basis of what I hear from those in the market who use models and look at vol-targeting funds based on data they can glean, it looks like vol-targeting funds and variations of it are less invested than they were in January, and they have somewhat less leverage on than they did in January. And, because of that, they believe the potential for selling is in fact quantitatively less than it was in January and early February. So that's the good news, and we may look back and say February, therefore, was a blessing; everything that happened was healthy, and it makes it less likely to happen.

There is an opposing view held by some people whose opinions I respect in the market who still believe that February instead was coming attractions, that while VIX products—as Governor Quarles said—were washed out, risk parity, vol-targeting shortfall, and other embedded leverage in the financial system are still alive and well out there. And they point out that a deeper selloff in February—if there had been another leg down and a little bit higher or persistent spike in vol—would have led to a lot more selling than what we saw. They warn that this bigger wave could be coming in the future, and they remind everyone that vol targeting and other derivations of it—risk parity—are linear on the upside and exponential in terms of selling on the downside, much like a put would be or we experienced with CDS in 2008 and 2009.

Whatever the arguments are, I do think we're probably in better shape. The one thing I do have conviction about is we don't know exactly what we don't know. And the smarter the people I talk to, the more I realize what we don't know. We don't know what we don't know. The data on the nonbank financial system—the shadow system—aren't great. There is no stress testing in the shadow system. We know we can see debt, but derivatives positions are often netted, and, unless there is a stress scenario, you can't see how much is out there.

So the only comment on all of this that I would make is we would be wise not to rely just on data. We should continue to be vigilant, and I think—as I said in the January meeting—phone calls and system checks have never been more important. Going around and making calls to participants in the market, to hedge funds, and to other people we respect will be continually important from here on, just to get a sense of what’s going on, because, honestly, the smartest people that I talk to in the market think we’re in better shape, but they’re not sure. We’d be wise to be vigilant and run a little scared on this and keep making checks in the months and even years ahead. Thank you.

CHAIRMAN POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. First, I want to thank the staff, because I find their diligence in focusing our attention on some of these vulnerabilities is useful.

I have just a couple of observations. I agree with the staff that while a number of the factors look like they’re going to support a continued expansion, but—I think, looking at some of the underlying credit dynamics could be pointing us to growing pressures about a turn in the credit cycle. One of the things I see as evidence of this on a small scale in my own region is the rise in liquidity risk in community banks. Clearly, this is unlikely to be a systemic risk issue for the broader economy, but it does point to conditions that look similar to past credit cycles. By that, I look at the robust loan growth going on right now: The average community bank loan portfolio has been increasing more than 8 percent a year over the past three years. But deposit growth is not keeping pace, which means that these banks have a growing reliance on things like listing service deposits, broker deposits, or Home Loan Bank advances. Of particular concern is that an increasing number of these institutions with elevated liquidity risk profiles also have asset concentrations in higher risk loan categories like commercial real estate and ag loans. This

vulnerability has the potential to magnify stress in a downturn, especially in our smaller rural communities.

In terms of issues that affect the broader financial system, several of these points have been noted. The long, steady economic expansion has increased investor appetite for risk. The extended period of low interest rates has encouraged investors to reach for yield. And this combination has generated strong investor demand for commercial real estate investments, high-yield bonds, and leveraged loans. Strong investor demand stimulated credit flows to risky borrowers, which has been facilitated by weaker underwriting standards. These credit flows have pushed values of CRE, leveraged loans, and high-yield bonds to very high levels and increased leverage in the nonfinancial corporate sector.

The staff memo on assessing vulnerabilities in nonfinancial corporate credit finds losses in the moderate-to-notable range, depending on the stress scenario, yet those simulations are not likely to account fully for possible reactions of other market actors. If initial losses lead to market uncertainty, increased risk aversion, and a general retreat by market participants, the losses experienced by banks, nonbank lenders, and investors could be substantially higher. Given that, I think we should be particularly mindful of these vulnerabilities as bank regulators entertain a recalibration and relaxation of capital requirements for the largest banks. Allowing G-SIBs to increase their leverage in the face of these risks warrants caution, knowing that history reminds us that the value of building countercyclical buffers now will not be apparent until the next downturn. Thank you.

CHAIRMAN POWELL. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. As we just heard, our scan of financial vulnerabilities suggests risks are elevated in two areas, and there is a particular overlap in the corporate sector.

First, even after taking into account recent market volatility, asset valuations across a range of markets remain elevated relative to a variety of historical norms. If—as we just discussed—the currently prevailing Treasury security term premiums, which are very low relative to historical values, were to experience a snapback, the effect on asset valuations would likely be very far reaching. Second, corporate bond yields remain very low. Spreads on junk bonds and on leveraged loans, particularly, are near the low end of their historical range, and prices of multifamily residential and industrial CRE have risen, while capitalization rates are at historical lows. Related to this, the debt-to-income ratio of the nonfinancial business sector is now at the upper end of its historical distribution, and net leverage at speculative-grade firms is especially elevated.

As we've seen in previous cycles, unexpected negative shocks to earnings, in combination with increased interest rates, could quickly lead to rising levels of delinquencies among these borrowers and related stresses to some bank's balance sheets. The staff's stress test of corporate balance sheets highlights some of these possible vulnerabilities in transmission channels. Despite these risks, overall vulnerabilities are assessed to be moderate, and that assessment rests, in great measure, on our regulatory and supervisory framework that was put in place post-crisis.

In particular, the capital and liquidity buffers that our financial institutions have built are key bulwarks in the resilience of our system. Not only do our largest firms now have the right kind and amount of liquidity calibrated to their funding needs and their likely run risk, but they are also required to know where it is and to ensure it's positioned or readily accessible where it's most likely to be needed at moments of stress, which was not the case pre-crisis.

In parallel, the quality of capital has improved, with a focus on the most loss-absorbing type, which is common equity, and the quantum of capital has increased through higher minimum requirements and new capital conservation and G-SIB buffers. And, of course, our annual stress tests increase the ability of these banks to absorb losses and continue to lend during times of stress. My reading is that the improvement in regulatory buffers has contributed to the international competitiveness and strength of the U.S. banking system. Over recent years, bank lending has been healthy, and profits are strong by any measure.

Against the backdrop of stretched asset valuations, sizable fiscal stimulus is likely to reinforce cyclical pressures at a time when we're at above-trend economic growth and resource utilization is tightening. History suggests that a booming economy can lead to a relaxation in lending standards and an attendant increase in risky debt levels. If we've learned anything from the past, it's that we must be especially vigilant about the health of our financial system in good times, when potential vulnerabilities may be building. We need to be thinking about resilience through the cycle. While there is a natural tendency to question the need for thick capital buffers when times are good, the severe costs associated with not having those buffers to absorb losses become all too evident in a downturn, when it's too late to start building them. For that reason, I'm quite reluctant to see our large banking institutions releasing the capital buffers they've built over the past few years.

In fact, if financial vulnerabilities were to broaden, it may become appropriate to ask the largest banking organizations to safeguard an additional margin of capital as a countercyclical buffer. This would help to sustain their resilience when there is an elevated risk of above-normal losses, which often follows periods of rapid asset price appreciation and credit growth. And, of course, if the economy were subsequently to weaken, this buffer would be available to release in

order to support lending when it is actually most needed. With regard to monetary policy, countercyclical capital requirements can also be seen as leaning against rising risks at a time when the degree of monetary tightening that would be needed to achieve the same goal could be inconsistent with our dual-mandate goals. In addition, unlike monetary policy, countercyclical buffers build resilience. So for all of these reasons, I think this is a topic to which we should return if the economy evolves as we expect. Thank you.

CHAIRMAN POWELL. Thank you. If there are no further comments on financial stability, why don't we have a well-earned coffee break, which will end precisely at 20 minutes after 3:00 p.m. Thank you.

[Coffee break]

CHAIRMAN POWELL. Okay. Let's go ahead and start our economic go-round, starting with President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. Incoming data confirm that the economic expansion is very strong. Job growth has been running at an extraordinary pace. Consumer and business confidence is high. Even the fear of a first-quarter pothole in GDP growth didn't materialize.

And there is good news in nominal wage growth, too. Friday's employment cost index release puts the four-quarter change in total compensation at 2.7 percent and on a clear upward trajectory. Looking ahead, several factors will continue to juice the economy, including the double dose of fiscal stimulus, solid global growth, and supportive financial conditions. I expect GDP growth this year and next to average about 2½ percent, well above potential. As a result, I see the unemployment rate drifting down to 3½ percent next year.

With all of this good news, I made an extra effort to look for signs belying these days of wine and roses. Sifting through the data, one discordant note is gross domestic income, or GDI, which has been lagging behind GDP growth for some time now. For example, during the second half of last year, annualized growth of GDI fell short of that of real GDP growth by more than 1¼ percentage points. And this discrepancy is particularly noteworthy because of past research by Board staff and others. The GDI may be the more reliable indicator of underlying economic conditions. Specifically, in the past, a shortfall of GDI growth relative to GDP often correctly predicted that the GDP number would be revised down later on.

So my staff took another look at the signaling properties of GDI, and they found that since the Great Recession, this predictive advantage of GDI has almost completely disappeared. In the current expansion, GDI has provided little help in forecasting later vintages of GDP. Moreover, in an out-of-sample forecast horserace—the focus on the recent period—GDP has been better than GDI at forecasting other measures of activity such as the unemployment rate. I conclude from this analysis that one shouldn't take too much signal from the soft GDI data, and that the strength we are seeing across a broad set of indicators is painting an accurate picture.

This conclusion is echoed in reports received from my contacts. Throughout the District, businesses are reporting robust growth and ever-tightening labor markets. Indeed, some firms noted that worker shortages have become a binding constraint. Now I know that at our own bank we have numerous openings posted for jobs ranging from IT to police services and the CEO. [Laughter] Along with the high level of job vacancies nationally, we are also seeing the duration of vacancies rise. That is, it's taking longer and longer to find suitable workers. This delay is lengthening despite the fact that much more effort and resources are being expended to fill open

positions. Such difficulties in finding workers has led some of my contacts to worry about the sustainability of the current pace of economic growth.

The Tealbook alternative simulation on supply constraints illustrates some of the potential implications of this concern. And I should mention that the Board briefing on this topic was very helpful in describing the scenario. Although I view the Okun's law deviations implied by the simulation—that is, very strong output growth with an unchanging unemployment rate—as unlikely, this scenario does serve as a useful reminder that a prolonged period of significant overshooting full employment can produce bottlenecks and put unwanted upward pressure on inflation.

Staying on the topic of inflation, I'm reminded of the quote by Winston Churchill, who as a young man described a battlefield by saying, "Nothing in life is so exhilarating as to be shot at without result." We have dodged last year's low-inflation bullet. I don't know whether I should be breathing a sigh of relief or just counting my blessings that last year's downside surprises have indeed proved to be transitory. But what's important is that, for all intents and purposes, with the 12-month core inflation rate at 1.9 percent and headline at 2 percent, we are now, in fact, closing in on our 2 percent inflation target. And I expect core inflation to soon reach and then to modestly exceed our target for the next few years, and I view the risks to this forecast as balanced.

Finally, to set the stage for my discussion tomorrow of monetary policy, I think it's useful to compare our current outlook with the one we had one year ago. According to the median SEP numbers of March 2017, we were then anticipating that real GDP growth would average about 2 percent in 2018 and 2019. This March, the median SEP numbers showed substantially faster real GDP growth, averaging about 2½ percent. In keeping with faster

growth, the path of the unemployment rate has come down significantly. Last March, the median SEP put the unemployment rate at 4½ percent at the end of 2019. In the latest projection, it was 3.6 percent—a downward revision of nearly a full percentage point, with only a small portion of that explained by a lower estimate of the long-run unemployment rate.

The “takeaway” is that we now project that the economy in 2018 will run substantially “hotter” than we did a year ago. In contrast to the inflation outlook for this year, next year is little changed from a year ago. We expect inflation very near our 2 percent goal, a projection now confirmed by the data. Despite substantially faster growth, considerably lower unemployment, and an essentially unchanged future inflation path, the median path for the federal funds rate is almost identical to that of last March. And I will return to this topic of data dependence, or lack thereof, in our policy discussion tomorrow. Thank you.

CHAIRMAN POWELL. Thank you. Governor Quarles.

MR. QUARLES. Thank you, Mr. Chairman. I had a fairly optimistic outlook when we last met. Nothing in the past six weeks has much changed that view. Inflation remains toward our target, and unemployment is unchanged near multidecade lows. The economy is in as good a place as it’s been for a long time.

Most people expected a first-quarter dip in real GDP growth. Even that was shallower than the staff or the markets were expecting. Growth is strong, but not so strong that you’ve got concerns of overheating being ignited. The unemployment rate hasn’t moved for months. Inflation, while almost to target, hasn’t shown clear upward momentum. Financial conditions have tightened a little bit since our previous meeting, but not in a way that’s really particularly surprising. The dollar has strengthened a bit. That’s less unexpected than its decline over much of the past year. Higher bond yields likely reflect expectations of strong economic growth as

well as the firming of inflation expectations, and they are unlikely to provide much of a drag on economic activity.

With the March inflation data, we can finally start putting behind us the one-time drop in the price of mobile telephone services. Core PCE inflation was 1.9 percent in March. It's now clear that the weakness of inflation through much of 2017 was, in fact, due to transitory factors. While the upward pressure on prices seems fairly well contained, I obviously acknowledge the risk that in a tight economy, supply constraints could create a kink in the Phillips curve, which is a feature, even if it's only a minor component, of the staff forecast, and a possibility explored with greater severity in an alternative scenario in the Risks and Uncertainty section of the Tealbook. However, I think that a kink like that, while it's a possibility, is not a reality. Nominal wage growth has picked up as expected with the tightening of the labor market. The employment cost index increased at the fastest pace in a decade in this past quarter, but this pickup follows a decade of the weakest wage growth on record, and increases in the index remain at a pace that's still far below its pre-crisis norm.

Another alternative scenario in the Tealbook that I found interesting was the hysteresis scenario that, in some ways, bookends the supply constraint scenario. Obviously, in that scenario, a tight economy elicits additional supply through increased labor force participation and a downward push to the natural rate of unemployment, loosening constraints rather than tightening them. Which world do we live in? I don't know. Maybe neither.

We should be watching for a sharper increase in price pressures as a signal of binding constraints, but, at the same time, we should acknowledge our uncertainty regarding the natural rate of unemployment as well as the potential capacity of the economy. Again, I thought that the work that we talked about at the last meeting regarding changes in the educational attainment

of the workforce and the potential effect of that on the natural rate of unemployment is quite interesting and potentially quite a material change.

So while my estimate is, I think, the same as most others' in the SEP, at about 4½ percent, I have a very big confidence interval around that. And this uncertainty is all the more acute as the changes introduced by the tax bill work their way through the economy.

Thank you.

CHAIRMAN POWELL. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chair. Little has changed in my economic outlook since the previous meeting. The pause I was expecting in the first quarter was less pronounced than I anticipated, and Q1 GDP growth was faster than my estimate of potential growth. Like the Tealbook and most private-sector forecasters, I continue to assume that real GDP for the remainder of this year and all of next year will grow more rapidly than potential GDP, in part because of highly stimulative fiscal policy and only gradual tightening of monetary policy. As a result, I expect labor markets to tighten further, with the unemployment rate falling about ½ percentage point. With inflation likely to be at our 2 percent target but the unemployment rate more than a full percentage point below my estimate of full employment, we will be testing the limits of running a tight labor market economy.

Are the low unemployment rates that both the Tealbook and I are expecting sustainable? There has been a great deal of discussion about whether the unemployment rate accurately reflects the true degree of labor market slack—about whether the low labor force participation rate, which is more than 3 percentage points below its level before the financial crisis, indicates much more labor market slack. As is well known, much of the decline in participation is a consequence of the demographic changes in the workforce. These demographic trends are

significant, and typical estimates suggest that the effective aging would, by itself, lower the aggregate labor force participation rate 80 basis points over the next three years.

My staff has looked at how responsive labor force participation rates have been to tightening labor markets historically and during this recovery. Using state-level panel data as well as labor force reentry data across states, they find that prime-age males show little to no cyclical rebound in participation. Older workers tend to postpone their retirement, but the largest response usually comes from young workers. Relying heavily on a cyclical rebound in the participation of the very young might not correspond well to the kind of labor market improvements we would hope for in running a tight labor market economy. Overall, work by my staff indicates that, on account of the significant downward pull on participation and the aging of the workforce, even keeping the aggregate labor force participation rate constant may be a challenge. If we do see more entrants to the labor force, they may well be primarily younger workers entering the workforce prematurely or temporarily.

Of course, tight labor markets may also lead to a more restive workforce. Recent examples include strikes and ballot initiatives for better working conditions by nurses in Boston and strikes of public school teachers in many states. Both of these examples indicate that the current tight labor markets lead workers to believe this is an ideal time to demand higher wages and benefits.

As for our leading measures of wages and compensation, the rates of increase in the ECI and average hourly earnings are not alarming, but they have risen roughly 75 basis points over the past three years. In this regard, it might be instructive to consider the last time we surpassed full employment in a tightening cycle. We began raising the funds rate from 1 percent in June 2004, when the unemployment rate was 5.6 percent and average hourly earnings were increasing

at a 2 percent rate over the preceding 12 months. Two years later, average hourly earnings were growing at a 4 percent clip, a significant increase in wage pressures in a fairly short time. At this point, we were also at the high point of our tightening. Inflation had also risen above 2 percent. It almost goes without saying that the episode did not end well.

No two recoveries are the same, but we should not assume that the recent quiescence of wages means they will not, at some point, respond strongly to tight labor markets—and possibly do so relatively soon. We have little recent experience running the labor market as tight as I expect we will see over the next two years.

Prudent risk management would argue for a regular increase in interest rates likely to a level noticeably above our estimates of the equilibrium rate. Such a strategy would gradually guide us back closer to the natural rate, provide some insurance against more pronounced and rapid wage increases that might be expected to accompany such tight labor markets, and increase the probability of a sustained recovery. But as recent volatility highlights, if markets become convinced that labor market pressures are not sustainable and that wages and prices will rise more than we have seen of late, they may anticipate a more vigorous monetary policy response, and financial markets could begin to look a bit more disorderly. At that time, it is likely that reaching-for-yield strategies that were advantageous in the good times will start to look less advantageous, possibly generating losses in unexpected places as markets reverse. Thus, we should not only be concerned with whether labor markets generate wage and price pressures, but also whether such tight labor markets reflect more fundamental macroeconomic imbalances that will eventually become apparent in financial markets and exacerbate the negative effect on the real economy. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. The comments received from my directors and other contacts about economic activity continue to be upbeat, and their reports regarding wages and prices point to a further welcome pickup in aggregate inflationary pressures. In general, the manufacturing sector continues to benefit from strong global cap-ex. One of my directors with a global reach noted that while he had seen a first-quarter slowdown in the United States, Europe, and the Asia Pacific region, the slowing was expected to be temporary. He also indicated that uncertainty over international trade policy was generating a lot of talk. However, to date he hadn't seen any precautionary pullback in spending.

I didn't hear much commentary about softness in consumer spending, despite the first-quarter NIPA data. Indeed, my Discover Financial director indicated that the firm's numbers continued to be quite strong. Automakers seem comfortable with their sales outlook. Ford's forecast of light vehicle sales in 2018 is about 17 million. This is down marginally from last year, but it's still at a rate most in the industry see as a healthy, sustainable pace.

Labor markets, obviously, are tight. I heard the usual litany of stories regarding shortages of workers as well as a few more reports of large wage increases. These covered both entry-level and higher-skilled manufacturing positions, skilled workers in the construction trades, and truck drivers. In Chicago, local demand is quite strong. My director, who's the president of the Chicago Federation of Labor, keeps close track of the building crane count in Chicago. In 2017, it was 61 cranes, an all-time Chicago record, and 2018 is looking quite solid as well. So there will be continued strong demand for skilled construction workers. Still, it's not obvious yet that labor markets are overheating. Notably, Manpower, which has a broad line of sight into labor demand, reported only a modest pickup in wage growth and that the increase was less than

they would have expected, given other labor market indicators. This seems in line with the aggregate wage statistics, even with the pickup in the ECI last quarter.

I heard numerous reports of higher nonlabor input costs. Tariffs and strong demand have led to a further increase in industrial materials prices. There's also been an increase in shipping costs. For some time, we've been hearing that it's hard for manufacturers to get trucking companies to ship their products promptly. This round, one of the large equipment manufacturers told me that they finally bit the bullet and started paying a 30 percent premium for shipping—just as you would expect, right? Now they have the trucking capacity that they need. Another major manufacturer also told me that most companies are now paying up to ensure delivery of critical products. I continue to hear a range of comments regarding the ability of firms to pass through cost increases to their customers. So there still is uncertainty about the strength of businesses' pricing power. That said, there were more reports this time of dollar-for-dollar pass-through of materials cost as well as some firms realizing even broader price increases. So my sense is that, in the aggregate, we are seeing a modest increase in pricing power.

For the national outlook, we haven't changed our views about economic growth since our March SEP submission, which had real GDP increasing 3 percent in 2018, 2½ percent in 2019, and 1¾ percent in 2020. And we're still projecting that the unemployment rate will drop to near 3½ percent by late 2018 and stay there through 2020. This is a percentage point below our estimate of the natural rate of unemployment. On balance, the incoming data on inflation have been positive. As expected, year-over-year inflation stepped up as the ugly March 2017 data fell out of the calculation, and the anecdotes I just mentioned are consistent with a modest increase in

inflationary pressure. So all in all, I'm feeling more confident that we are on a trajectory to achieve our symmetric 2 percent objective. This is good news.

I'm still concerned, though, that inflation expectations remain somewhat below levels consistent with our symmetric 2 percent target. Survey measures have not budged off their lows, and the Chicago bank's term structure models indicate that, at most, 10 of the roughly 50 basis point increase in nominal Treasury rates since last December represent higher expected inflation. So even though we're now just about at 2 percent inflation, I'm not as confident as I'd like to be about the sustainability of this accomplishment. I really won't be comfortable until inflation expectations are more entrenched symmetrically around 2 percent. While the inflation picture is looking much better, I don't think we should declare victory quite yet. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Mester.

MS. MESTER. Thank you, Mr. Chair. Overall, there's been little change in the economic picture of the Fourth District. Business activity continues to improve at a moderate pace. Firms report ongoing difficulty in attracting and retaining workers. Wage pressures remain elevated. Manufacturers, builders, and freight companies are experiencing substantial input price increases and are finding little resistance in passing on price increases to their customers. The level of the Cleveland Fed staff diffusion index measuring the percentage of business contacts reporting better versus worse conditions was 36 in April, essentially unchanged from March. Average readings so far this year are higher than last year and significantly higher than in 2016. Business sentiment remains upbeat. Planned capital expenditures continue on a moderate upward path. Firms continue to cite the tax changes as a spur to investment, although we have not yet seen a strong acceleration.

District labor market conditions have strengthened further since our previous meeting. The District's unemployment rate fell to 4.4 percent in March, its lowest level since 2001 and more than ½ percentage point below its year-ago level. Year-over-year payroll job growth in the District strengthened in March and has been running at about 1 percent since the middle of last year. This is more than double the Cleveland bank staff's 0.4 percent estimate of trend job growth in the District.

Hiring remains a challenge for District firms. They're meeting the challenge in a variety of ways, with varied results. One steel company has added a second shift and is increasing overtime. A freight firm unable to find qualified drivers or diesel mechanics has idled eight trucks despite strong demand. Another freight firm has started its own apprentice program. A staffing firm reported a notable increase in orders in recent months but trouble finding workers to fill the vacancies.

In the midst of this strong demand for labor, wage pressures in the District continue to be elevated. The Cleveland staff's wage diffusion index remains at high levels, and wages are rising in all sectors except the retail sector, in which wages have been steady. Nonlabor input cost pressures remain elevated. Prices of construction materials have risen partly because of the steel, aluminum, and lumber tariffs. Manufacturing contacts in the District reported steel price increases of 25 percent or more. A rising share of firms reports having more success in passing on price increases to their customers.

Regarding the national economy, while consumption spending moderated in the first quarter, overall real GDP growth was somewhat higher than the consensus forecast, and early indicators point to a pickup in growth in the second quarter. There's been little change in my outlook since our previous meeting. I expect above-trend growth, tight labor markets, and

inflation moving back to our 2 percent target over the medium run. The underlying fundamentals of the economy remain favorable, including accommodative monetary and fiscal policies, healthy household balance sheets, rising personal income, and a global economy that's improving overall. The rise in oil prices and increase in the value of the dollar are worth watching, but so far the magnitudes don't suggest they pose much of a downside risk. The tax package and increased federal spending are expected to add to an already healthy level of spending for the second half of the year and next year, though the magnitudes and exact timing are somewhat uncertain. While the tax package contains several provisions that affect the tax treatment of home ownership, I expect activity in the housing sector to continue to expand at a sustainable pace.

Financial market volatility has risen from the very low levels of recent years, but investors seem to be taking it in stride, and firms tell us the volatility has not thwarted their spending plans. There's continued uncertainty surrounding trade, and geopolitical concerns have risen. The cloud created by the trade situation may not pass over quickly—being an “unforced error” in the midst of a healthy economy. The rhetoric suggests an escalation in the probability of reciprocal tariffs on goods traded between the United States and China. Were such tariffs imposed broadly, this would create a meaningful change in the outlook. Assessing the effect on the U.S. macroeconomy will ultimately depend on the actions actually taken by the United States and its trading partners with respect to trade. But even without broad tariffs, continuing uncertainty could cause businesses and investors to reevaluate their outlook for the U.S. economy and alter their spending in the near term. So we need to continue to monitor the situation.

Aside from this downside risk, the underlying strength in the economy is illustrated by the very strong conditions in the labor market, which I expect to continue. The unemployment rate at 4.1 percent is below its lowest point during the previous expansion. I expect it to fall further this year and to remain below 4 percent next year. Over the first three months of the year, average monthly payroll job growth has strengthened to about 200,000 jobs, which is well above most economists' estimates of trend job growth. Wages and broader labor compensation have been increasing over the expansion. The acceleration in the employment cost index over the past two years suggests that the anecdotal reports of firms raising wages to attract and retain workers are now filtering through into the official statistics. Should investment remain strong, we may see stronger productivity growth over time, which should help buoy wages, although that remains to be seen.

Inflation has been firming, with year-over-year total PCE inflation and core PCE inflation rising to 2 percent and 1.9 percent, respectively, in March. Some of the pickup reflects higher commodity prices, and some of the strength is likely to be temporary as low readings of last March drop out of the calculations. To assess where we are relative to goal, it's always a good idea to look through transitory movements in the numbers and focus on where inflation is going on a sustained basis. A variety of models, including the Cleveland Fed staff's BVAR models and the Tealbook, are now forecasting inflation to be at or above 2 percent for a time. The fact that inflation expectations have been broadly stable supports the forecast that inflation will continue to firm.

Conditional on the outlook, the task before monetary policymakers is to calibrate policy to this healthy economy to sustain the expansion. Monetary policy is still accommodative. Real rates are negative even though the economic outlook is strong. The set of simple monetary

policy rules across several forecasts that are available on the Cleveland Fed's external website indicates that policy rates should be rising. Running the rules through updated forecasts gives a median path across the rules and forecasts that is somewhat steeper than the median path in the March Summary of Economic Projections. As the economy strengthens, we want to avoid a buildup in risks to macroeconomic and financial stability. Recent Cleveland Fed staff research suggests that a strategy to overheat the economy in an attempt to pull more people back into the workforce is unlikely to have any lasting effect on labor force participation. Yet overheating would have costs that would necessitate sharper rate increases that could in themselves be destabilizing. At the same time, we also want to avoid raising rates too aggressively, which could potentially curtail the expansion. This takes some careful balancing.

In the current environment, I think there's more risk we'll move rates up too slowly than too quickly, and I continue to think that the path of gradual rate increases, which we've been on for some time, remains appropriate. I think we should communicate this base case as clearly as possible so that the markets continue to place high odds on the gradual policy rate path. Clear communication will help avoid the situation in which market expectations are undermined by news that's irrelevant to the medium-run outlook. Recently, market participants have seemed to react strongly to all sorts of news, so I don't see this as an insignificant risk. I wouldn't want to find ourselves in a situation where we feel somewhat constrained because of changing market expectations, even though the outlook hasn't changed.

Over the remainder of the year, especially at the three remaining press conference meetings, I will be biased toward favoring a further reduction in accommodation if economic data and the medium-run outlook are supportive. That is, the burden of proof will lie on delaying a rate increase, not on taking one. In my view, thinking of the gradual path as a base

case will help prevent us from placing too much emphasis on short-run movements in the data and from getting “behind the curve.” Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President Barkin.

MR. BARKIN. Thanks. I agree with others that we remain on a good path. Output growth is above trend. We have strong employment growth, while unemployment remains historically low and inflation is effectively at our target. From our standpoint, it may well be this is as good as it gets. In that context, I want to emphasize four points. First, while first-quarter consumer spending might not seem as clearly aligned with this story, our contacts assure me that underlying growth in this economy really is strong. Yes, the tariff talk has taken business sentiment down a notch, but it had been euphoric. Our contacts couldn't be clearer that after a softish start to the year, they're seeing real strength. More recent data from the end of the first quarter—for example, industrial production and retail sales—support that our economy has momentum.

Second, while we clearly have labor market tightness, I've spent a lot of time, but I can't yet find the evidence that that tightness is leading to more than moderate wage increases, other than in a few places like trade workers and truck drivers and the like. With inflation expectations anchored and productivity growth apparently limited, businesses are still of a mindset to aggressively work to defend against outsized wage pressure. Our contacts are clearly increasing compensation for entry-level hires, but that only affects a small and targeted segment of their workforce. We do see evidence they are being creative in bringing new profiles into the workforce—for example, one who has relaxed his posture on hiring workers with felony convictions. They're using offshoring and automation as alternatives and are willing to delay filling positions. Where they do see broader pressure, they're attempting to use temporary

measures—for example, one-time bonuses. I'd note, as I understand it, these aren't captured in the hourly wage statistics, and perhaps that helps explain the greater rise we just saw in the ECI.

More fundamentally, with attrition still manageable, they're resisting the need to let increases flow to their greater workforce in ways that would meaningfully move the average. For example, a couple of recent union negotiations in our District resulted in 2 percent annual wage increases over five years. I remember clearly in both the late 1990s and the mid-2000s that attrition rose to levels where businesses like the one I ran had to gulp and take action. We're watching closely to see if and when that happens here but haven't really seen the evidence that it's happening in a broad-based way.

A third point: As Presidents Evans and Mester both said, we are seeing real input cost pressure in multiple places. Some of it's driven by actual and expected tariff increases—for example, steel. Our contacts in that sector tell us that steel beam pricing is up 30 percent since December 1. Some of it is oil price driven—for example, in chemicals—and we've heard of similar pressures in linerboard, caustic soda, and pulp. And, of course, notably, we see increase in freight prices and challenges in trucker availability with its corresponding pressure on supply chains.

Finally, while price inflation is now at target, I still don't have any sense it's about to take off in a much more significant way. Despite input cost pressures, I view pricing as more expectations driven than cost driven, as I discussed in March. Our policies are keeping expectations anchored, and customers are not receptive to outsized price increases without a visible driver. That driver is there in the commodity industries I just discussed, but not in the consumer-facing sector in which price transparency and buyer power really matter. Likewise, that driver seems to be absent in areas such as utilities in which, as I discussed in January, part of

the tax cut is being passed on to consumers. Net–net, our economy has real strength and momentum, which I believe is helping keep inflation firm. We’ve also embedded a set of expectations that I believe will keep it manageable.

CHAIRMAN POWELL. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. Although intermeeting indicators of real economic activity have been somewhat on the soft side and financial conditions have tightened a bit, my outlook for the remainder of the year remains broadly unchanged. Nonetheless, there are uncertainties that could complicate our task in both directions. In particular, it’s hard to assess the likely course of trade policy and the extent to which markets are pricing in the risks. In addition, we have little historical experience with procyclical fiscal stimulus of the magnitude expected in the near term, and there is some uncertainty about its path in the medium term and beyond.

As of Friday, real GDP was estimated to have grown at an annual rate of 2.3 percent in the first quarter. This is quite a respectable pace considering the residual seasonality that has clouded first-quarter growth readings in recent years. While consumption posted anemic growth of 1.1 percent, which was a sharp step-down from the fourth-quarter pace, business investment continued last year’s impressive gains. And, of course, the report was quite strong and above expectations on net exports.

Fundamentally, intermeeting developments didn’t change the outlook, in my view. I expect the slowdown in consumer spending growth to prove transitory, as the fundamentals facing households remain quite positive. Consumer confidence remains very high, and employment prospects remain bright.

Although payroll employment rose only about 100,000 in March, the picture looks stronger for the first quarter as a whole, with payroll gains averaging 200,000 per month and the employment-to-population ratio moving up. The unemployment rate has now remained flat at 4.1 percent for six consecutive months. While that's below most estimates of the natural rate, this could reflect, in part, changes in the educational attainment of the workforce. Other measures of labor market utilization, such as the prime-age EPOP ratio, remain notably lower than their pre-crisis levels, although, as I noted, they're starting to move up.

While it's difficult to know with precision how much slack still remains, Friday's reading on the employment cost index provides some evidence that labor markets are tightening and wages are accelerating, albeit at a measured pace. The first-quarter reading on the trailing 12-month change was 2.8 percent, up from 2.3 percent in the year-earlier period. By comparison, in the years before the financial crisis, the ECI rose at an annual rate of a bit more than 3 percent on average. In the period ahead, I will be looking for confirmation in other measures of nominal wage growth that labor market tightness is finally feeding through to broadening wage gains. In particular, the latest readings on gains in both average hourly earnings and the Atlanta Fed wage tracker remain in the range of recent years, and I would expect those also to show some acceleration.

Turning to global factors, foreign growth remained robust overall, although a bit weaker than forecast. Emerging Asian economies, led by China, are likely to post solid gains in the first quarter. Closer to home, Mexico looks likely to post a second consecutive quarter of 3 percent growth, and Canada's real GDP growth is projected to have picked up. But Japan and some European countries look to have grown somewhat less rapidly early this year than we expected. Partly as a result, monetary policies among the advanced economies look likely to be

increasingly divergent. With underlying inflation in the euro zone remaining stubbornly low and first-quarter growth coming in softer than anticipated, the ECB has indicated it will maintain a very prudent course. And in Japan, with inflation continuing to run well below the 2 percent objective, changes to the yield curve control policy and rate hikes seem very remote.

Consistent with these developments, the foreign exchange value of the dollar in real trade-weighted terms is up about $\frac{3}{4}$ percentage point from the March meeting. But, of course, it's still much lower than its 2016 peak. This is part of a broader picture where financial conditions have tightened somewhat during the intermeeting period, moving more in line with the expectation of continued gradual increases in the federal funds rate than we observed for much of last year. In particular, longer-term Treasury yields have risen, and the 10-year yield increased 60 basis points so far and crossed the 3 percent threshold for the first time in four years. Similarly, equity prices are down $1\frac{3}{4}$ percent since March and flat so far this year, but still up nearly 20 percent relative to the end of 2016. On net, even with these recent moves, financial conditions remain quite supportive of aggregate demand.

The latest readings on inflation, as others have noted, have been encouraging. In the March data, the trailing 12-month change in core PCE was 1.9 percent. That was entirely in line with expectations as the depressed readings associated with last spring's cell phone plan changes fell out of the data. We have also seen improvement in market-based measures of inflation compensation with the five-year, five-year-forward moving up 12 basis points in the intermeeting period, although it's still somewhat short of the levels that prevailed in the decade before 2014.

Meanwhile, the Michigan consumer surveys remain range bound at the lower end of historical observations. And some alternative measures of core inflation don't show the same

upward movement that we've seen in core PCE. Even the Dallas Fed's trimmed mean shows that the latest 12-month reading is unchanged from a year earlier. The Tealbook forecast has core PCE inflation at around 2 percent for the year as a whole, and then moving modestly higher. But it's important to note that this forecast relies on a judgmental adjustment to the Phillips curve according to which the responsiveness of inflation rises as the unemployment rate moves further below the natural rate, as well as a judgmental 10 basis point increase in the underlying trend inflation rate over the next two years.

In short, while it's reassuring to see core PCE inflation moving back to target, as well as market-based measures of inflation compensation retracing earlier declines, after seven long years of missing our target and with wages only rising modestly, it would be mistaken to declare victory or materially shift upward our expected path of the policy rate at this point. More broadly, while we can comfortably assess risks to the outlook as roughly balanced, nonetheless, important risks remain on both sides. Turning to the clearest policy risks, trade policy continues to pose a material uncertainty. While targeted trade measures that result in negotiated outcomes should have little effect on the outlook, any broadening dynamic of retaliation and counterretaliation could unsettle equity markets, damp global confidence, and disrupt supply chains, as Beth Anne pointed out earlier.

Second, the staff estimates that fiscal impetus will contribute about $\frac{1}{2}$ percentage point to real GDP growth this year and $\frac{3}{4}$ percentage point next year—and CBO estimates that are similar—coincide with a time when the economy is already close to full employment and growing above its trend rate. It's hard to know with precision how the economy is likely to respond, because there are very few cases of such procyclical fiscal stimulus at similarly high levels of resource utilization. If resource utilization continues to tighten at the rate of the past

year, it could reach levels not seen in several decades—for instance, as is the case in the Tealbook baseline projection. Beyond that, there is substantial uncertainty regarding the likely path of fiscal policy in the medium term, because the recently enacted Bipartisan Budget Act doesn't set appropriation levels for fiscal 2020 and beyond.

While the Tealbook baseline assumes spending continues to rise with inflation, this would require spending legislation to be enacted in the summer or fall of 2019, a tricky time. Furthermore, CBO projections suggest that budget deficits will be high and rising toward 5 percent, which may prompt fiscal fears to be back in focus. There is, therefore, a nontrivial risk of a reduction in fiscal support coming at a time when the economy may be slowing. The implied fiscal impetus in the CBO baseline, for instance, drops from nearly $\frac{3}{4}$ percentage point in 2018 and 2019 to only 0.1 percentage point in 2020. A large increase in fiscal support late in the cycle followed by a sharp withdrawal could present us with a difficult set of crosswinds as we attempt to navigate a soft landing. On the other side, there is quite a bit of likelihood that a large portion of today's fiscal stimulus could be extended, which could raise concerns about fiscal sustainability over time. And, of course, the drawing down of fiscal space during good times creates the risk that there will be less fiscal space to cushion a cyclical downturn in the future—a situation that has very important implications for monetary policy. Thank you.

CHAIRMAN POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Mr. Chairman. The 11th District economy continues to grow at a strong pace. We are expecting Texas job growth in 2018 to exceed 3 percent. This growth is helped by strength in the energy sector but is well diversified across industries. As we have said before, migration of people and firms to Texas continues to be a big part of the 11th District's growth story. The state's unemployment rate now stands at 4 percent, which is very

near the lowest level since data started being recorded in the 1970s. Labor market conditions are clearly tightening, and an increasing percentage of our manufacturing, retail, and service-sector firms that we survey have indicated they are raising wages. However, in follow-up with contacts, it's clear, in our judgment, that it's most pronounced at the low end—that is, \$10 to \$15 an hour—and at the skilled level, and is less pronounced in the middle. I'll come back to that.

Dallas Fed economists expect U.S. crude oil production to grow a million barrels a day in 2018. We've mentioned that forecast before. We think we will end the year in the United States at 11 million barrels per day. We expect, as we have said before, that 70 percent of this production is likely to come from the Permian. We are hearing increasingly that labor shortages are cited at the greatest threat to increased production. Also, industry executives cite the greater discipline that is being demanded by capital providers as another constraint to production growth. We continue to be more confident in our assessments of global daily demand growth. It is now in excess of 1.5 million barrels a day, and we expect that increased shale production will be unable to keep up with global demand growth. Assuming that OPEC continues to maintain production discipline and agreed cuts, we think, as we've said before, oil price risk is to the upside.

Stepping back a bit, we went from a global oversupply situation in 2014 to a current global situation of relative balance, taking into account OPEC supply restrictions. However, Dallas Fed economists and our industry contacts are increasingly of the view that in the next few years we will likely move to a global undersupply situation. The fact that major oil companies have not and are not making meaningful investments in long-lived capital projects and are instead relying on shale investments make this undersupply scenario much more likely. This

situation means that global oil markets are going to be particularly vulnerable to geopolitical shocks and disruptions. Syria, Iran, Iraq, and Venezuela are all examples.

And this all creates oil price risk to the upside. If this risk is realized and oil prices materially increase, it obviously has implications for consumers, inflation, and economic conditions. This story, though, is part of a broader narrative that many of you have mentioned today about rising input costs. Shipping costs are up. Steel costs are up. Aluminum and labor costs are up. The potential for more tariffs could further increase costs. We are talking to more and more companies that are attempting to pass through price increases, but this is an ongoing theme of increasing input costs.

For the U.S. economy, our Dallas Fed economists continue to expect real GDP growth in excess of 2½ percent, but we do continue to expect this growth to moderate in 2019 and move toward potential in 2020, mainly because of aging workforce demographics, continued sluggish productivity due to lagging education and skill levels, and other structural challenges that are likely to create headwinds for economic growth in the medium term.

We continue to believe, though, as most of you have said, that unemployment this year is going to move well below 4 percent. We do believe PCE inflation is going to meet or exceed 2 percent. It is correct that the Dallas trimmed mean now stands at 1.8 percent, which is the same as it was a year ago, but it has been moving up in recent months. We've had an unusual situation. We talk a lot about March 2017 being weak. However, if you go back a year earlier, according to our numbers, April 2016 was unusually strong. So the reason that the Dallas trimmed mean looks like it's the same year over year is that it was artificially strong a year ago. I don't need to go through what happened with March, because we've beat it to death. Our

Dallas trimmed mean has actually been moving up, and we believe even that measure is going to start migrating to 2 percent.

Our contacts emphasize broadly that business spending is strong. They characterize consumer spending, on the other hand, as solid but price sensitive. And the other comment I'm hearing from more and more calls with consumer-facing companies is that they segment their customers between the upper 20 percent and everyone else. There's very healthy growth in the first segment, and, certainly, we see this in luxury brands and anything that caters to upper-income consumers. However, when you talk about the rest, most contacts see those consumers standing pat, spending but not materially increasing their spending, and monitoring their personal leverage. And to explain why consumer spending growth isn't greater in this group, our contacts are guessing that recent trade policy rhetoric, stock market volatility, and overall news volatility may be causing these middle-level consumers to be somewhat more cautious in their spending. They have also posited a view that these consumers are starting to realize that these \$1,000 bonuses they have been receiving in their jobs may well be one-off, and they would be wise to not assume that recent legislation will in fact translate into greater nominal wage growth. There's more skepticism about that, and we may be seeing that belief in consumer spending.

Another comment I'd make is, several public company contacts I talk to—and I've mentioned this before over the past couple of years—are talking as much as ever about the role of activist investors in influencing their decisions to spend on cap-ex, expand capacity, and invest in their workforce versus focusing on cash flow to do mergers, share repurchase, and dividends. As I have mentioned here before, the presence of activists is shortening the time frame of most CEOs. Today, if a company has an extended period of weakness in the share

price, a CEO is likely to find an activist in his or her stock insisting on cost reductions, breakup of the business, increased financial engineering, and the like. This trend, from what I can tell, is intensifying and may help explain why merger activity is so pronounced. Also, technology-enabled disruption, a lack of pricing power, and increasing desire for scale but thin margins fit right into this narrative.

One additional comment: I went with members of my team to China in the past couple of weeks and have a few observations. Number one, U.S. companies doing business in China clearly report stronger domestic competitors. In addition, despite public comments to the contrary, China is continuing to use debt to fuel at least a portion of its economic growth. But more interestingly, the Chinese are—and have been for a number of years—making long-term investments—that I would argue maybe we're not making in the United States—in technology, education of their citizens, and in other steps to improve their global competitiveness. They are also aggressively stepping in around the world to make greater investments and, maybe disturbingly, change global standards to fit their products, moving away from Western standards. While reciprocal tariffs are being publicly discussed, Western companies we met with there are far more concerned with issues related to intellectual property and technology transfer for fear that China is using those properties and technology to improve its global competitiveness dramatically and compete with Western companies around the world and will do so in the years ahead.

Last comment: All of this highlights the potential need for the United States to segment trade relationships. Our trade relationships with Mexico and Canada are very different from our trade relationship with China. And as I've said here before, our research suggests that the Mexico–Canada trading relationships are heavily tilted toward intermediate goods and involve

complex logistics and supply chain arrangements. Our own research suggests that trade with Mexico and Canada helps U.S. companies be more globally competitive and retain jobs. And those jobs, we believe, would otherwise be lost to other parts of the world, particularly to Asia, if we didn't have these relationships. And as we are dealing with the rise of China, strengthening these Northern Hemisphere trading relationships is as important as it has ever been. Maybe it is something we have to prioritize a little more. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Harker.

MR. HARKER. Thank you, Mr. Chair. Over the intermeeting period, economic growth in the Third District has been consistent with trend. Labor markets remain quite healthy, with both current hiring and planned hiring above average rates. Consumption, though, has tapered off, but confidence remains extremely high, and the first-quarter weakness will most likely be temporary. However, we have yet to see much pickup in housing starts or permits in our District, and our District will probably continue to lag the nation on this dimension. Contacts, especially those in manufacturing, continue to be quite upbeat, and I am anticipating at- or above-trend growth over the remainder of the year. The District continues to add jobs at a pace exceeding that of the nation. For example, one health-care provider in the District added more than 1,000 professionals last year, the majority being nurses, and has similar hiring plans for this year. As President Williams can attest, it's good to have a nurse in the family. [Laughter]

This type of strength in our labor market is unusual for our region because our region usually underperforms the nation. However, unemployment rates have remained constant at 4.7 percent as more individuals have been drawn into the labor force. Also, with the exception of manufacturing, we are not seeing any acceleration in wage growth. Regarding manufacturing, contacts remain extremely optimistic, and activity has picked up. The current employment index

in our manufacturing survey is in historically high territory, as is the future employment index. Overall, the general activity index remains solidly in expansionary territory. Bankers in the region report that their business customers are doing well and that the effects of the tax cut have not fully worked their way through the economy. They anticipate that business activity will continue to expand.

A knowledgeable business contact with a broad portfolio of manufactured products reports that activity is robust worldwide, with orders and backlogs up across a wide range of products. To use a technical phrase, he is “almost giddy” with what he is seeing. He states that backlogs are actually at historic highs and quarter two is looking stronger than quarter one, with all signs pointing to an exceptionally strong third quarter as well. And one sign that he brought up in our meeting recently was that he’s running delays in shipments because of these backlogs. Normally, he would get calls with complaints from his customers. His take is, he’s not, because everybody globally is running these delays. All his global competitors are seeing very similar backlogs and the inability to meet the time targets they have set out. At this level of activity, he anticipated midyear price increases in the neighborhood of 3 percent. His firms are raising wages as well in an attempt to put a firewall around employees, particularly IT workers and engineers. With robust growth, those firms cannot afford to lose key employees. Consistent with our contact’s view, our prices received indexes, both current and future, are indicating increased price pressures. Contacts are also reporting additional uncertainty largely due to potential tariffs and retaliations they could provoke. However, as others have said, the uncertainty has not risen to a level where it is significantly affecting their plans yet.

Consumption activity continues to be somewhat lackluster, and the general activity index for services has fallen a tad below average, with both sales and new orders declining. But with

very optimistic consumers, healthy job growth, and rising income, I anticipate this lull to be temporary. Regarding residential housing markets, they have yet to gather significant momentum, and single-family permits have been flat for more than two years. There appear to be severe supply constraints in the housing market, with reports of existing homes remaining on the market for a matter of hours. Inventories of existing homes for sale continue to plummet. Overall, however, the trend in activity remains positive. And due to multifamily construction and renovation, contract values for residential buildings remain at high levels.

To conclude: Growth in the Third District has picked up to or is at, or above, trend levels, and fundamentals remain strong. We anticipate some rebound this quarter, and that is my view of the national economy as well. With the exception of the projected funds rate path, I see little to quibble with in the staff's assessment of the economy in the Tealbook. In addition, I am becoming increasingly confident that inflation will likely exceed our target sometime this year. As my confidence level increases, I will need to reassess my view that only three rate hikes are appropriate for this year. I'll return to those thoughts tomorrow. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chair. Economic conditions in the 10th District remain strong, and our District contacts are generally upbeat about the outlook. Job growth in the District increased in March from a year ago, supported by solid contributions made by states that benefited from a strengthening energy sector. Personal income and wage growth also strengthened in the last quarter of 2017 as wages increased notably in all District states. With the price of oil well above the breakeven price required for profitable drilling among District firms, the number of active drilling rigs in the District is about 20 percent higher than a year ago. Manufacturing has also remained strong in the District despite some concerns about

developments in trade policy. Our District’s manufacturing survey in April showed the strongest activity in its 24-year history, even as respondents noted that input costs have surged alongside significant increases in steel prices. Agriculture, on the other hand, remains the weakest sector in the District economy. Although farm income and credit conditions have continued to stabilize, ongoing cash flow shortages appear to be increasingly weighing on bankers’ decisions to extend credit.

Finally, trade policy concerns continue to be highlighted by our contacts in the District. For example, in the construction industry, contacts report that rising input costs have prompted contract renegotiations, along with the postponement or even cancellation of some projects. In the agricultural sector, recent announcements by China to raise tariffs on key agricultural products have raised concern about U.S. competitiveness in some agricultural markets in the long term, although short-term effects are expected to be relatively small, as trade flows are likely to simply reshuffle in response to changes in tariffs.

Turning to the national economy: My outlook for real GDP growth has changed little since our previous meeting. Despite softness in Q1 consumer spending, the latest data releases point to a rebound in consumption in Q2. And more broadly, households and businesses appear well positioned to support real GDP growth that is at or slightly above the trend rate, accompanied by a tightening labor market and a gradual rise in nominal wage growth. As the labor market tightens and reports of worker shortages grow, I asked my staff to look at the current moderate pace of wage growth for its signal of additional slack in the labor market—whether it’s consistent with broader forces in the economy. One observation comes from the San Francisco Fed’s wage rigidity meter, in which a significant number of workers report that their wages have not been adjusted over the past year. This measure remains at historically high

levels and actually ticked up through most of 2017. Limited or no wage growth for a subset of workers may be related to the low levels of labor productivity growth for the economy during the current expansion. Analysis by my staff suggests that such nominal wage rigidities have persistent effects on wage growth even a year later. Current readings on nominal wage growth, relative to wage rigidity a year ago, are right in line with the historical pattern over the past two decades. Thus, it may not be surprising to see moderate nominal wage growth despite a low unemployment rate.

Finally, I expect year-over-year inflation to reach 2 percent in the current quarter, with some upside risk over the medium term as the momentum for economic growth in the United States and the global economy continues. Whether inflation moves significantly higher over the forecast horizon is difficult to judge. But our District contacts did point to meaningful price pressures in a couple of areas and seem quite confident in their ability to pass these higher prices on to consumers. One source of price pressure is rising shipping costs for both domestic and international transportation. The Harpex shipping index, which tracks worldwide international container shipping rates, has increased rapidly since January. Importantly, these international shipping costs are generally not included in the U.S. import price indexes, but importers can pass changes in shipping costs through to consumers in a manner that affects aggregate price growth.

Research by my staff shows that an increase of 25 percent in the Harpex index, as we have seen this year, can lead to a rise of 15 basis points on core PCE inflation after a year. Similarly, rail and truck transportation costs have also increased, which is consistent with the anecdotes I hear from our District business contacts. The other source of upside risk to inflation comes from rising energy prices. Strong U.S. and global demand have contributed to an increase in oil prices, which have risen more than 25 percent over the past six months. If oil prices

remain at this level or move even higher, these higher energy costs are likely to put upward pressure on core prices in coming periods. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President Bostic.

MR. BOSTIC. Thank you, Mr. Chairman. The accumulated evidence since our previous meeting hasn't been sufficiently far from my expectations to push me off the projections I submitted for the March SEP. Most Sixth District directors and contacts are similarly looking past some of the weaker-than-expected first-quarter data and continue to report activity levels consistent with a moderate pace of output growth.

While my contacts appear to be reasonably satisfied with the current state of the economy, their attitude shifts markedly when asked about the future. Swelling optimism over the tax reform has now been replaced almost completely by concerns and uncertainty regarding the proposed tariffs and the possibility of a trade war. To quote one director, "The bandwidth of unknowns is vastly greater than it used to be."

I had speculated in the previous meeting that the surge in pessimism we saw late in the cycle may just be a reflection of the freshness of the news. My hope was that the negative sentiment would abate quickly. Unfortunately, that does not appear to be the case. If anything, these concerns appear to have escalated, consuming many of the discussions I have had with my contacts. Though there are exceptions, I come away with the sense that, for now, most firms are moving to the sidelines with respect to new cap-ex plans. To quote another director, "Even if all of this trade talk ends up being just noise, noise itself has a tangible cost."

I have gathered little indication that firms are pulling back on investment projects that are already in progress. But investment projects slated for the pipeline have been pushed out. The head of a global logistics and shipping firm noted that the prospect of trade wars has totally

affected his cap-ex plans moving forward over the next 10 years. He indicated that planning that had already been under way for capital expansion to meet a rise in global demand has all but completely halted. All of this is fully consistent with the model presented by Beth Anne showing a market response, even if no trade war comes to pass. This already appears to be happening in some circles.

On the consumer spending front, I, like the Board staff, am tempted to chalk up most of the weakness in the recent data to payback after a strong Q4. However, I received few, if any, reports of a noticeable acceleration in consumer spending attributable to the tax cuts. Retailers generally report steady sales growth overall, but our anecdotal reports are consistent with the survey data out of the New York Fed indicating that consumer expectations on future spending growth are relatively flat. On the plus side, the heightened uncertainty that firms appear to be feeling does not appear to be significantly affecting household sentiment.

Qualitative evidence gathered by my regional economic intelligence network suggests that labor market conditions have not changed much in recent months. Like many here, I heard that labor markets are tight, but I see few signs of overheating. My view is that the natural rate has fallen and is a bit lower than the rate in the Tealbook projections, with the reduction being sparked in part by technological change in the job-search space. On balance, I still view the economy as being close to or at full employment, but I am not seeing an accumulation of evidence that would suggest the economy is significantly beyond the frontier.

An interesting theme has developed in several of my conversations with business decisionmakers that may shed some light on the continuing puzzle of the disconnect between the weak productivity growth and the emphatic assertions by firms that productivity gains are evident in their operations. I am engaging in some speculation here, but it may be the case that

productivity gains at the level of production workers are being soaked up by a new line item, cyber expense. Efforts to stay “left of the boom”—that is, to thwart cyberattacks before they occur—have accelerated markedly over this recovery. My contacts assure me that these efforts require an ever-increasing set of new capital and labor inputs just to keep pace with the surge in attacks. It stands to reason that these new inputs, much like hiring accountants and lawyers to keep up with the regulatory environment, do little to grow output.

Regarding inflation, while most of my contacts continue to report little to no pricing power, we are beginning to discern a shift in sentiment. April data obtained from our Business Inflation Expectations survey reveal a sizable increase in reported unit cost pressures over the past few months. Despite the increase, nearly half of these firms see profit margins as being in line with what they would consider normal, and 15 percent reported above-normal margins. Interestingly, the majority of those with above-normal margins indicated that they had achieved margin growth by increasing prices.

Reports on likely pricing pressure in the period ahead are mixed—like many have reported here today—with the most significant pricing power reported in businesses and sectors that are exposed to cost pressures associated with actual or potential tariffs. These are isolated and presumably transitory developments. Still, it is notable that longer-run business inflation expectations have risen to their highest level since shortly after QE3 began.

As measured inflation is already effectively on target, I’m continuing to mark in a modest overshoot of target and still see the risk to that projection as being slightly to the upside. Overall, I view the economy as being on track and believe we are close to mandate-consistent outcomes for both inflation and employment. I will carry that thought over to my remarks on policy tomorrow. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. Economic activity in the Eighth District has been improving at a moderate pace during the intermeeting period. District banks increased lending activity during this period in large part by lending in the commercial real estate sector. There continues to be a resurgence of hotel construction in the District. Industry contacts suggested that demand for hotel rooms has been particularly robust. Much of the new construction is for smaller boutique hotels, defined as fewer than 100 rooms.

The outlook for inflation appears to be subdued. District contacts, while acknowledging the strong economy, generally did not stress pricing pressures during the intermeeting period. Members of the Eighth District Health Care Industry Council noted that cost-cutting pressures in their industry are very strong, driven by little or no growth in Medicare spending. According to the agricultural sector, many contacts indicated that planting delays are commonplace, in a cold, wet spring. This sector is quite concerned about the potential for a trade war with China.

Regarding the national outlook, I have just a few comments on inflation. The main news on inflation is that headline PCE inflation measured from one year earlier is now 2 percent, and core PCE inflation measured from one year earlier is 1.9 percent. In central banking, this is about the best that can be achieved, so we should probably take a brief moment to celebrate our victory. In this respect, Mr. Chairman, I'm expecting a very high quality champagne at our event tonight. [Laughter] In truth, however—and I'm going to channel Governor Brainard here a little bit—this event has been a long time coming, as neither headline nor core PCE inflation has been meaningfully above our 2 percent target since 2011. That is six years below target, a time during which the Committee, including me, consistently forecast an imminent return of inflation.

The unemployment rate in the United States fell below 5 percent in the fall of 2015—more than 2½ years ago—an event that, by conventional accounts of the Phillips curve, should have presaged increasing inflationary pressure. That pressure never really materialized, a clear indication in my mind of just how weak these effects really are in the current macroeconomic environment. In light of these events, it does not seem prudent to me to bet heavily on the idea that Phillips curve mechanisms will now become significantly stronger. Instead, it seems to me that the baseline case should be for very weak Phillips curve mechanisms in the future. In concise terms, an economy growing at 3 percent is not very different from an economy growing at 2 percent in terms of inflationary effect, in our current environment. In addition, this Committee has already been preemptive in trying to control those very minor inflationary effects by normalizing the policy rate substantially and by allowing the balance sheet to begin to shrink.

In the meantime, the six-year low-side miss on inflation has arguably taken a toll on inflation expectations. Five-year TIPS-based inflation compensation is now about 2 percent, but that is on a CPI basis. If we adjust that expectation down 30 basis points to get something comparable to PCE inflation expectations, we see that markets still do not expect this Committee to achieve the inflation target on a PCE basis over the next five years. This is all the more surprising, as financial markets, generally speaking, have a less aggressive monetary policy penciled in compared with the median policy rate path of the Committee.

I think a prudent policy at this point would be to let the five-year market-based inflation expectations firm somewhat, perhaps to 2.3 percent or somewhat higher, and then see how the economy evolves from there and adjust monetary policy in response to macroeconomic surprises from that point.

Let me now turn to yield curve issues very briefly. The slope of the yield curve is perfectly fine today. The 10-year–1-year difference is about 70 basis points, and that’s very normal. Recession probabilities calculated using that kind of yield curve data are low today, indicating only a low probability of recession 6 or 12 or 18 months in the future. The issue for the yield curve is not today, but for later this year or early in 2019. If the Committee proceeds with three additional policy rate increases this year and the long end of the curve does not cooperate, we will have a yield curve inversion. If we get to that point, it may be too late to do much about it, owing to the lagged effects of monetary policy. Typical estimates of simple models using U.S. postwar data suggest a recession would begin as early as one or two quarters after that inversion or, if not, almost certainly within seven or eight quarters. Of course, it’s possible that this time will be different, but I would not make a bet on that direction, as we do not have an inflation problem in the United States at this point. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chairman. Starting with the Ninth District economy, moderate growth continues in the region. Demand for labor remains strong overall, with staffing firms reporting difficulty finding workers. There are numerous reports that some local suppliers are using the threat of tariffs as an excuse to raise prices now for steel and aluminum products. Our Bakken region of North Dakota is booming, but across the rest of the District, agriculture continues to struggle with low prices.

Regarding the national economy, recent economic growth has been somewhat disappointing, but I think the outlook remains generally positive, taking into account various tailwinds: the fiscal stimulus, high asset prices, and high consumer and business confidence. There are some headwinds, however, in particular talk of tariffs and a trade war. Three or four

months ago everyone wanted to talk about optimism due to the tax cuts. That has now been replaced with concerns about the tariffs. But I think in both cases I wasn't seeing much translation into action. It was just more a sense of optimism being replaced by a sense of concern. Furthermore, rising oil prices may now take a toll, and I'm hearing more concerns about a fairly aggressive rate path on the part of the FOMC and the effect we could have on the economy.

Regarding financial markets, there is an ongoing increase in longer-term nominal rates since the start of the year, but it's difficult to decompose any of the effects of larger expected deficits versus faster economic growth and higher inflation expectations. I think our rate path is obviously having a lot of effect on the shorter end, and, like President Bullard said, I continue to be very focused on the yield curve. I look at the 10-year–2-year yield spread at around 50 basis points, and that is something I'm going to return to in my discussion tomorrow.

I continue to pay close attention to labor markets. In my view, the amount of labor market slack is still uncertain: I think we're quite uncertain about the trend labor force participation and about the natural rate of unemployment. The staff's view at present is that the unemployment rate is 0.6 percentage point below the natural rate and that the current labor force participation rate is also significantly above trend. Personally, I find the idea that we're operating well above full employment hard to square with the modest nominal wage growth that we're seeing.

On the labor force participation front, I expect that the healthy labor market will continue to draw people into employment from outside the labor force, as has happened over the past few years. I've said this before, and I think you all have heard this. Prime-age labor force participation has recovered to pre-recession levels in many other OECD countries. I see no

reason why the same should not happen here. As Governor Brainard mentioned, among all the different labor market indicators we monitor, I think we should pay especially close attention to the prime-age employment-to-population ratio. Work done by my staff shows that in recent years, this indicator is closely connected to nominal wage growth, and so it might be useful in predicting incoming inflation. Interestingly, this indicator is still 1 percentage point below the 2006 peak and 2 percentage points below the 1999 peak.

As I travel around, like all of you, businesses are declaring historic worker shortages. You've got the *Wall Street Journal* echoing these hyperbolic views, and yet, at the same time, I haven't heard anybody say that there's an oil shortage. The price of oil has more than doubled, and that's just the market adjusting. However, if firms can't find workers at wages they're used to paying, all of a sudden that's a historic worker shortage. At the same time I was listening to this discussion, it occurred to me there are a whole bunch of likely presidential candidates for the next cycle who are out there now calling for a federal job guarantee. There's a huge disconnect. If the need for a federal job guarantee is resonating with their constituents, it seems like there's a very big disconnect between labor and the business community, and maybe between our view of maximum employment, or full employment. I think there are a lot of Americans who would say we're not near maximum employment, as evidenced by the modest nominal wage growth. So for me it comes down to assessing wage growth.

Inflation has continued to move up in recent months, and we're now close to target. I think that's welcome. After so many years below target, this is good news. To me, the fact that wage growth is slowly climbing at a time when core inflation is slowly climbing suggests it is signal, so I take that seriously. Market-based measures have also continued to move up. Some of the increased inflation over the past year reflects transitory effects of energy prices and dollar

depreciation, but, overall, I think it's good news. Nominal wage growth remains modest. Higher nominal wage growth is going to be required to sustain our return to 2 percent inflation over the medium term. So, in summary, I think we've made important progress in getting inflation back to target. I hope this rise will prove to be persistent. I'll feel more confident if we see more evidence that wage growth increases.

On the labor market front, I agree we have made progress toward full employment, but I still think there may be slack, and the data are mixed. I don't find plausible the Tealbook view that we are running well above full employment. Thank you.

CHAIRMAN POWELL. Thank you. Vice Chair.

VICE CHAIRMAN DUDLEY. Thank you, Mr. Chairman. I'm pretty much with the consensus on the economic growth side. Although we've seen a modest slowing in real GDP growth in Q1, it looks to have been mainly because of payback for the surge in consumer spending that we saw in the fourth quarter following last fall's hurricanes. The rebound that we saw in consumer spending in March coupled with the ongoing strength of payroll employment reinforces this conclusion. Also, the fact that fiscal policy is stimulative and financial markets are still easy points to a pickup in economic activity in the second quarter.

On the inflation side, as many people have noted, we're now close to our 2 percent objective. However, I would be less excited about this, because I think what we're seeing to a large extent is just the opposite of what we saw a year ago. Just as core PCE inflation was held down a year ago by a few transitory factors—most notably the big drop in cellular phone services prices last March but also the softness in prescription drug prices—it now appears there are some other factors, also likely transitory, that are pushing upward in the opposite direction.

Rates of price increase both for hospital and nursing-home services and for financial services furnished without payment—think about that as deposit services—are rising quite sharply now on a year-over-year basis compared with a year earlier. Just to dig a bit deeper into the numbers: In March 2017, the year-over-year rate of increase in prices of hospital and nursing-home services was 1.8 percent. In March 2018, it had climbed to 3.3 percent. Now, this is a pretty big component of the PCE. It's 10 percent of the weight of the PCE index. That has contributed nearly 0.2 percentage point to the increase that we have seen in core PCE inflation. Similarly, with respect to financial services furnished without payment, the year-over-year rate climbed to 7.5 percent in March of this year compared with 4 percent a year earlier. That's contributing another tenth to the rise in core PCE inflation. My view is that we shouldn't take too much signal from the recent pickup that we've seen. The rise in hospital and nursing-home services was primarily driven by a one-time increase in Medicare reimbursement rates in October followed by a rise in private insurance reimbursement rates a bit later. And the rise in the rate of increase in prices of financial services furnished without payment was due mainly to the rise in short-term interest rates relative to deposit rates—a pattern that typically occurs during the early stages of a tightening cycle when deposit rates lag behind changes in the federal funds rate. Most importantly, both of these increases don't have strong ties back to labor resource utilization rates, and they can be quite volatile on a year-over-year basis.

So what happens if we take out all of these factors? We take out hospital and nursing care, we take out financial services, we take out cellular phones, and we take out prescription drugs. We take out both sides. A year ago, core PCE inflation in March 2017, without all of these things, was 1.52 percent; core PCE inflation in March 2018 was 1.51 percent. I think we

just have to be a little bit cautionary not to put too much weight on the fact that we've gotten back to 1.9 percent for PCE inflation.

In terms of the risk to the outlook, I'll cite some of the risks that have already been mentioned. The first, I think, is obviously the trade side, which, depending on how it goes, could lead to higher trade barriers here and abroad. And as Beth Anne and others have pointed out, the result would be disruption to the supply chains, higher inflation, and slower productivity growth, which is not a good combination.

Now, I'm pretty confident that this is not where the Administration wants to end up. I don't think any Administration would want to end up there, but that doesn't mean it won't happen. As I see it, the Administration's goal—the benign outcome—is to realign trade so that the United States is on a more level playing field with its major trading partners, such as China. I spoke to one senior Administration official, and how he explained it to me is that the United States has made concessions on trade over several decades essentially intended to induce other nations to embrace a more open trade regime. But that has ultimately resulted in an underlying misalignment in which the United States faces higher trade barriers than our trading partners face on our end. In this benign version of intent and goals, if the Administration were successful, we would end up both with the United States facing lower trade barriers and with lower trade barriers for the global economy as a whole. So we'll see whether we move in this direction—which is a benign outcome—or toward higher trade barriers here and abroad. But it is certainly a big risk to the outlook.

The second risk, of course, is the unsustainability of the nation's fiscal trajectory. This is one reason why I don't want to talk about how good the economy is today, because I think this is going to be a really big problem for the economy down the road. Since our previous meeting,

the CBO has updated its 10-year budget projections. And, under current law, which includes the rollback of tax cut provisions over time and the reimposition of spending caps on discretionary spending—pretty favorable assumptions—the budget deficits are projected to be between 4½ and 5½ percent of GDP each year over the next decade. And if we had deficits like that, the debt-to-GDP ratio would persistently increase over that period.

Now, there are several reasons why this baseline is likely to be considerably too optimistic. First, as I mentioned, the projections assume that current laws maintain. Well, maintaining current law holds down the deficit projections in several ways. First, in the projections it's assumed that the provisions of the tax law changes that are scheduled to lapse in the future do so. Recall that we had all of this lapsing of the tax provisions because that was the only way to shoehorn these tax cuts into the \$1.5 trillion price tag over the 10-year budget window.

Second, the CBO projections—and Governor Brainard alluded to this—are based on the assumption that defense and discretionary spending will drop in 2020 as the spending caps reassert themselves. That doesn't seem very likely to me. The current CBO projections have defense spending falling to \$651 billion in 2020 from \$669 billion in 2019. This is a pretty sizable drop in defense spending; discretionary spending falls as well. And that's all in nominal terms. Starting in 2022, all of these discretionary outlays are assumed to only rise at the inflation rate. So with those assumptions in place, discretionary outlays are projected to decline to 5.4 percent of GDP in 2028. That's down a full percentage point from discretionary outlays in 2018. I would take the over, rather than the under, on that particular projection. These 10-year budget projections also are based on the assumption of steady economic growth, with no recession. Economic downturns inevitably are going to occur, And when that happens, that's

going to lead to lower revenues, increased outlays, and more debt, and that's going to worsen the fiscal path over time.

Third, I think businesses may adjust their business models and how they structure their businesses in legal forms in order to reduce their income tax liabilities. Just as the tax cuts could lead to somewhat higher tax revenue arising from faster GDP growth, which were built into the CBO projections, tax revenues could be reduced as businesses adjust to minimize their liabilities.

The bottom line is, if fiscal policy is not put proactively on a more sustainable course, a budgetary crisis will probably be the likely means of forcing the necessary adjustment. I think we have to recognize that an unsustainable fiscal path puts more pressure on us—or you.

[Laughter] The pressure is going to be for the central bank to allow more inflation to reduce the real burden of the debt if we're in that situation, and that's, of course, something that we all must not do. Thank you.

CHAIRMAN POWELL. Thank you, and thanks to everyone for an interesting discussion of the outlook. I hear many of you saying that, on balance, the outlook has really not changed a great deal since the previous meeting and thus remains a strong one, and that is how I see it as well. Let me briefly summarize some of what I hear as main areas of agreement and then touch on some areas of risk.

First, many of you are looking through the softness in first-quarter real GDP. The slowing was concentrated in PCE, but fundamentals, including strong job growth, fiscal stimulus, robust household and business confidence, and still-accommodative financial conditions, continue to point to above-trend growth in both consumer spending and business investment. Conditions abroad also remain generally favorable, although the apparent slowdown of growth in the euro area and Japan will bear watching.

Above-trend economic growth should lead to further labor market tightening, as many of you noted. Consistent with this view and despite some monthly fluctuations, payrolls rose a bit faster, on average, in the first quarter than in 2017. A rise in the labor force participation rate has accompanied job growth in recent months, keeping the unemployment rate steady. Strong labor force participation over the past few years has been a welcome surprise, and this strength can reasonably be expected to continue as long as growth in the economy remains solid. Of course, there's no assurance of that.

After the outsized declines of last March dropped from the 12-month calculation, PCE inflation has now moved close to 2 percent, consistent with our oft-expressed expectations. And I would note that a large number of you mentioned input cost pressures, along with varying degrees of ability to pass those increased costs through in prices. And that, too, is a positive development that supports increased confidence about the path of inflation, although let's hope for not too much of a good thing.

It is, of course, too early to declare victory, as many said, over several years of stubbornly low inflation. We need to see inflation return on a sustained basis to our symmetric 2 percent objective, and that mission is not yet accomplished. On a personal note, since I joined the FOMC in May 2012, there has not been a single month in which 12-month core PCE inflation has reached 2 percent. I am sitting here today 0 for 71 [laughter], and I look forward to ending that streak soon.

As always, there are risks to the outlook and some differing views on how best to manage those risks. I would call out what I thought were particularly interesting, insightful, and thought-provoking alternative scenarios in the Tealbook. I think it is going to be hard to beat that set of scenarios—if I can say so—particularly the hysteresis one and the supply constraint one.

In view of the likely decline of unemployment to levels not seen in 50 years, we will need to be alert for signs of mounting inflationary pressures or of emerging financial imbalances. A number of you mentioned anecdotes of labor shortages and capacity limits. A tight labor market is likely to bring some benefits, for example, by supporting labor force participation or by assuring that inflation returns sustainably to 2 percent. Wage gains have continued to move up gradually but remain moderate even after accounting for weak productivity growth, providing little evidence of a significant overheating in the labor market so far.

Trade is another risk that was prominently mentioned around the table today. Many of you said that you're hearing from your business contacts about the risk of disruptive changes to trade policy. And while we're not yet at the point at which these concerns are affecting the outlook, we'll be watching this closely. I would point out that, as Beth Anne showed in her presentation, the program of protectionist measures is actually growing to quite a broad one at this point, particularly the confrontation with China. If you put it all together, the risks are certainly there—and, in my opinion, growing—that this will blossom into something that will have negative implications for the outlook.

Turning to monetary policy, I would note that a number of you mentioned that financial conditions have tightened modestly, particularly with the dollar strengthening over the past couple of weeks and the 10-year rate moving up materially since the previous meeting. That, of course, is consistent with our normalization policy. I continue to see our gradual approach to removing accommodation as the appropriate way to balance the risk of overheating against the risk that we might move too fast and fail to bring inflation up to 2 percent on a sustained and symmetric basis. And that means keeping the target rate unchanged at this meeting while leaving the door open for a likely hike in June.

I'll stop there. I suggest we move to Thomas, who will give us a look at monetary policy before we break for cocktails and dinner. Thomas.

MR. LAUBACH.⁵ Thank you, Mr. Chairman. I will be referring to the handout labeled “Material for the Briefing on Monetary Policy Alternatives.”

Before I get started on my first exhibit, I would like to direct your attention to page 4, alternative B. On that page, you will see some language in blue in paragraph 1. You'll recall that, in response to the Q1 NIPA release, yesterday we had circulated a version of alternative B that had switched that sentence back to all black—no changes. Subsequently, it was noted that the statement that business fixed investment moderated from strong fourth-quarter readings could be overinterpreted as suggesting that investment was no longer growing at a strong pace. It was, in fact, growing at 6.1 percent. So this sentence construction now pulls the household spending and BFI pieces apart, in order to give a slightly more nuanced description of the data, in which it is now stated that the “growth of household spending moderated from its strong fourth-quarter pace, while business fixed investment continued to grow strongly.”

Regarding the first exhibit, your policy decisions at this meeting center on alternative B, which is a fairly straightforward update of the March statement. Under the bold assumption that you will adopt alternative B tomorrow, I will devote the bulk of my briefing to looking a bit further down the road. Many of you have suggested that some parts of the postmeeting statement be modified so as to keep it in line with the Committee's evolving expectations of future monetary policy. As indicated in the Monetary Policy Alternatives section of the April Tealbook, alternative C has been written with this objective in mind and is intended to elicit your feedback on possible future statement language. The upper-left panel summarizes the principal changes in alternative C from the current version of alternative B.

The main change in alternative C is to shift the focus of paragraph 4 to data dependence and to eliminate guidance that is no longer necessary or appropriate. The reference to “further gradual increases” in the federal funds rate would be moved to paragraph 2, where it serves to characterize a trajectory for the funds rate as “consistent with sustained expansion of economic activity and employment and with inflation near . . . 2 percent.” The deletion of the part of the current guidance that “the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run” recognizes the likelihood that, over time, the federal funds rate will move gradually toward—and perhaps overshoot—its longer-run normal value. Nearly all of your March projections suggested that it would likely be appropriate for the federal funds rate to rise at least slightly above your estimates of its longer-run value at the end of the forecast period. The statement in the existing forward-guidance language may thus soon no longer be an accurate characterization of your outlook.

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

Alternative C also raises the target range to $1\frac{3}{4}$ to 2 percent. To provide some perspective on the current and projected stance of monetary policy, the upper-right panel shows the historical evolution of the real federal funds rate (the black line) and the median of participants' implied March SEP numbers for the real federal funds rate at the end of this year and the next two years (the red diamonds). Also plotted are the mean (shown by the blue dashed line) and the range (shown by the blue shaded region) of estimates of the longer-run equilibrium real rate, or r^* , from several time-series econometric models. The real federal funds rate has risen steadily since 2016, reflecting the Committee's gradual removal of policy accommodation, and is now near the lower end of the range of r^* estimates. Paragraph 3 of alternative C continues to note that "monetary policy remains accommodative," but if participants' assessments of the current level of the neutral federal funds rate were toward the lower end of the range of estimates, this language, too, may need to be removed before too long. Yet the Committee may wish to limit the changes to the statement made at the same meeting to avoid giving the impression of a shift in the Committee's policy intentions. For that reason, although alternative C removes the sentence on "carefully monitor[ing] actual and expected inflation developments" from paragraph 4, it retains the reference to the symmetry of the inflation goal to avoid having the deletion interpreted as prematurely "declaring victory" on the inflation objective.

In communicating the Committee's outlook for the economy over the medium term, alternative C would be consistent with the message of your March SEP. Most of you submitted projections in which a period of modestly restrictive policy ultimately raises the unemployment rate to its longer-run normal rate and returns inflation to 2 percent from above. In a memo that we sent you ahead of the December 2016 meeting, we noted that such soft landings have not been achieved frequently, although they are not without precedent in the postwar record. If market participants expected a moderately restrictive policy along these lines, the yield curve could flatten further or even invert. As shown in the middle-left panel, the yield spread between the 10-year Treasury note and the 3-month Treasury bill is low by historical standards, but not exceptionally low. In particular, this spread stands at about the 25th percentile of the distribution since 1990 and still about $1\frac{1}{2}$ percentage points above the average historical level associated with the onset of recessions.

The flattening of the yield curve over the past year comes up frequently in our conversations with market participants. Many saw the recent fiscal stimulus and attendant financing needs of the Treasury as important factors shaping the yield curve. As mentioned in the middle right panel, they offered two different narratives on how the fiscal developments might affect the economic outlook. Under the benign view, the addition of fiscal stimulus will require raising the federal funds rate above its longer-run level for a time, but not by enough to derail the expansion. The more pessimistic interpretation of the yield curve flattening is that it reflects concerns that the fiscal stimulus will create a fiscal cliff around 2020, when the effects of the current stimulus are expected to wane and thereby bring forward the end of the expansion.

While none of our contacts saw the flattening of the yield curve as signaling heightened recession risk over the next year, several of you commented at previous meetings on an important empirical regularity of the past five decades—namely, that a negative term spread has preceded every recession. The lower-left panel updates the results of two regressions that I presented in my briefing in December, and they are very much consistent with President Bullard’s comments. The first uses the spread between the 10-year and 3-month yield to compute the probability that the U.S. economy will be in recession at any time over the next four quarters. In a univariate model, as shown by the red line, the current level of the yield spread implies about a 35 percent probability of such an event, up from about 15 percent since you began raising the funds rate. But market commentary has questioned the reliability of the yield spread as an indicator of recession risk in light of continued low term premiums. An alternative approach is to combine the yield spread with other measures of financial conditions to assess the likelihood of a near-term recession. As I discussed in December, the “Excess Bond Premium” developed by Simon Gilchrist and Egon Zakrajšek, shown in the lower-right panel, is a useful indicator because it tends to rise shortly before the onset of recessions as lenders demand increased compensation for bearing credit risk. As indicated by the green dashed line to the left, including both the yield spread and the excess bond premium in the regression model implies that the probability of a recession at any time in the next four quarters is only about 7 percent and is little changed over the past two years. This result suggests that further gradual removal of policy accommodation is not yet likely to jeopardize the expansion.

Thank you, Mr. Chairman. That concludes my prepared remarks. The March statement and the draft alternatives are shown on pages 2 to 9 of the handout. I will be happy to take any questions.

CHAIRMAN POWELL. Vice Chair.

VICE CHAIRMAN DUDLEY. Thomas, you said that the yield spread was in the 25th percentile if you take the data since 1990. Is that really a good time frame? Because you’re really giving a lot of weight to the post-crisis period when we were far away from full employment. And I wonder if it would be better to eliminate this cycle because this cycle is so unusual and take the period before 2007—just to get your thoughts on that.

MR. LAUBACH. First of all, I don’t have the number with me.

VICE CHAIRMAN DUDLEY. No, I know you don’t. I just think that it tends to bias down that estimate of where you are.

MR. LAUBACH. Looking at the exhibit—to just give another example—the horizontal line is the mean level at the onset of recessions. You see that, in the previous two recessions, that level was quite a bit higher. It's very much driven by the early 1980s observations. Any of these statistics are somewhat sensitive to the sample period, and I'm not claiming that 1990 is necessarily the right time frame to look at. At the same time, I think it's interesting to ask what the implications are of a potentially persistently lower term premium—the question that came up in Josh's briefing. Even though it may come up, we don't necessarily think that it is going to go up to where it was, say, in the 1980s. So it is difficult to say exactly what the most relevant sample is.

VICE CHAIRMAN DUDLEY. By including those 10 years, roughly almost 40 percent of your sample is this cycle, and because the cycle isn't even over yet and you'd expect the yield curve to be flatter toward the end of the cycle, I think you're sort of biasing down your estimate a little bit.

CHAIRMAN POWELL. Thanks. President Rosengren.

MR. ROSENGREN. So a little bit on that theme, but from the opposite standpoint. When I think of a flatter yield curve, Europe, Japan, and the United States have all expanded their balance sheets very significantly and haven't done that in previous periods. To some extent, it is a policy decision of the central banks around the world to try to depress rates in the long end of the market. And so when I think about the statistical relationship, we've made a choice that we were very gradual at the long end of the market in letting the balance sheet roll off and deciding to focus primarily on the short end. The consequence of that would be a flatter yield curve than we would presumably have seen if we had chosen a different exit strategy and if the Europeans and Japanese were at a very different stage as well. How do you think about a

statistical relationship that is really tied to where the long end of the market is when there's so much intervention by central banks around the world?

MR. LAUBACH. I would think that if you look at it narrowly, about the ability to predict recessions, I would argue in some sense you want to get the expectations for the path of the short-term interest rate, because the signal is when the market participants expect that you need to cut the rate. On average, they're actually correct about that, right? And that is what's sending the signal.

We are still in the period in which the balance sheet here is very large and where balance sheets elsewhere are even still in expansion. It seems that that would mean that there's potentially less policy space. But I'm not quite sure whether it would have a meaningful effect on the signal that you take from the slope of the expected path of the policy rate, because that arguably should really depend on whether you think the economy is nearing recession, when you need to change the policy rate path.

CHAIRMAN POWELL. Two-hander? John.

MR. WILLIAMS. Yes. I thought President Rosengren's question was an excellent question. I asked my staff this question months ago—Thomas Mertens and, I think, Michael Bauer worked on this. It's in an *Economic Letter* that we published. To get at this general question, they actually threw the term premium into a standard probit model for the probability of recession, separately from the slope of the yield curve. Does the term premium—and it could be because of QE or other reasons—affect this relationship? They also put in r^* to see if the level of interest rates entered independently. Their findings are that the slope of the yield curve is an amazingly robust predictor of recessions, and including the term premium in the relationship did not change that result. It doesn't prove overwhelmingly that the question about

QE is not a good one, but the evidence is that at least movements of the term premium separate from the inverted yield curve don't seem to change this basic idea that the inverted yield curve comes before a recession historically in the United States.

CHAIRMAN POWELL. President Kaplan.

MR. KAPLAN. I think I'm okay. On this bottom right-hand exhibit, I may read this paper just to dig into what credit spreads actually do right before a recession, because which comes first? My guess is people start to get nervous, and then credit spreads begin to change. In a funny way, the tighter the credit spreads are sometimes as good a predictor as recession as spreads that are gapping out, because I remember blow-by-blow what happened in 2008, and 2007 in particular, when we were starting to go sideways. My point—which is not worth making, we're about to have a drink, which may be more important [laughter]— is, I don't take any comfort from the tightness of credit spreads right now, because I think they could change on a dime. You just need some data, and everything will look different.

CHAIRMAN POWELL. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I appreciate the discussion of this yield curve issue, and I think it is the right time to have this debate and talk about it. And I agree with President Williams about the San Francisco *Economic Letter*, which I would recommend. We did other versions of that same kind of analysis. We came to the same conclusion that the yield curve does a pretty good job of predicting recessions in the United States. If you go across countries, it's going to break down, and I guess my thinking on that is that small, open economies are a different kettle of fish than big economies. So I think that's why the cross-country evidence doesn't look as good, at least in my mind, right now.

There are a lot of recession-predictor-type models that are kind of univariate models. There are many competing models. It looks like the yield curve is probably the best one of those. You might be able to combine things. There's a lot of literature on it.

The theory behind it is a little bit sketchy, and it doesn't always fit into our macro model. So when you talk to macro guys like me, we'll say, "Yield curve? What?" But I want to respect the empirical evidence, and I want the Committee and all of us to think about this and debate this and not go blindly into a yield curve inversion without saying, "Okay, we went in with our eyes open. We knew this could happen, but we think it's a risk worth taking."

I think previous incarnations of this Committee have done that, but because they felt like they had an inflation problem they had to fight, they were weighing some risks about getting inflation under control versus the possibility that you would induce a recession, and it maybe went one way or the other for them. But for us, we don't have that much of an inflation problem, so I put less weight on that than previous committees probably did. I guess the bottom line is, I'd like to keep a positive slope to the yield curve. Thank you, Mr. Chairman.

CHAIRMAN POWELL. President Kashkari.

MR. KASHKARI. Thank you. Very briefly, just one quick comment and then one question. The comment is, for me, the yield curve flattening is notable. I mean, we know in a tightening cycle it's going to fall. But it's flattening in a time of a big tax cut, a big increase in spending, and a roll-off of our balance sheet. That, to me, is some signal that we should take seriously and not just say, "Well, this time is different."

But then, Thomas, shifting gears for a second, on your chart on the top right on where is neutral, my question is where is the lower bound problem? Now, granted, the chart only starts in 2015. Maybe you'd have to go back further. But this suggests that the effective real federal

funds rate that we achieved was well below neutral. So I'm trying to understand what this is telling me.

MR. LAUBACH. That's right. By all the methods that I'm familiar with, a longer-run measure of the neutral federal funds rate never went as far into negative territory. The shorter-run measure is obtained using DSGE models that are much more volatile. But, for example, the Laubach–Williams measure, of course, always thought that there was, in fact, a negative real rate gap throughout the post-crisis period.

Does that mean that there is no zero lower bound problem? Well, the r^* estimate—at least, for example, in our model—is of course boosted by asset purchases. So it's not like you didn't need to resort to any other tool. You did need to have other tools in order to, in effect, boost r^* to a level such that you were still able to provide the accommodation that the economy needed. So I would not view this as “There is no zero lower bound problem.” Obviously, you need to resort to quite challenging tools.

MR. KASHKARI. But is the right comparison the historical real federal funds rate, which you have here in black against your blue dashed line, or should it be against a short-run neutral rate? Are you comparing a short-run federal funds rate to a long-run neutral rate? And isn't that apples and oranges?

MR. LAUBACH. No. First, you shouldn't identify the blue dashed line with the Laubach–Williams measure. The blue dashed line is, of course, the mean of the eight measures that are represented here. Any of these measures will tell you that this is measuring the amount of stimulus that you are currently imparting that, over time, is going to boost the output gap. If you resorted to a more short-run measure of r^* , that would be telling you more an answer not to

how you stabilize the economy over time but what would you need to do in order to basically eliminate the output gap at a much higher frequency.

MR. EVANS. Looking at 2015 on this chart—and President Kashkari mentioned this to me—your eye tells that, unless you think about the equilibrium real funds rate, there is a shocking amount of accommodation that was being supplied in 2015, and yet we didn't have a lot of inflation. So I think the shorter-run measure is the one that tells you that you didn't have as much accommodation. And, presumably, the equilibrium funds rate in real terms was probably negative, and this was accommodative, but not nearly as much.

Now, you're pointing us in this chart to 2019 and 2020, and now all of a sudden the real rate is going above r^* . And I think we're supposed to infer that there is some tightness involved there. We're kind of mixing these concepts, in a way—it's in the eye of the beholder as to what you're trying to get out of this, and we're one of the beholders. Just a different eye.

MR. LAUBACH. It was an attempt to construct the chart artfully. The historical estimates end where they end, and, of course, that means that it's not clear where, for example, these measures are going to move over that period. So how quickly you are moving from “accommodative” to “neutral” depends in part on what r^* is going to do in the future. The eye seems to see that there isn't a whole lot of upward movement going on. And if that was true, if you more or less extended one of these lines straight out, then you might say that by late 2019, it seems that you are at the midpoint of these estimates. But, again, there is no guarantee that these estimates are just going to go sideways. We don't know that.

MR. EVANS. But the context of the entire discussion is about gradual increases intended to remove accommodation and where we're sort of tight. So that's why I would focus it the way that I did. But it's a subjective assessment, I think.

MR. LAUBACH. I completely agree. I think that looking at these statistical estimates is helpful. This is basically what the data tell you as of now, and, of course, it's very difficult to make predictions.

MR. BARKIN. Thomas, just a question. The blue range here, is that the range of estimates, which is what the line says? Does that include confidence intervals?

MR. LAUBACH. No. It's purely the range of estimates.

MR. BARKIN. That's the blend of estimates, and then, of course, each estimate has a confidence interval.

MR. LAUBACH. That's right. The footnote points you back to material in the previous round's Tealbook in which we also show the confidence intervals around the individual estimates.

MR. BARKIN. I just wanted to make sure I understood.

MR. LAUBACH. Absolutely.

MR. BARKIN. Or, as I like to call it, I have not that much "confidence interval".

CHAIRMAN POWELL. All right. Thank you. If I can just keep you for one minute before we go down to the West Court Café. I have something I would like to mention, and I think it would go particularly well with that drink that President Kaplan mentioned. And that is, as I've mentioned to some of you, I am looking for some ways to tinker at the margins with the format of the FOMC meetings, and I want to say right up front that I don't think that our meetings fail to serve their purpose. I think they serve it very well. I don't think that we produce bad results or that we fail to allow diverse views or anything like that.

The overall idea is more to make changes to the format so that they become maybe, at the margin, less formal, less scripted, more interactive—particularly between participants—less

repetitive, and more focused on the issues of the day. I think back to various examples over the years in which a conversation breaks out, and I would point to the previous meeting at which President Rosengren brought up the question of the relationship between SEP forecasts and the staff forecast, and we had a nice go-round exchange. The idea would be to try to set conditions or have things on the agenda that would somehow provoke more of that at the margin. That's the idea.

I just want to say—I don't want to talk about individual ideas right now, but I welcome ideas. It's going to be, of course, a consultative process. Please call. Please write. I hope we can find some changes, and we'll obviously develop some sort of a process for collecting ideas and talking, but I just wanted to get people thinking about that, and we'll work on it together as we go forward. And with that, we go to the West Court Café. Thanks, everyone.

[Meeting recessed]

May 2 Session

CHAIRMAN POWELL. Good morning, everyone. Before we get started, some news: The President is visiting the State Department at noon. And what that means is, for those of you who desire to leave the premises between 11:00 and 1:00—

MR. QUARLES. We're trapped!

CHAIRMAN POWELL. —there may be delays of 15 minutes at the most. They're not going to shut the place down for two hours, but just know that if you're planning to catch, for example, an 11:30 flight, don't try to leave at 11:00. [Laughter] This will be between 11:00 and 1:00. So that's just a risk.

With that said, let's resume now and begin our monetary policy go-round with President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chair. I support alternative B as written. While we are not taking any action today, consistent with limited changes in the statement, the market seems well aligned with an increase in June, and I think that is quite appropriate.

I am concerned, however, that the markets are unduly optimistic about the future path of rates. With the Tealbook forecasting inflation at our target for this year and an unemployment rate below what is viewed as sustainable by this Committee, it is becoming more difficult to explain why we would not move the funds rate up more steadily than is implied by the median of the SEP. The median funds rate path in the SEP implies a pause in our tightening at some point during this year, but I think the macro environment is more consistent with at least three more tightenings this year, not two. The concern is that a slower pace of normalization now risks being forced into a steeper path in the future once pressure due to a tightening labor market shows through to nominal wage growth and price inflation or, alternatively, financial instability.

Such an acceleration in the pace of policy tightening, especially if the markets have not been prepared adequately for such a change, risks sharp reversals in investor behavior that could introduce heightened volatility into financial markets. Such disruptions have the potential to lead to an episode of financial instability.

That logic, of course, presumes that we are sticking to a framework that maintains a 2 percent inflation target and a so-called balanced approach, and all of my remarks to this point have held to that assumption. In previous years, our challenge was to attain our 2 percent inflation goal, an accomplishment that was by no means certain a couple of years ago. It would have been premature at that point to consider strategies that might move inflation more persistently above 2 percent. But now that we are finally achieving a 2 percent inflation, we should be planning for a broader discussion of the framework.

If we were, perhaps opportunistically, willing to allow the actual and target inflation rates to rise above 2 percent, I would be much less concerned with the pace of tightening currently envisioned in the SEP. However, under the current framework, undue patience now is likely to build significant macroeconomic imbalances. One way or another, whether through an episode of financial instability or by requiring a more aggressive and thus risky policy response, such imbalances are not likely to end well. They never have historically. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Mester.

MS. MESTER. Thank you, Mr. Chair. I can support alternative B today and the statement as written, with the amendment discussed yesterday.

As I discussed yesterday, I think the medium-run outlook supports continued gradual removal of accommodation. It seems the best strategy to balance the risks to both our policy goals and to avoid a buildup of financial stability risk. But because the public is not expecting

the Committee to act today and the Committee’s communications haven’t prepared the public for another increase, I can support no change in rates today. If the economy continues to perform as expected between now and our June meeting and there’s no material deterioration in the medium-run outlook, I will favor an increase in the funds rate in June.

The wording of alternative B does not seem to change expectations of a June increase, so I’m supportive of it. I have a couple of comments, though. In paragraph 1, I have a slight preference for the simplified language on inflation expectations that appears in paragraph 1 of alternative C. In paragraph 2, I appreciate the change that eliminates the phrase saying that inflation will stabilize around our inflation goal. As I indicated in our previous meeting, the word “stabilize” ran the danger of suggesting less month-to-month variation in inflation numbers than is typical of that we recently experienced. Also in paragraph 2, I appreciate indicating that the “risks to the economic outlook appear roughly balanced” and removing the reference to the Committee “monitoring inflation developments closely.” But with the removal in paragraph 2, I would also suggest that we remove the language from paragraph 4.

Now, at some point, it would be useful for the Committee to reconsider the statement more fundamentally as part of its ongoing work to improve its communication. In the meantime, should we decide to raise the funds rate in June, it would be an opportune time to “clean up” some of the language we’ve been carrying in the course of several statements. And we’ve been asked to comment on alternative C as one way to do that.

In considering those changes, I took a step back and thought about the current format of the statement. Now, I realize not everyone may view the statement the way I do, but I view it as having four paragraphs, with paragraphs 1 and 2 covering the economy and paragraphs 3 and 4 covering monetary policy. Within each topic, there’s a time element to the paragraphs.

Paragraph 1 discusses recent economic developments. Paragraph 2 discusses the outlook and risks around the outlook, conditional on appropriate monetary policy. Paragraph 3 discusses current monetary policy. And paragraph 4 discusses future policy considerations and gives a sense of the Committee’s reaction function. It conveys an important idea that policy is being set in a systematic way, something that can enhance Committee credibility by making decisions easier for the public to understand and anticipate. “Systematic policymaking” is something that the Committee needs to continue to convey through word and deed.

With that as a guide, I would change the conditioning statement in paragraph 2 to merely say “conditional on appropriate policy, the Committee’s outlook is X, Y, and Z.” I would put the Committee’s view of what that appropriate policy rate path is—that is, further gradual increases—into paragraph 4. Whether paragraph 4 gives more explicit forward guidance or whether it gives only information about how the Committee is approaching its future policy decisions—that is, information about the reaction function—will vary with economic circumstances. In current circumstances, I believe it’s appropriate to continue to indicate the Committee anticipates further increases in the funds rate, because this will help align the public’s expectations with this expected policy rate path.

As I indicated in the previous meeting, I do agree it’s time to delete the language that says the Committee expects the funds rate to remain below its longer-run level for some time. This is problematic language in view of the path shown in the SEP, and I’d even be comfortable removing that language at this meeting.

Finally, with respect to how we discuss our monetary policy goals in paragraph 4, those who were around when the longer-run goals and strategy document was negotiated in 2011 and 2012 and first adopted by the Committee in 2012 may remember the discussions of the tension

between the two parts of our mandate—namely, why the Committee should set a numerical goal for inflation but not for the maximum-employment part of the mandate. The proposed language in paragraph 4 in alternative C calls attention to that tension by using “objective” for maximum employment and “goal” for inflation. I don’t feel calling attention to that distinction is helpful. I prefer we keep the alternative B language that refers to both as objectives. After all, we use the term “objective” in paragraph 2 when speaking about 2 percent inflation, so I don’t see why we wouldn’t do the same in paragraph 4. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. Governor Quarles.

MR. QUARLES. Thank you, Mr. Chairman. I’ll be brief. I support alternative B as written and as amended. I continue to believe that a policy of gradual tightening is most consistent with meeting both objectives of our dual mandate. Inflation is effectively at our target, with still-moderate nominal wage growth and not much sign of further pressure on inflation. We can be patient. That said, the upward path of rates is likely needed to keep the economy growing at a sustainable rate.

Let me just add, there was a fair bit of discussion yesterday about the flattening of the yield curve—certainly something that we should continue to monitor. That said, I don’t think the flattening that we’ve experienced up to this point is either particularly surprising or troubling. I wouldn’t be surprised if the yield curve would flatten a bit more. The curve isn’t that much flatter today—maybe 10 basis points—than it was at the end of last year. We all remember that in December, the staff presented analysis that showed that the slope of the curve had shifted much more abruptly during past tightening cycles relative to the current cycle. What we’ve seen isn’t terribly unexpected.

I thought President Williams and President Bullard made very interesting points about the nonetheless almost invariable corollaries of an inverted yield curve, whatever one might think about causation. But I still think you have to have some sort of view as to what's causing the flattening of the yield curve to come to that view. If my skin is unusually warm, it may be because I'm ill, or I could just have been sitting outside by the pool for an hour, and I need to know which it is before running to the doctor.

Thinking ahead to our next meeting, I appreciated the discussion of alternative C as a possible template for the June statement. As was widely discussed in previous meetings, some of the forward-guidance language in paragraph 4 has grown stale. It should be removed at the earliest opportunity at which it can be explained. And one benefit of taking it out is that it keeps our powder dry should we have to put it back in. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Bostic.

MR. BOSTIC. Thank you, Mr. Chairman. I support the decision to maintain the current target of the federal funds rate at this meeting and the language in alternative B. Both the economy and inflation are performing at or slightly beyond target, and I take that as a signal that we should have a neutral policy stance. Because our current position remains accommodating, I believe that further rate increases are in order.

As for the pace of these increases, for well over a year, this body has communicated that the move of monetary policy away from full stimulus would be gradual. It is important that we continue on this path. And because we raised the target range for the funds rate last time, we should stand pat today. I think pauses are appropriate in the absence of evidence of overheating in the economy. My contacts tell me that there has been great value to their businesses and our economy in having a clear, consistent policy here at the Federal Reserve that is implemented as

expected. Some people expect the FOMC to deliver what it promises, and we should not surprise or disappoint them.

Regarding the statement, I'm especially pleased that paragraph 2 of both the alternative B and alternative C statements more clearly casts the Committee's policy actions in the context of a symmetric view about inflation. My own forecast projects that even with further gradual tightening of monetary policy, inflation is likely to run a bit above 2 percent in the near term. In my judgment, such an outcome is not a problem that would, in and of itself, necessitate a more aggressive response. Rather, it is a feature of a well-calibrated policy that supports both strong labor market conditions and our longer-run symmetric inflation goal. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Mr. Chair. I support alternative B as written. Given my forecasts of real GDP growth, unemployment, and inflation, I believe it's appropriate for us to continue to remove accommodation in a gradual and patient manner. Three increases over 2018—that is, two more—are still my base case, although I am open minded about a fourth increase. But I'd like to make that judgment later this year.

As we go through this process this year, I will be carefully monitoring the 10-year Treasury rate and the shape of the yield curve. It's my own view that the reason for the flatness of the curve has a lot to do with the sluggish outlook for real GDP growth in the medium term. Put another way, I believe the next two or three moves—particularly three, once we get to $2\frac{1}{4}$ to $2\frac{1}{2}$ —are likely manageable. But from there, I think the judgments will be much tougher, and the risk of a Fed overshoot becomes much more of an issue, at least for me. In that regard, I think we should be data dependent and not predetermined or rigid in our plans.

Also, as we move forward in the year, I think we would be well served, as soon as we could, to have press conferences after every meeting. Not only will this help improve the clarity of our communications, which I think will get much more important once we get to that 2¼ to 2½ percent level but it will also give this Committee more operating flexibility, which I think we'll be glad we have when the time comes.

In terms of the statement language, I'll just make a couple of comments on alternative C. I would agree with President Mester on not changing the first two sentences in paragraph 4. I like the changes that she proposed here in staying with the previous language. And, as you've heard me mention before, on the deleted language at the bottom, I would retain the sentence about "the Committee expects that economic conditions will evolve in a manner that will warrant further gradual increases." I know it's redundant to some extent with paragraph 2, but I think it would be useful, at the risk of being redundant, to make clear to the market and to observers what the Fed's thinking is on our reaction function. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Barkin.

MR. BARKIN. Thank you, Mr. Chair. I'm comfortable supporting alternative B today. The data over the past several months have been, by and large, consistent with the path we've articulated, and I see no reason to vary from that path.

Two sentences in alternative B are, I think, ready to be revisited. At the end of paragraph 1, we continue to state that "market-based measures of inflation compensation remain low." I'm aware of the history of this language and its intent when it was introduced—to underscore our concern with the soft inflation readings we were seeing then. And we retained this language early last year when inflation compensation numbers got close to where they are now to support the view there were still downside risks to inflation. But today, as I look at the language with

fresh eyes—and with my expectation that we’re experiencing a more sustained return of inflation to target—the language appears to me to be less useful and potentially misleading, as it appears to call out downside risks to inflation when, in the next paragraph, we characterize risks as balanced.

The other element of the statement that is ripe for removal is the end of paragraph 4, the statement that the federal funds rate is “likely to remain, for some time, below levels that are expected to prevail in the longer run. As I said at our previous meeting, when it gets removed from alternative A and alternative C for conflicting reasons, one might want to consider whether including it could actually be confusing.

These two changes are both substantive and open to misinterpretation, so I think it makes sense to execute them in June when the Chair has an opportunity to discuss them in a press conference. I note that the staff is unsurprisingly ahead of me on both changes. Alternative C incorporates both of these and, I think, does so quite well.

Finally, a request for our next meeting—I would love to ask the staff to run, perhaps as an alternative scenario, the Tealbook forecast with a more moderate path of rate increases, maybe similar to the March SEP median. I think that forecast would make us take on in a more direct way the gap between the Tealbook sense of the strength of the economy and ours. And speaking for myself, I think that would be a valuable challenge to my thinking before we take on our next rate decision.

CHAIRMAN POWELL. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I support alternative B today. Now that we have better confirmation in the data, I’m more confident that we are headed toward our symmetric 2 percent inflation target. However, low inflation expectations remain a concern, so I

think we need to keep the pace of tightening gradual to help bolster expectations. The data will determine whether this means two or three additional rate hikes this year. I guess that means data dependence. Markets seem comfortable with this range of funds rate outcomes and our data-dependent approach. And, as I discussed last time, given our current best thinking on the nature of the inflation process—that is, the non-accelerationist Phillips curve—there’s no reason to think we need to push rates beyond what markets expect. Once inflation expectations measures are stable around 2 percent, simply bringing policy rates to neutral or perhaps a little above should be enough to stabilize inflation at our target.

I’d like to spend the rest of my time discussing the suitability of alternative C for our future policy statement. My bottom line is that I think it will serve us well for the near term, but there will be some further communications challenges that we will need to address, perhaps in the not-too-distant future. First, I’m glad the alternative continues to describe our expected funds rate path as gradual increases in the target range. As I just noted, I think gradualism is necessary to bring inflation expectations into better alignment with our symmetric 2 percent objective. Continuing to communicate a gradual pace also conveys to the public that, though the Committee is in data-dependent mode, we are unlikely to shift gears abruptly. This should help keep the market’s policy expectations from overreacting to the ups and downs we inevitably will see in the coming data.

Second, the language in paragraph 2 is artful in saying that future “increases . . . will be consistent with sustained expansion of economic activity and employment.” “Sustained” is the key term to parse here. Presumably, sustainable growth means growth that could be repeated year after year. For activity, that means $1\frac{3}{4}$ to 2 percent, our views for long-run growth in the SEP. For employment, there’s a wide range of estimates—say, 60,000 to 120,000 per month.

Under this interpretation of “sustained,” alternative C associates our tightening path with GDP and employment growth moderating to such lower numbers.

This is largely in line with the projections for 2020 in the March SEP. However, as we think output will be above potential and unemployment below its natural rate, at some point the SEPs will show real GDP growth falling below trend and the unemployment rate rising modestly as we attempt to engineer the quintessential soft landing. Currently, this slowdown lies beyond our 2020 forecast horizon. But I can imagine these lower projections emerging in September when we roll the SEP forward to forecast 2021. I can’t really improve on the alternative C offering at this time. I just think that our attempts to speak plainly will become more difficult as the forecast horizon moves forward. And if inflation pressures remain contained, then describing the rationale for below-trend output growth and rising unemployment may be even more challenging.

The statement in paragraph 3 of alternative C that “monetary policy remains accommodative” may also have a short shelf life. Within a year of gradual increases, the funds rate could be in the range of $2\frac{1}{2}$ to $2\frac{3}{4}$ percent—and I agree with the comments that President Kaplan made about how, once we get to this juncture, I think it’s going to be more challenging—thus reaching the SEP central tendency for the long-run neutral rate. And if the short-run equilibrium federal funds rate continues to be below the longer-term rate, then we’ll be at neutral even sooner. Indeed, savvy Fed watchers already wonder where we see the current funds rate *vis-à-vis* short-run r^* . We talked about that briefly yesterday with Thomas Laubach.

I think it could soon be helpful to include a modifier in front of “accommodative”—something like “monetary policy remains modestly accommodative.” This would have the virtue of letting the public know that we are reasonably close to a natural resting point for policy, or it

could be the first step in preparing them if we eventually need to move beyond neutral to a restrictive stance. Naturally, when we think we are roughly at neutral, we should remove the reference to being accommodative altogether. Of course, the hard part is figuring out where neutral is. We'll probably find ourselves turning to current growth and inflation developments as a guide—the somewhat uncomfortable but inevitable “we'll know it when we see it” mode for calibrating policy.

You know, I had not really taken great note of paragraph 4 language about our maximum-employment objective and our symmetric 2 percent inflation goal in alternative C, and I appreciate that being mentioned. I think that I don't have a strong opinion about “objective” versus “goal,” but I do think it's extremely useful that we insert the term “symmetric 2 percent inflation goal.” And it could be that by trying to get “symmetric” in there, we end up with this “objective” and “goal.” I don't have a strong opinion on or preference for that, except for the fact that I think “symmetric” is quite useful.

So, in sum, if it's appropriate to increase the funds rate in June, I would support using the language in alternative C. But we should think ahead a bit more about how we describe appropriate policy as we switch from supporting improving labor markets and rising inflation to engineering a soft landing to our policy objectives. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. President Harker.

MR. HARKER. Thank you, Mr. Chair. I support alternative B at this meeting, as amended. Policy remains accommodative, and, as I alluded to yesterday, I'm more confident that inflation will rise to or above our target and that economic growth will be sustained. With firmer evidence of strengthening in inflation, I'm becoming more confident that a policy that raises the funds rate four times this year may be appropriate, depending on how the data evolve.

That does not imply that we should be overly concerned with inflation rates rising modestly above 2 percent. The target is symmetric, and we should miss on the upside as often as we miss on the downside. And I concur with President Evans that the addition of that word is appropriate.

There's also a good deal of uncertainty regarding the natural rate of interest, and that implies significant uncertainty over the level of the neutral funds rate. We may be only 100 basis points or so from neutral. If that's the case, it implies that we should proceed cautiously and gradually with the removal of accommodation. I anticipate that output will grow at about its trend rate and inflation will only slightly exceed 2 percent, which leads me to conclude that any significant overshooting of our policy rate would be problematic for the economy.

Uncertainty also appears to be abnormally high, and the increased uncertainty is being reflected, for example, in greater asset market volatility. Many of my contacts are concerned with the possibility of a trade war. And even if one does not occur, a further increase in uncertainty could damp the entire economic climate. Therefore, I think we should remain prudent and not remove accommodation at anything but a gradual pace.

Regarding the language in alternative C, I think the paragraph 2 language gives a clear assessment of how we operate. It indicates that our policy rate path is intended to be consistent with our dual mandate, and consistency will likely require some gradual increase in the funds rate. Paragraph 4 continues to indicate the pace of those increases will be governed by economic outcomes. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chair. I, too, support alternative B. Maintaining the funds rate at its current level is consistent with the Committee's strategy for a gradual path of

normalization. Looking ahead to the June meeting, however, I do support further adjustments in the stance of policy, assuming no change in the outlook. I also support a recalibration of the statement at the June meeting to more clearly express the Committee's expectations.

While I consider the risks to the outlook roughly balanced in the near term, I see considerable uncertainties over the medium term. In particular, with unemployment below most estimates of its longer-term level, with real GDP expected to grow faster than the potential rate, and with inflation headed higher, I see a nonnegligible risk that inflation could rise uncomfortably above our target. On the other hand, rising longer-term interest rates, declining equity values, the possibility of a yield curve inversion, and uncertainty about trade policy all present downside risks over the medium term. In this context, I would prefer we deemphasize forward guidance in our communication and associate a sense of greater uncertainty and data dependence with our policy rate path. In particular, I support dropping the guidance that says “the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run” as proposed in alternative C.

In addition, I think we need to reevaluate whether we still want to describe our interest rate normalization path as gradual. While my baseline outlook does not call for speeding up on the path to normalization, I'm concerned that our current forward guidance has a familiar ring to that of 2003. We said we would keep rates low because inflation was low and financial imbalances were thought to be benign. In my view, this guidance gave a false sense of stability, which in turn led to greater risk-taking and facilitated a buildup of financial imbalances that ended poorly. Of course, it is also possible that the downside risks I mentioned earlier could materialize, in which case we might want to slow the pace of normalization. The point is that the

uncertainty around the medium-term outlook makes it difficult to provide forward guidance, and I would prefer we deemphasize it in the statement in June.

Finally, on the basis of the discussion yesterday about the effective federal funds rate relative to IOER, I support resuming work about the long-run operating framework. Knowing where we're headed in terms of the size of the balance sheet and the related operating framework would help us make tactical decisions about how we, from an operational standpoint, can best achieve our objectives for interest rate control. Thank you.

CHAIRMAN POWELL. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I'm going to give some comments here that try to react to what other people have been saying around the table. I'm going to start off with core PCE inflation versus the Dallas Fed trimmed mean rate as a measure of underlying inflation for use by the Committee. This is a topic that I've tried to hit on in the past. I think it is time to consider our putting more emphasis on the Dallas Fed trimmed mean as our main measure of underlying inflation. Several of you pointed out yesterday that the Dallas Fed trimmed mean was 1.8 percent a year ago and is 1.8 percent today. So that would indicate not too much in the way of developments in terms of underlying inflation.

Since 2011, the Dallas Fed trimmed mean tracks core PCE inflation quite closely except for two incidents, which I think hurt the Committee. One was in 2015, and the other was in 2017. In both of those cases, there were special factors that came in and moved core PCE inflation lower. And then in both cases, we spent an entire year saying, "Well, core inflation is lower, but it's not really lower because there are special factors, and therefore we're going to wait until the special factors roll out." But if you look at the Dallas Fed trimmed mean in both of

those cases, it did not drop, and you would not have had to tell those stories. You would have been able to say, “Well, inflation is pretty flat,” and that’s what we were trying to say anyway.

Another element of this is that the Dallas Fed trimmed mean was about 1.6 percent during 2015. It’s now about 1.8 percent. I think that gives you a better sense of what’s happened over the past several years. In terms of inflation, there was almost no movement but very gradual movement up toward 2 percent. I think that’s a better assessment of what’s happening. Now we’ve got core PCE, and markets are saying, “Well, core PCE was 1.3 percent in the middle of last year—now it’s up at 1.9 percent. There must be increasing inflation pressure in the economy.” I think that’s a deceptive signal, and that’s coming from artificial factors in core PCE inflation that aren’t in the Dallas Fed trimmed mean. So it’s feeding into an accelerating inflation story that I’m not sure is really there.

Why do we have to do this? Why do we have to stick with core PCE inflation? I’m not quite sure. We have a better measure. Let’s use it. I think the fact that we use core PCE inflation is harming our own perceptions of what’s going on with underlying inflation, and it harms our communications. I know a lot of you have cited the Dallas Fed trimmed mean. It has been a trend over the past five years or more, and I’d encourage everyone to go more in that direction. I think it’s a better measure.

Let me turn to some ideas about the statement. I do support alternative B for today and, actually, for quite a while into the future. [Laughter] I think we may want to think about something like alternative A for next time, so let me try to make the case for alternative A.

In my opinion, as I said yesterday, inflation expectations are still too low for comfort for this Committee. It’s true that something like the five-year TIPS-based measure of expected inflation—or compensation, really, but let’s call that expected inflation—is about 2 percent, but

then you have to convert that into an expectation for PCE inflation that's based on market factors. If you make that conversion—and even if you don't put in risk premiums or anything like that—you're going to get a number like 1¾ percent for market-based expected inflation over the next five years. The market is saying, "I don't really think you're going to hit your inflation target over the next five years."

Now, you might say, "Well, this is close enough for government work." But, you know, we have missed this for a long time, since early 2012. And the other thing about the market-based measures is, they're factoring everything in. They're factoring in an economy that's doing very well. They're factoring in a strong labor market. They're factoring in fiscal policy. They're also factoring in oil prices. So it's a sufficient statistic, and the kicker is that markets are factoring in a more "dovish" Committee than what this Committee is saying that we're going to do on our baseline path. They're anticipating that we're going to have to back off somewhat from our interest rate increase path. And even doing that, we're not going to hit our inflation target. That's how I would interpret the market signal at this point.

Just to put a little bit of emphasis on this, if you dig far enough in the Tealbook and look at the models we use to get an estimate of the probability of inflation exceeding 3 percent versus the probability of inflation being less than 1 percent, according to the models we use, we've still got a higher probability that inflation would be lower than 1 percent in the future rather than higher than 3 percent in the future. Those are tail events, but I think that's interesting that, according to those models, the probabilities really haven't shifted as much as the rhetoric has shifted around the table here.

Inflation expectations are too low, and I think a good strategy for the Committee would be to use the fact that the economy is performing well—it doesn't really get any better than this

from a central banker's perspective—and try to get inflation expectations back to a reasonable level: I think $2\frac{1}{4}$ or 2.3 percent on the five-year TIPS and maybe $2\frac{1}{2}$ percent or higher on the five-year, five-year-forward, because those are CPI-based measures, and they have risk premiums and so on—other things in there. So I think that you'd like them to run somewhat higher than they are today, and that that would be a beautiful thing to do, because that would set us up for hitting our 2 percent target over the next five years, as opposed to again struggling on the low side over that period.

Okay. A third topic I just wanted to touch on is to think about an alternative approach to the baseline Tealbook policy. I do think, as I've said before at this meeting, that the Taylor (1999) rule may have outlived its usefulness as a baseline policy measure, and maybe we should think about a different way to do this. I do understand that this is a difficult thing from the staff's perspective—what do you want to present to the Committee?—but I think it's gotten quite a ways out of alignment with what the Committee is thinking and with what markets are thinking. That's okay. But I think we want to revisit this issue and think about what we're doing. I agree with President Barkin's comment on this.

Let me just put out a possible question for consideration. We could ask the question differently than we do. Instead of assuming Taylor (1999), we could say, "What changes to the staff model would be necessary to rationalize the median SEP path of the policy rate?" And I think what would happen is, you'd say, "Well, this elasticity would have to be different. I'd have to change that coefficient." Then you could come back and say, "How reasonable are these modifications? Why don't we want to make these modifications?" There are good reasons: They don't fit the data, they're unreasonable, or they're crazy or something. And that would be a

way that we could then debate the median SEP path versus what the staff model says. How reasonable would those changes be? So that's just one idea about maybe how to proceed here.

I have just a few reactions to some of the things said this morning. President Rosengren said too much patience might create a situation in which we have to raise the policy rate aggressively later, and then that event might cause market volatility—it might cause a problem, might cause a recession. That's a common argument made around this table. I do not agree with that argument. You know, that's saying that we don't want to be too patient today because we might make a mistake later. And I think that's not the way to think about it. The way to think about it is, we're going to be at exactly the right policy today and exactly the right policy later, and we're going to prepare markets in exactly the right way so there wouldn't be this jarring surprise in the future that would cause a recession. I think if it's appropriate to be patient today, we should be. We could reset inflation expectations. And we have to have confidence in ourselves that if the data tell us to adjust, then we're going to adjust and go from there.

Governor Quarles asked a great question on the yield curve issue. He correctly says, not that much is really going on, as far as the flattening of the yield curve—that's very common as an expansion goes along, and I totally agree with that, and I think the yield curve is fine where it is today. The question is, where are we going to be at the end of this year or early 2019? And if it does invert, what kind of signal is that sending? I think it is sending some kind of signal, and it does have some theoretical support because the long-term interest rate is supposed to be the sequence of future expected short-term rates. So markets are saying that future short-term rates will have to be lower. That sounds like at least a growth slowdown or maybe recession. So that's why it seems to work pretty well in the U.S. data historically.

President Kaplan commented on press conferences. Of course, I've been a big advocate of going to regular press conferences. I agree with his assessment that they're going to be more important as we go forward, and I'd like to get on with it if we can. I think the ability for the Chair to communicate on a regular basis, even if not too much is going on, is very reassuring to markets so that they understand that we're not changing our plans more than what the data suggest. I would very much think that we want to get to that situation soon so that we can handle the variability in the data more effectively.

President Barkin also called current inflation expectations acceptable. I think they're too low, according to my calculations that translate market-based expectations into the PCE version.

President Evans emphasized ideas about data dependence. I do think that we're getting too mechanical here. I think markets are starting to think, with increased entrenchment, that we're going to simply raise the policy rate every quarter come hell or high water and we're going to look through all variation in the data and not change. I think we should at least have a contingency plan about what we would do and under what circumstances we would pause.

I also agree with President Evans about the "remains accommodative" phrase in alternative C getting questionable. I think we need a modifier there. I would suggest "somewhat accommodative." I think President Evans suggested something else. I think we have to do something to modify that particular term in alternative C.

Okay. I'll quit rambling on, and I appreciate the time, Mr. Chair.

CHAIRMAN POWELL. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chairman. I support alternative B. I continue to focus on three key indicators—core PCE inflation, inflation expectations, and indicators of labor market slack. I do take signal from core PCE inflation moving up. I think the fact that it's

moving up slowly, with wage growth moving up slowly, is probably real and is reflecting economic reality. So I take comfort from that. But, as I said yesterday, I do also think that there is likely still some slack in the labor market.

My policy views have changed in the sense that I've been calling for accommodative monetary policy. I feel more comfortable moving to a neutral stance in the near term, but the big question is, where is neutral? And I don't see any evidence, in the data we've talked about today, that we should be going to a contractionary policy stance. I think the neutral stance makes more sense. But "where is neutral?" is a very big question mark, at least in my mind.

There are lots of different models. The previous Tealbook—not this one, the March one—went through an update of different ranges, and the ranges for r^* are all over the place. Returning to the discussion, Thomas, we had yesterday, when I think about it, I think about a short-term r^* and a long-term r^* in the short run and in the long run. In a sense, I think about a "yield curve*"—which gets kind of confusing. But if I think about where the 10-year rate is today, at 3 percent, minus 2 percent inflation, you have a real interest rate of 1 percent. The 10-year rate might be at its neutral value already. I don't know. But my staff and I are going to do a lot more work trying to assess where neutral is.

Then when I think about the yield curve, it's not simply the inversion as a recession indicator. I look at the yield curve as giving us feedback on where neutral is. If we proceed down a path of continuing to raise short-term rates this year and if the 10-year rate were to stay at around 3 percent, yes, we would be approaching a flat or an inverted yield curve. But I think the market would be telling us, "Hey, you're pretty close to neutral already." So I think we should take that seriously and take that into account.

When I look at alternative C, I have three quick comments. One comment is, in alternative A, there's language that we expect to overshoot our inflation target. I actually like that language because I think most people around the table do expect us to overshoot the inflation target. And signaling that we're expecting it and we're comfortable with it would be helpful so markets don't think that we're going to overreact. So I would encourage us to consider the language in alternative A rather than what's in alternative C in June. Second, I would caution us about baking in too many rate hikes this year, because if the yield curve does flatten, I think a number of us around the table would encourage us to pause. We don't want to overcommit to a steep rate path that we may then have to back off from. I'd ask us to consider that. Then the last point is, I always struggle with this notion that we're raising rates to sustain the expansion. I know what we're trying to say, but I find this language intellectually contorted—like arguing that we need to cut taxes to balance the budget. We seem to be contorting ourselves to make this argument. I think a stronger argument is simply to say, “We think we need to raise the federal funds rate in order to achieve our dual-mandate goals over the medium term.” And that gets us away from people getting concerned that we're trying to raise the unemployment rate. If we're trying to achieve our dual-mandate goals, we're trying to achieve maximum employment, and we're trying to achieve stable prices—without having to go to this intellectual contortion of raising rates to sustain the expansion. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. The current economic outlook remains consistent with continued gradual increases in the federal funds rate. A gradual pace is still appropriate for two reasons. First, I expect the short-run level of the equilibrium federal funds rate also to rise only

gradually. I view the economy as moving from a long period of stubborn headwinds with short-run r^* below its long-run value to enjoying tailwinds, meaning that the short-run value of r^* will likely, at some point over the medium term, temporarily exceed its long-run value.

Two of the main reasons for that transition are the shift to an expansionary fiscal policy and the synchronized global expansion, and the effects of both are likely to play out over time. Although the tax cuts are already in place, the full effects on spending may not be seen for a few years. Similarly, the spend-out arising from the recent budget agreement may occur with some delay, which will stretch out the effect of the agreed appropriations. And, as we discussed yesterday, there's a fair likelihood that the elevated spending levels could be extended somewhat beyond the two-year window. Similarly, the process of recovery abroad in some advanced foreign economies is gaining momentum only gradually, just as it did here.

I also believe the gradual pace is warranted in light of the long period of undershooting our inflation target. As many have said, it's encouraging that the latest inflation readings are very close to our objective, but on the conventional over-the-year measure, that's been true for only one month. Moreover, given a long period of underperformance near the lower bound and the slippage we had seen in various measures of expected inflation, it's reasonable to conclude that longer-run underlying inflation is running somewhat below our target. We will want to see inflation remaining in a narrow band around the 2 percent objective on a sustained basis to ensure underlying inflation is re-anchored at 2 percent.

Unfortunately, there's little precision in our understanding of the lags in the inflation process. A key tenet of monetary policy had been that inflation responds with a lag to tightening resource utilization, and that, of course, underlies the case for acting preemptively to prevent a later outbreak of inflation. But my reading of the empirical evidence is mixed. While the

evidence is fairly strong that such a lag was an important part of the inflation process in the 1960s and 1970s, when inflation expectations may have been less well anchored, it is also the case that, over the past 30 years or so, the evidence of lags seems to be far weaker—with some studies suggesting that the relationship between inflation and aggregate demand has become roughly contemporaneous. If there is indeed only a short lag, preemptively accelerating the pace of tightening could raise the risk that inflation expectations get entrenched somewhat below 2 percent. Preemptive acceleration could also contribute to an inversion of the yield curve—something that, as many have noted, has been an important antecedent to recessions in the U.S. context.

On the other hand, a too gradual removal of accommodation will likely mean that resource utilization will tighten further with an economy growing above trend. Historically, periods with very high levels of resource utilization have been associated with either elevated risks of an outbreak of inflation, the “old school” risk, or elevated risks of financial imbalances, a risk we’ve seen play out in the past two or three cycles.

I agree with the cautions expressed by Presidents Kaplan and Evans. I don’t underestimate the challenge of calibrating monetary policy to sustain full employment and re-anchor trend inflation around 2 percent while adjusting to sizable stimulus at a time when resource utilization is high and the economy is growing above trend. Nonetheless, although I want to remain very vigilant for both types of risks, I view continued gradual increases in the federal funds rate to be appropriate and, for that reason, support alternative B.

In addition, as I’ve noted previously—and echoing sentiments expressed by many of you—the forward guidance in paragraph 4 is increasingly awkward, and I would support removing it as soon as the next meeting. With sizable fiscal stimulus, supportive financial

conditions, and foreign growth likely to provide a boost to demand in the near-to-medium term that should fade somewhat further out, it would be reasonable to expect the neutral rate in the medium term to rise above its longer-run value while leaving little imprint on the long-run neutral rate. More broadly, as President George pointed out, conditions no longer merit this kind of forward guidance, and Committee members' outlook is well summarized in the median SEP numbers. I also support moving to language in paragraph 3 that suggests policy is oriented to sustaining our dual-mandate objectives when we gain greater confidence in the inflation outlook. Thank you, Mr. Chair.

CHAIRMAN POWELL. Thank you. President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. I support alternative B as written, with the amended language in Thomas's briefing.

I do have to make a brief remark about Governor Quarles's very nice thought experiment that you're feeling your skin is warm and you're not sure why. I will say that I think this inversion of the yield curve is more about, do you have a high fever, or do you have a severe sunburn? In either case, you want to go to the doctor. [Laughter] So that's the way I think about it.

Anyway, going back to supporting alternative B, I repeat, I think, what most everyone said. Recent data have been in line with the strong economic baseline described in our March forecasts. Job gains are averaging well above their sustainable pace even as we stretch well beyond full employment. On the inflation side, the latest data show inflation essentially at 2 percent. And with all indicators pointing to a strong economic outlook, I'm increasingly confident that this will be a sustained achievement of our target.

I'm very sympathetic to the views expressed by a number of people, though, that this is not the time to declare "mission accomplished" on inflation. We have had just one month at the 12-month change in terms of core inflation, so I think we have to be cautious here. I'm confident that we're going to have a sustained 2 percent inflation—a little bit of an overshoot—but, at the same time, I don't think we should get ahead of ourselves about declaring victory.

Against the background of these conditions, it is appropriate to maintain a steady but gradual pace of policy normalization. The language in alternative B allows us to hold rates fixed today but also validates expectations for an increase in the target range in June, barring any earth-shattering surprises before that meeting. And I continue to see a total of four rate increases this year as appropriate, in view of the very favorable outlook for the economy and inflation.

As we look ahead to the June meeting, the draft language of alternative C serves as a good template for updating the statement language for the reasons that many have talked about. Some of the language in our current statement clearly needs to be changed in coming months. For example, as I've mentioned and many others have mentioned a number of times already, the language in paragraph 4 that suggests the federal funds rate is likely to remain below long-run levels for some time is getting past its sell-by date. In particular, it runs counter to the projected overshooting of the neutral rate in the median SEP. Similarly, the language on closely monitoring inflation and inflation expectations served us well when we were undershooting our target but may be confusing when we're at the target or actually in the period when we're modestly overshooting the 2 percent target.

In addition, as I noted in some of my comments yesterday, we have seen a significant improvement in the economic outlook, but we haven't changed our underlying view of appropriate policy. I do think that, as the economy continues to progress, we will want to have

more optionality for the reasons that Governor Brainard and many others talked about, I see this as optionality whether you're thinking about it as alternative A or alternative C in the future. It could be that the economy performs much stronger, and this gradual rate increase path may not be appropriate. It could be that, as I believe, the neutral rate is low, and that if the economy underperforms, we will not want to continue with increases four times a year or some kind of gradual path like that. So I do think we want to have more optionality on how we describe our future policy moves. And for that reason, I do think that we will want to step away from the explicit forward guidance that we have in paragraph 4 at the appropriate time. Again, I think alternative C provides a really nice approach to doing that sometime in the future.

That said, none of these changes in statement language should occur today for reasons a number of people mentioned. I think that any of these changes, whether in paragraph 1, 2, 3, or 4, really do require some explanation by the Chairman at the press conference to make sure that people do not see what we're doing as a shift in our reaction function, but instead as a movement along the reaction function reflecting the really strong economy and, again, the much better data we're seeing on inflation and other indicators. We'll have time to calibrate the evolution of the statement based on economic developments in coming months. Again, I think it does make sense to do this in the press conference meeting. Thank you.

CHAIRMAN POWELL. Thank you. Vice Chair Dudley.

VICE CHAIRMAN DUDLEY. Thank you, Mr. Chairman. I support alternative B as written. As I see it, the key issue is whether the change in language could be interpreted as signaling the potential for a faster pace of monetary policy tightening in the future by acknowledging that inflation has now "moved close to" and is expected to "run near our symmetric 2 percent objective over the medium term." The statement does signal progress

toward our inflation objective. I think it's going to be important in our public communications to indicate that this outcome was what we've actually been anticipating, and that we still remain on a gradual path of removing monetary policy accommodation.

Although inflation has gotten back to near 2 percent, our target is symmetric. Moreover, I think it is very premature to signal that we've reached our objective, because I think the inflation data are noisy; I talked about this yesterday. Some of the upward pressure on the core PCE index appears, at least from my vantage point, to be due to transitory factors, so it's possible that we could see core PCE inflation turn back down again.

Turning to alternative C, I do think it provides a good template, should we decide to remove further monetary policy accommodation at the June meeting. As I see it, the removal of the language in paragraph 4 will be important in two respects. First, the removal would make it clear that monetary policy is not on a preset course. In my mind, it'd be the final step in "walking back" from forward guidance, a step that I think is appropriate. Second, by removing the language that we expect "the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run," it should signal that, as the federal funds rate gets closer to what we judge as neutral, we're becoming more agnostic about what comes next.

Now, by themselves, the changes in alternative C, including the removal of the "gradual increases" language in paragraph 4, might be taken by some as implying a more aggressive policy stance. If we go with alternative C or something close to that as the postmeeting statement in June, I expect that this risk will be out there, and we just need to be aware of it. I think it's mitigated by two things, however. Number one, the second paragraph will keep the "gradual increases" language. And number two is the fact that we'll have the Summary of

Economic Projections, which I think won't change much from the March meeting. So I think those will anchor and push against that potential risk.

Finally, I want to return to the issue of the flattening of the Treasury yield curve. There are several reasons why I don't share this concern that the flattening of the yield curve foreshadows an economic slowdown or, if it continues further, which seems likely, a recession in the next year or two. First, we should be expecting the curve to flatten when we're raising our federal funds rate target. If the curve weren't flattening, this would suggest that we're behind the curve in removing monetary policy accommodation.

Second, I don't think the yield curve flattening is particularly pronounced. The current spread between the yields on the 2-year Treasury note and the 10-year Treasury note is really roughly average compared with historical experience when you don't include the past decade. And I really do think that you want to exclude the past decade from your calculation for two reasons. Number one, it was a very deep recession, so that meant there was a long period to get back to full employment. During that period, the yield curve is going to be very, very steep. Number two, I don't think you want to include it because you're including only part of a business cycle. You're including the part of the business cycle in which the yield curve is steep, but you're not including the part of the business cycle in which the yield curve was flat or inverted. So I think if you're doing this analysis about what's normal, you should be basically looking at complete business cycles.

Third, we should expect the yield curve to be flatter than normal because term premiums are depressed. And I think flatness due to lower term premiums is different from flatness due to expectations that short-term interest rates are high and are likely to fall in the future. So, to me, what matters is not the shape of the yield curve per se, but whether monetary policy is indeed

tight. If short-term rates are high relative to what is likely to occur over the longer term, then investors will expect short-term rates to fall in the future, and the yield curve will be flat or invert to reflect such expectations.

Now, in the current environment, I don't think that's where we are at all. I think monetary policy is still viewed as accommodative. If you look at federal funds rate futures contracts a few years out, they climb to about 2.7 percent, and then they're sort of flat after that. That implies market participants believe that a neutral federal funds rate is $2\frac{1}{2}$ or higher, and that's not really that different from our implied SEP median long-term federal funds rate of 3 percent.

Also, this is market expectations, and the markets don't always get it right. Even if the yield curve were to flatten, I don't think we want to take this onboard literally and say, "Well, the market thinks that the curve is inverted. Therefore, short-term rates are high." We have to make our independent judgment about whether monetary policy is, in fact, tight.

Finally, while the inverted yield curve has typically preceded recession, I'm not aware of any causal element in this. This is all just about expectations. I'm not aware of banks being unwilling to lend because the yield curve inverts. I think that all that happens is, when the yield curve is inverted, it's because people think that short-term rates are high relative to what they're going to be in the future, and that's it. There's no causal aspect to this.

So I think what's going to happen is, the yield curve is going to continue to flatten as we remove monetary policy accommodation. And I would imagine that inversion might happen earlier than normal because term premiums are depressed. But worrying now that we're about to commit a major policy mistake because the curve is flattening somewhat seems completely misplaced. Our tightening moves have not appreciably tightened financial market conditions.

They've tightened a little bit. So if that's the case, why should we expect our actions to exert a significant restraining effect on economic activity at this point? The answer is straightforward from my perspective: We shouldn't. Thank you, Mr. Chairman.

CHAIRMAN POWELL. Thank you. And thanks to everyone for a thoughtful discussion. I particularly appreciate the comments on alternative C, which I think give us a head start on thinking about what will be important changes to the statement should the Committee decide to move in June.

The decision today seems quite straightforward. I've heard strong support for alternative B as written. So let me now ask Jim Clouse to make clear what the FOMC will vote on and then to read the roll.

MR. CLOUSE. Thank you. The vote will be on the monetary policy statement as it appears on page 4 of Thomas Laubach's briefing materials. The vote will also encompass the directive to the Desk as it appears in the implementation note on pages 6 and 7 of Thomas's briefing materials.

Chairman Powell	Yes
Vice Chairman Dudley	Yes
President Barkin	Yes
President Bostic	Yes
Governor Brainard	Yes
President Mester	Yes
Governor Quarles	Yes
President Williams	Yes

CHAIRMAN POWELL. Thank you. Now we have two sets of related matters under the Board's jurisdiction: corresponding interest rates on reserves and discount rates. I first need a motion from a Board member to leave the interest rates on required and excess reserve balances unchanged at 1¾ percent.

MS. BRAINARD. So moved.

CHAIRMAN POWELL. Second?

MR. QUARLES. Second.

CHAIRMAN POWELL. Without objection. Finally, I need a motion from a Board member to approve establishment of the primary credit rate at the existing rate of 2¼ percent and establishment of the rates for secondary and seasonal credit under the existing formulas specified in the staff's April 27 memo to the Board.

MS. BRAINARD. So moved.

CHAIRMAN POWELL. Second?

MR. QUARLES. Seconded.

CHAIRMAN POWELL. Without objection. Thanks very much. Our final agenda item is to confirm that the next meeting will be on Tuesday and Wednesday, June 12 and 13. And that concludes the meeting. We have your boxed lunches ready for those of you who eat at 10:00 a.m. [Laughter] Thanks very much, everybody, and travel safely.

END OF MEETING