Meeting of the Federal Open Market Committee on June 16–17, 2015

A meeting of the Federal Open Market Committee was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, June 16, 2015, at 1:00 p.m. and continued on Wednesday, June 17, 2015, at 9:00 a.m. Those present were the following:

Janet L. Yellen, Chair
William C. Dudley, Vice Chairman
Lael Brainard
Charles L. Evans
Stanley Fischer
Jeffrey M. Lacker
Dennis P. Lockhart
Jerome H. Powell
Daniel K. Tarullo
John C. Williams

James Bullard, Esther L. George, Loretta J. Mester, and Eric Rosengren, Alternate Members of the Federal Open Market Committee

Narayana Kocherlakota, President of the Federal Reserve Bank of Minneapolis

Helen E. Holcomb and Blake Prichard, First Vice Presidents, Federal Reserve Banks of Dallas and Philadelphia, respectively

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

David Altig, Eric M. Engen,[1] Michael P. Leahy, Jonathan P. McCarthy, William R. Nelson,

Glenn D. Rudebusch, and William Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

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

[1] Attended Wednesday's session only.

Robert deV. Frierson,[2] Secretary of the Board, Office of the Secretary, Board of Governors

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

James A. Clouse and Stephen A. Meyer, Deputy Directors, Division of Monetary Affairs, Board of Governors; Daniel M. Covitz, Deputy Director, Division of Research and Statistics, Board of Governors

Andreas Lehnert, Deputy Director, Office of Financial Stability Policy and Research, Board of Governors

William B. English, Senior Special Adviser to the Board, Office of Board Members, Board of Governors

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

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

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

Christopher J. Erceg and Beth Anne Wilson, Senior Associate Directors, Division of International Finance, Board of Governors; David E. Lebow and Michael G. Palumbo, Senior Associate Directors, Division of Research and Statistics, Board of Governors

Ellen E. Meade and Joyce K. Zickler, Senior Advisers, Division of Monetary Affairs, Board of Governors

Gretchen C. Weinbach, Associate Director, Division of Monetary Affairs, Board of Governors

Glenn Follette and Paul A. Smith, Assistant Directors, Division of Research and Statistics, Board of Governors

Jane E. Ihrig, Deputy Associate Director, Division of Monetary Affairs, Board of Governors

Robert J. Tetlow, Adviser, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie,[2] Assistant to the Secretary, Office of the Secretary, Board of Governors

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[2] Attended the joint session of the Federal Open Market Committee and the Board of Governors.

Katie Ross,[2] Manager, Office of the Secretary, Board of Governors

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

Stephen Lin, Senior Economist, Division of International Finance, Board of Governors; Deborah J. Lindner, Senior Economist, Division of Research and Statistics, Board of Governors

Benjamin K. Johannsen, Marcel A. Priebsch, and Francisco Vazquez-Grande,[3] Economists, Division of Monetary Affairs, Board of Governors

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

Mark A. Gould, First Vice President, Federal Reserve Bank of San Francisco

Michael Strine, Executive Vice President, Federal Reserve Bank of New York

Kartik B. Athreya, Evan F. Koenig, Susan McLaughlin,[3] Samuel Schulhofer-Wohl, Ellis W. Tallman, Geoffrey Tootell, and Christopher J. Waller, Senior Vice Presidents, Federal Reserve Banks of Richmond, Dallas, New York, Minneapolis, Cleveland, Boston, and St. Louis, respectively

Roc Armenter, Deborah L. Leonard, Anna Paulson, Douglas Tillett, and Jonathan L. Willis, Vice Presidents, Federal Reserve Banks of Philadelphia, New York, Chicago, Chicago, and Kansas City, respectively

[3] Attended Tuesday's session only.

Transcript of the Federal Open Market Committee Meeting on June 16–17, 2015

June 16 Session

CHAIR YELLEN. Good afternoon, everyone. I would like to, again, welcome First Vice Presidents Holcomb and Prichard, who are representing Dallas and Philadelphia. My understanding is that Patrick Harker will take office as president of the Federal Reserve Bank of Philadelphia on July 1. So this is likely to be Blake's last meeting, and I want to thank you very much for representing Philadelphia today and at the most recent two meetings.

I'd also like to welcome back Brian Madigan, who has been selected through notation vote to serve as Secretary of the FOMC for a term that began on June 4. As I mentioned at the previous meeting, Brian will have oversight responsibility for the FOMC Secretariat and will be playing a key role in the production of minutes and transcripts of the FOMC meetings. These are duties that Brian has ably performed in the past and is uniquely qualified to fulfill. And, obviously, Brian is no stranger to this room.

Finally, I'd like to also welcome Michael Strine to his first FOMC meeting. Michael, who currently serves as an executive vice president and head of the Federal Reserve Bank of New York's Corporate Group, will become the first vice president of the New York Fed on July 1 and will also become an alternate voter of this Committee at that point. So, Brian and Michael, welcome, and we look forward to working with both of you.

Let's turn now to our agenda, and the first item is going to be the Desk report. But before we do that, we're going to be considering this first topic in a joint meeting of the FOMC and the Board, as usual. So I need a motion to close the Board meeting.

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. Without objection. And now, let me call on Simon to deliver the Desk report.

MR. POTTER.[1] Thank you, Madam Chair. Over the intermeeting period, the 10-year Treasury yield increased 39 basis points, moving in tandem with a more pronounced 67 basis point rise in the 10-year German yield. The moves were concentrated in longer-dated forwards and occurred after German interest rates had reached historically low levels, as shown in the top-left panel of your first exhibit. This rise in nominal forward rates largely retraced the declines that began after last year's Jackson Hole speech by ECB President Draghi and continued through the start of QE in the euro area earlier this year.

The size and speed of the moves in long rates were similar to the so-called taper tantrum in 2013. However, as I'll discuss in a bit, these moves had more limited knock-on effects across financial markets.

Recent U.S. data releases suggested to contacts that disappointing Q1 economic growth may have been largely due to transitory factors, but the data generally were not seen as sufficiently strong to prompt the Committee to start the normalization process at the June or July meetings. On average, buy-side and primary dealer respondents to the Desk's June surveys assigned a near-zero probability to liftoff occurring at this meeting and reduced the odds assigned to the July meeting, as shown in the top-right panel. The average probability assigned to liftoff in September or later increased for both groups. The vast majority of respondents to our surveys put the probability of a liftoff in September somewhere between 30 and 70 percent. Beyond liftoff, survey respondents' modal and mean expectations for the level of the federal funds rate over the next several years were little changed.

The market-implied path of the federal funds rate in the very near term was also little changed over the period, though the path two to three years ahead shifted up slightly, as shown in the middle-left panel. The path remains far lower and flatter than at the end of 2013 and is substantially below the median of the March SEP federal funds rate projections for 2016 and 2017. Desk survey respondents expect the means of the rate projections to decline in the June SEP; they also expect the dispersion of projections across FOMC participants to narrow.

The upward shift in the market-implied path, alongside relatively steady survey expectations, suggests that the rise in market rates over the period was due to an increase in near-dated term premiums. Indeed, the difference between the end-2017 market-implied rate and the mean PDF-implied federal funds rate expectation obtained from the Desk surveys—a measure of the term premium at this horizon—became less negative over the intermeeting period for both buy- and sell-side respondents, as shown in the middle-right panel. The increase in these near-dated

[1] The materials used by Mr. Potter are appended to this transcript (appendix 1).

term premiums may stem from reduced concerns over negative shocks and from higher interest rates abroad.

The Desk surveys suggest that the rise in longer-dated U.S. Treasury yields was also due to increased term premiums, as shown in the bottom-left panel. In particular, when asked to decompose the 36 basis point change in the 10-year rate between April 28 and June 3, survey respondents on average ascribed 23 basis points, or 63 percent of the move, to a rise in the term premium, which, in their qualitative comments, was linked to spillover from European markets. On average, respondents attributed 9 basis points, or one-quarter of the move, to higher expected average real policy rates. There was only a minimal attribution given to a higher expected average inflation rate. The staff's term-structure models also attribute most of the move to movements in term premiums.

As shown in the left half of the bottom-right panel, nearly all of the 42 basis point rise in U.S. forward nominal rates over the period came from higher real yields, with forward measures of domestic inflation compensation relatively little changed.

The right half of the panel shows that real rates also accounted for most of the move in the euro-area rates. Inflation compensation accounted for a slightly larger portion of the European rate moves in comparison to the United States, as recent higher euro-area realized core inflation reportedly reduced the odds some assigned to very low longer-run inflation outcomes in the region. Market participants attributed the rise in euro-area real rates largely to higher term premiums.

Market participants highlighted a number of technical factors that likely exacerbated the rise in euro-area yields. Many noted a reduction or reversal of extended long positions by momentum-driven leveraged investors, whose assets under management have grown substantially over recent years. In addition, higher euro-area interest rate volatility may have caused investors who rely on value-at-risk models to pare back their holdings. The top-left panel of your next exhibit shows this volatility using the 30-day average intraday trading range on the 10-year bund yield, which rose to its highest levels in three years. Over the period, Draghi noted that market participants "should get used to periods of higher volatility," and contacts reported that this stated comfort with recent moves contributed to further upward pressure on rates. During the sharp rate moves and since the onset of the ECB's asset purchases, anecdotal reports from Desk counterparties indicate that liquidity conditions in the euro-area fixed-income markets have deteriorated, though this is not borne out in liquidity metrics we typically monitor. However, the rise in interest rates has decreased the amount of European securities trading with negative yields and alleviated some associated challenges for investors. Indeed, there are a greater number of positive-yielding securities available for reinvestment from SOMA's maturing euro-denominated bond holdings.

The sharp rise in longer-term rates over the period has drawn comparisons with the taper tantrum of 2013, with some even labeling the selloff in euro-area rates as the "bund tantrum." However, the deterioration in risk sentiment evidenced across a

multitude of global risk assets has been much less acute, as shown in the top-right panel. The disparate reaction of risk assets may be a result of a more limited shift in U.S. monetary policy expectations, a smaller increase in U.S. interest rates, and the backdrop of ECB and BOJ asset purchases continuing well into 2016. In addition, valuations and positioning were reportedly not as extended across credit and emerging market assets as we know, albeit ex post, they were in 2013, which may account for some of the differences. Although the most severe risks to emerging market asset prices associated with a sharp increase in U.S. term premiums—risks discussed in the recent QS report—have thus far not materialized, vulnerabilities remain, especially if macroeconomic fundamentals in troubled emerging markets weaken further.

Emerging market currencies depreciated against the dollar over the period, also shown in the middle-left panel, but to a lesser extent than following the taper tantrum. On net, the DXY dollar index was little changed, though there were significant movements in some major currency pairs.

The foreign exchange value of the euro continued to display very little reaction to the precarious situation in Greece, and spillover to other euro-area assets remained limited. For example, as shown in the middle-right panel, Italian spreads to German rates remained relatively stable amidst Greek bank deposit outflows, although this and other peripheral-country spreads have widened over the most recent few trading sessions. Greek deposit outflows have been offset by increases in Eurosystem emergency liquidity assistance. Greece's inability to reach an agreement on a new program with its creditors could lead it not to deliver payments to the IMF at the end of the month and payments to the ECB over the following two months. A payment delay or default could, in turn, lead the ECB to cut off or severely limit ELA to Greek banks, resulting in bank holidays, capital controls, and the potential for an exit from the euro area. However, most market participants still expect Greece and its creditors to reach a resolution that would allow it to remain in the euro area. Beth Anne will discuss the Greek situation further in her briefing. I should note that last Wednesday, the ECB saw a small bid at its seven-day U.S. dollar liquidity auction, the first since mid-September 2014.

Outside Greece, another possible risk in markets relates to the dramatic rise in Chinese equity prices, which, despite the country's slowing growth, increased 13 percent over the period and are nearly 150 percent higher over the past year. Market participants frequently cite expectations for continued accommodative policies by the People's Bank of China as the dominant driver of the rise in Chinese shares. The timing of recent monetary policy easing actions is indicated by the yellow diamonds in the panel in the bottom-left. The rally over the second quarter of this year has also overlapped with a significant drop in Chinese money market interest rates, which reduced the cost of leverage via equity margin financing, providing a tailwind to the equity market.

Margin trading is widely used by Chinese retail investors, and there has been a substantial increase in margin financing activity as a percent of the substantially

higher market capitalization, as shown in the bottom-right panel. Market participants have cited the use of margin financing as a contributor to the equity rally, which has led to a rapid expansion of earnings multiples. Higher valuations and increased retail equity market leverage may increase risks associated with any future sharp—and possibly disorderly—equity market correction, especially reflecting wealth and confidence effects. That said, many have noted that the effect of any potential correction in mainland equity markets may be limited outside greater China.

Your next two exhibits focus on money markets and Desk operations. The Desk's ON RRP operations continued to provide a soft floor under both secured and unsecured short-term interest rates, as shown in the top-left panel of the third exhibit. Relative to the prior intermeeting period, secured rates, on average, printed only modestly lower, while unsecured rates, such as the federal funds, were little changed.

Overall take-up in ON RRP operations was similar to previous periods and is shown in the top-right panel. Reverse repos conducted with foreign official institutions—known as the "foreign RP pool"—remained around $150 billion over the intermeeting period. The foreign RP pool is one possible destination for the runoff in nonoperational deposits held by foreign central banks, as discussed in a box in the Tealbook, Book B.

The Board of Governors continued its periodic testing of the TDF with a 14-day operation on May 21 and a 7-day operation on May 28. The results were in line with the staff's expectations, and market participants did not report any price action resulting from the testing.

The Desk's announcement on May 20 of term RRP operations spanning the June quarter-end did not garner significant market attention. Market participants generally suggested that, similar to the March quarter-end, the provision of "at least $200 billion" in term RRPs should leave sufficient headroom in the ON RRP over the quarter-end date. As noted in the Desk's statement, additional details regarding the amount offered and the maximum offering rates will be announced on June 22. These proposed details are summarized in your middle-left panel, under the assumption that the Committee does not increase the target range for the federal funds rate at this meeting. Unlike the $75 billion and $125 billion offerings in March, for the June quarter-end, the $200 billion available will be equally split across the two operations. Based on our experience with the term RRPs over the March quarter-end, we feel this change could better balance demand across the two operations. Further, the staff proposes setting the max offering rate at a smaller spread of 3 basis points to the prevailing ON RRP rate. This should help inform whether demand is driven more by the interest rate spread or the certainty of quarter-end supply. Also, these operations will include our first test of a two-day term operation, which should give us information on how close a substitute a two-day term is to overnight operations.

Operationally, the staff is ready to implement ON RRPs and, if necessary, term RRPs and TDFs to support the IOER rate for liftoff at any time deemed appropriate by the Committee. As part of the planning process for the start of the normalization

of policy, we would also like to update you on plans for the post-liftoff daily briefing process. These plans are designed to ensure the Committee receives timely updates on market conditions and is provided the opportunity to make adjustments to its policy tools, if necessary. As detailed in the memo circulated prior to the meeting and summarized in your middle-right panel, the staff proposes holding daily briefings from 2:00 to 3:00 p.m. for a period following liftoff. If a change to the parameters of the policy tools is needed, or if the Committee would like to hold a discussion on the configuration of the various policy tools, the daily briefing will be converted to an FOMC meeting upon notification by the FOMC Secretariat. If changes were made to the configuration of policy tools, a public announcement would be made at 4:30 p.m. on the day of any such decision. Thomas will discuss the format of announcements about normalization tools in his briefing. As described in another memo to the Committee ahead of this meeting, the Desk also plans to extend the duration of our daily morning operations briefing to allow for broader coverage and discussion of Desk operations and related market developments. These extended morning briefings would likely continue for longer than the daily staff briefings to the Committee.

I would like to highlight a couple of developments that could affect the Federal Reserve's balance sheet. On May 6, the Treasury—as part of its quarterly refunding announcement—indicated it would institute a minimum cash balance of roughly $150 billion in order to cover, on average, one week of outflows from the Treasury General Account, known as the TGA. As shown in the bottom-left panel, this would represent a material increase in the TGA balance relative to historical levels. Recall that an increase in the TGA reduces reserves in the banking system dollar for dollar.

The Treasury did not specify how it would fund this increase, though most observers believe it will occur through higher bill issuance. Increases in net bill supply have been inversely correlated with take-up in the ON RRP facility, so a higher TGA could be associated with lower ON RRP usage. However, if the Treasury exhausts its extraordinary measures to remain below the debt ceiling in the future, it will likely need to limit net new bill issuance and reduce its cash balance below the $150 billion minimum.

A factor with the potential to have a significant effect on the asset side of the Fed's balance sheet is the maturity of Treasury securities starting in early 2016, summarized in the bottom-right panel. Treasury reinvestments have not been of material size for some time, in view of the maturity profile of the Treasury portfolio resulting from the MEP. This issue has become somewhat more prominent in market discussions as the expected timing of normalization has shifted out, leaving open the possibility that sizable Treasury maturities could occur while the current reinvestment policy is still in place. Maturities of Treasury securities in the first quarter of 2016 will total $62 billion.

In accordance with the Committee's current reinvestment policy, the Desk would reinvest maturing Treasuries in new securities issued via auctions that settle on the day the maturing funds are received. Specifically, as summarized in the top-left panel of your final exhibit, according to this policy, the principal amount received from

maturing securities is reinvested on a noncompetitive basis and allocated in proportion to the issue sizes of all qualifying new securities. With regard to agency securities, the Desk continues to reinvest principal payments on holdings of agency debt and MBS into agency MBS through secondary market purchases, which continue to go smoothly.

Finally, we'd like to update you on the proposed changes to the calculation of the effective federal funds rate. The Desk is proposing to change the calculation methodology to a volume-weighted median concurrent with the data-source cutover to the FR 2420 in the first part of 2016. The same calculation methodology would be used for the new overnight bank funding rate. Recall, at the most recent meeting, we discussed the advantages of moving to a volume-weighted median—namely, the improvement in the representativeness and robustness of the effective rate. The detailed case for making these changes was summarized in both a memo to the Committee and a technical memo to research directors.

As noted in a memo sent to the FOMC last week, if the Committee is comfortable with the change to a volume-weighted median, our proposed plan to communicate these changes, outlined in your top-right panel, would be to include a summary of the proposed change and the associated discussion in the June meeting minutes as well as to release a Desk statement and a technical note with data and analysis supporting the change on the New York Fed website shortly thereafter. This would serve to enhance the public's understanding of the rationale for transitioning to the FR 2420 data collection and changing the calculation methodology. We will plan to return to the Committee later this year to outline specific implementation features, such as a detailed timeline, a list of additional disclosures, and an overview of practices to align with IOSCO principles for financial benchmarks. Thank you, Madam Chair. That concludes my prepared remarks.

CHAIR YELLEN. Thank you, Simon. Questions for Simon? President Rosengren.

MR. ROSENGREN. Your chart 18 on the SOMA Treasury security maturities is interesting. And so, your philosophy on duration as more and more of these securities are coming due—what is the conscious decision for the duration we're aiming at for the overall SOMA portfolio? Is there a target that we're hitting? We haven't had much of a discussion of the duration of our portfolio, and I'm wondering whether at some point it might be worthwhile discussing.

MR. POTTER. When we do rollovers, it really depends on Treasury issuance. We roll over into everything they issue except bills. So we would be adding securities to the portfolio of

between 60 and 70 months, depending on what Treasury does. They might move up above 70, depending on how they assess their split between bills and notes and other issues that they have. But at the point when we're reinvesting, we are not actively targeting any duration limit from the Desk. We're basically just accepting what the Treasury puts out in terms of its duration.

MR. ROSENGREN. So the debt management strategy of the Treasury is determining the duration of our portfolio going forward?

MR. POTTER. No, it's determining the duration of what we reinvest in. Because we have a very large amount of Treasuries right now, it won't have a material effect on the duration of the portfolio in 2016, if we continue doing reinvestments. Remember that what we are reinvesting has also got zero duration at that point. So reinvestment will then move up the duration in a mechanical sense, but it's not as if that's going to affect the previous thought that we had of holding long-duration assets. That is still there.

MR. ROSENGREN. Thank you.

CHAIR YELLEN. Other questions for Simon? President Dudley.

VICE CHAIRMAN DUDLEY. I just want to clarify. On panel 17, the Treasury increases its cash balance and that increases the supply of risk-free assets and reduces the demand for overnight RRP. If the debt limit becomes binding, then Treasury would draw down its cash balance. And so the demand for our overnight RRP could go up at that point in time. Is that a reasonable inference?

MR. POTTER. I think there is definitely that direct effect. And we know that, if this was happening in 2016, there are lots of other changes in money markets. There's another issue that we haven't really faced yet. Treasury bills are viewed as very safe assets, and there's only one exception to that: when Congress and the Treasury can't really agree on whether to raise the

debt limit. And then you could see other events happen. We saw this in 2013—a little bit of aversion to Treasury bills that would mature in the so-called red zone.

VICE CHAIRMAN DUDLEY. And the overnight RRP might be more attractive.

MR. POTTER. It's possible. Again, if you look at the holders of Treasury bills, a large amount of the holders are foreign central banks. So it would depend on their behavior. They also have the foreign pool as another option at that point.

VICE CHAIRMAN DUDLEY. What I'm trying to drive at is, it seems like it creates a little bit more uncertainty about what the demand for the overnight RRP would be as you go through this period.

MR. POTTER. There is definitely uncertainty on the operations side for us, always, when the debt limit comes up. I think the larger uncertainty is going through the debt limit again and what that does for views of U.S. policymaking and the Treasury market in general.

VICE CHAIRMAN DUDLEY. Sure, okay. Thank you.

CHAIR YELLEN. Other questions for Simon? [No response] Seeing none, let me just mention that Simon has offered a plan for moving to a calculation of the federal funds rate from the new FR 2420 data collection and simultaneously implementing this new volume-weighted median to calculate the federal funds rate. I just want to ask around the room whether people are comfortable with the Federal Reserve Bank of New York moving ahead with this plan.

MR. WILLIAMS. Do you want us to raise our hands?

CHAIR YELLEN. Yes. Raise your hands if you're comfortable. Okay, great. Anybody uncomfortable for any reason and want to comment? [No response] Okay, very good.

For our next topic, let me call on Susan McLaughlin, who is going to discuss the Federal Reserve Bank of New York's counterparty framework review.

MS. McLAUGHLIN.[2] Thank you, Madam Chair. I'll be referring to the exhibit titled "Desk Counterparty Framework."

Over the past year and a half, Federal Reserve Bank of New York and Board staff members have been engaged in a review of the Desk's counterparty framework across all of the Desk's operations in U.S. and foreign financial markets. In the past, such reviews tended to occur separately for domestic and foreign operations. This is the first time the staff have reviewed the frameworks on a comprehensive basis rather than an operation-specific one. The staff's recommendation is that such a review be conducted every three years from now on, in order to think less reactively and more strategically about how to manage Desk counterparties. The staff would consult with the Committee after each of these reviews.

As noted in the memo that you received, a key theme of the review was that financial markets are evolving in response to technological and regulatory developments, and that the structure of the markets in which the Desk operates could change in ways that may benefit from a larger and/or more diverse set of counterparties in the longer term.

It is too early at this point to forecast how the structure of these markets will evolve or what changes to the Desk's counterparty framework will be required to adapt to these changes. But the staff's review also suggested a number of enhancements that could be made in the near term to strengthen and harmonize the management of counterparties across all of the Desk's operations. Many of the recommendations concern ways to harmonize and refine internal administration of counterparty relationships across all Desk operations and are already under way. These changes are listed in the third paragraph of exhibit 1.

Additionally, the staff's review raised two policy questions that represent near-term opportunities for additional changes to the Desk's counterparty practices. These questions are shown in the fourth paragraph of exhibit 1. One question is whether to consider publishing lists of counterparties for FX and/or foreign reserves management operations, as is done currently for domestic OMO counterparties. As you can see in panel 2 of exhibit 2, there are currently some inconsistencies in the practices across counterparty types.

While most central banks do not make information about their FX or foreign reserves management counterparties public, the Federal Reserve already discloses some of this information through the quarterly post-trade disclosures under Dodd-Frank, just as is done for OMO counterparties. However, while the lists of primary dealers and expanded reverse repo counterparties are public, the Desk does not currently publish a list of FX or foreign reserves management counterparties.

Publishing counterparty lists for foreign operations would increase transparency by informing the public of all of the firms eligible for these operations and not just

[2] The materials used by Ms. McLaughlin are appended to this transcript (appendix 2).

those firms the Desk has dealt with in a given quarter. However, publishing a list could also create the perception of a Federal Reserve imprimatur with regard to the firms listed, as seems to have occurred in the case of primary dealers. This imprimatur carries costs as well as benefits in managing these relationships.

For open market operations, the benefit of publication clearly outweighs the cost. The Desk relies on primary dealers for a variety of services beyond trade execution in support of its mandate, such as FR 2004 reporting, TMPG best practice adherence, and survey responses about policy expectations before each meeting. Primary dealers are willing to serve these needs because they value the status they obtain from being listed as a primary dealer.

However, the Federal Reserve plays a more limited role in the foreign financial markets in which the Desk operates and does not require the same range of services from its counterparties in those markets. So the case for providing the same type of public recognition to these counterparties through publication of a list may not exist or may be stronger, perhaps, for policy operations like FX intervention than for portfolio maintenance activities such as reinvestment of Eurobond proceeds.

A second question is whether there is value to be gained by revising the eligibility requirements for primary dealers to allow for a modest expansion of the list. As is shown in panel 3 of exhibit 2, the number of primary dealers has risen modestly since the recent financial crisis but is still near the low end of the historical range. The staff believes that modifying the eligibility requirements to allow a wider range of broker-dealers and banks that make markets in government securities to be considered for primary dealer status is worthwhile, as it can potentially increase operational coverage and enhance trade execution. It will also increase coverage for Treasury auctions.

Additionally, the staff views a modest expansion of the primary dealer list as an informative and low-cost initial step toward the broader counterparty framework that might be required in the future as a result of changes in market structure. It would allow the staff to build on the learning to date from the Treasury and MBS pilots the Desk has recently conducted with very small firms and could be accomplished within the scope of the existing technology infrastructure.

The staff would like to pursue further work on these two questions and develop proposals to bring to the Committee later this year, along with drafts of the revised counterparty policies that would reflect the proposed changes. A tentative plan would be to publish revised counterparty policies in tandem with the announcement of the conclusion of the mortgage operations pilot shortly after year-end. The staff would greatly appreciate any feedback you may have, either now or in the coming weeks, on the questions outlined at the bottom of exhibit 1. In particular, do you agree that the staff should develop recommendations on these two issues for the Committee's consideration later this year? Do you have reactions to the questions we have laid out? Are there other issues that you would like the staff to consider? Are you comfortable with the general timeline and approach laid out for communicating to the

public in the event that the staff's recommendations are adopted? Thank you, Madam Chair. That concludes my prepared remarks.

CHAIR YELLEN. Thank you. Questions or comments? Vice Chairman.

VICE CHAIRMAN DUDLEY. If we broadened the eligibility requirements, there is a presumption that there would be more primary dealers. But that implies that someone actually would want to take advantage of it. So what do we know about that?

MS. McLAUGHLIN. That's true. We've actually just gotten some data in the past couple of days from the SEC on broker-dealers that we are going to be looking at to try to identify which broker-dealers are actually participants in the Treasury market. We probably can't predict who wants to step forward, and we know that some firms in the past who were eligible did not. But we'll at least be able to dimension a bit more what a given reduction in the capital requirement, for example, might entail in terms of potential additional counterparties.

CHAIR YELLEN. Other questions or comments? Governor Powell.

MR. POWELL. Susan, when you say that there may be an evolution in Treasury market structure in a direction that would suggest we need more primary dealers, what are you really thinking about there?

MS. McLAUGHLIN. There could be a number of ways that the markets could evolve. One could be that large firms are paring back their market-making activity, and smaller firms come in and pick up some of that activity. It could be that different types of firms beyond the traditional bank and broker-dealer realm we deal with come into the market and do more market making. I think there are a range of potential outcomes that we could see, and depending on the way that the market could evolve, that would have implications for what we might need to do to adapt our counterparty framework.

MR. POTTER. I think one way of trying to think about this is that we've been very reactive in the past. And because of the way trading happens and the end-to-end processing we would like to put in place, we need to plan more in advance for changes and have more flexibility.

CHAIR YELLEN. President Lacker.

MR. LACKER. I have two questions. Where did the $150 million dollar capital requirement come from? And just how does that relate to our exposure to them? How well is it grounded in what we actually need by way of assurance for the transaction?

MS. McLAUGHLIN. The $150 million requirement that we currently have was put in place in early 2010. And I think it was, to be frank, a result of negotiation and experience with the existing set of firms that we were dealing with. We don't really view that necessarily as a credit-risk mitigant for counterparties, it's really more a sign of the development of a firm and the capabilities that it has to operate internal compliance, risk management, et cetera. So I think the exposures that we can have to dealers on a given day are very large relative to that capital.

MR. POTTER. That's true. I think that, if I remember correctly, it was looking at the 30-year Treasury, which has the most price variation in it. And, really, there's a replacement cost in the operations, and we've been thinking through what that would mean for us. I think if you look at the history of the primary dealers, there's always been a feeling that we want some level of capital, and that links into market presence and their ability to execute well for us.

I think one of the things we'd like to do is come back and have more detail about some of the risk tolerance there. And I think, back in 2010—this might not have been prominent in people's minds, but—the risk tolerance really belongs to the people around this table. So giving me some clarity as to what we're willing to accept would be helpful.

MR. LACKER. This connects to this issue you alluded to in the memo in which there's this sort of imprimatur, but we're not explicitly examining for the type of maturity and risk-management capabilities you're talking about. And there was a time—I think it was in the '90s, the memo said—when a dealer failed, and we said, "Well, no, it's not our responsibility to check on their safety and soundness." But what you're telling me is, we really do care.

MS. McLAUGHLIN. We do care.

MR. LACKER. But we don't want to look as if we're responsible and we're actually doing due diligence. That seems like a really uncomfortable spot. We either need to be in or out on this, it seems to me.

MR. POTTER. I think we will be coming back to you to try and hone that down. There is some tension between the role of the Federal Reserve Bank of New York as a direct counterparty and what you might want the risk tolerance to be. But any way we can make clear that we're not there in a supervisory role or a safety-and-soundness role would be great.

Again, if you look at the history that we produced, this has been a constant tension, because the mere fact that we're the counterparty and we have to do some due diligence because these are counterparties in a business relationship, but at the same time we're a central bank with supervisory policies—it's very hard to separate that, both in the mind of the public and in the mind of the firms that we deal with.

MR. LACKER. What do you mean? What do we need to separate? Safety and soundness is analogous to counterparty risk evaluation. It's a similar activity. Why do we have to separate that?

MR. POTTER. Can you explain that a little bit more?

MR. LACKER. Well, they're the same things. We're checking on their capability in managing risk. So I don't see why we have to separate them. I think we're on the same page here. We need to really evaluate what we need to do, and if we need to do the due diligence, then maybe you should evaluate what that would involve.

MR. POTTER. Yes. But, just to be clear, the Desk does not check the safety and soundness of our counterparties in the way a supervisor would. We're looking at them as a business counterparty, which is a very different thing. I think safety and soundness is what we expect the supervisors to do. We want our counterparties to deliver on the operations that we have with them in an efficient way. And that's it.

MR. LACKER. Okay. But that's a certain level of due diligence.

MR. POTTER. It is, but it's a business due diligence, just as any private counterparty would do.

MR. LACKER. I have another question, Madam Chair. When you're a primary dealer, you agree to participate pro rata in Treasury auctions.

MS. McLAUGHLIN. Yes.

MR. LACKER. Does it seem attractive to give thought in this process to separating the qualifications for being a counterparty to the Federal Reserve Bank of New York in the SOMA from being a Treasury counterparty—because that requirement could be an impediment, conceivably, to broadening the pool. And I'll just generally say, I think broadening the pool of participants makes sense. I think it would help push back against this unfortunate notion out there that we have a cozy club of counterparties. But what would it be like to separate that out and say, "All right, for us, you don't need this pro rata thing, but to be a Treasury auction participant, you need this pro rata thing, and that's a separate category"?

MS. McLAUGHLIN. I think that's actually an issue that we talked a lot about early in the review. Why should this role as fiscal agent bind? I think in the past they've worked together because the firms that were particularly desirable for the Treasury as auction participants were also particularly desirable for us. As you say, that could diverge a bit in the future depending on what happens with respect to market structure.

I think, though, we have this role as fiscal agent. We've got a very clear indication from the Treasury that they would like us to continue to play this role for them. We have a lot of expertise on capital markets, we have these relationships with primary dealers, and we have a well-developed infrastructure that's been built up over a long time that I think would be very costly for them to replicate. And I think that's just probably one of many reasons why they have indicated strongly to us that they like to have us continue to play this role.

MR. LACKER. I wasn't envisioning that we would change that. It's just that the primary dealers are this group, and then there's some special subset—we don't make all of our primary dealers do pro rata bids in the Treasury auction.

MS. McLAUGHLIN. Yes. We did actually discuss some of these ideas early in the review—for instance, could you have different tiers of membership? That might be possible in the future. We didn't feel that this was the right time to go there, but I think it's something that we do want to—

MR. LACKER. Why?

MS. McLAUGHLIN. Well, just because we don't feel yet that we need to branch out well beyond the broker-dealer and bank community that we already deal with. I think there's more scope first to bring more of those firms in.

MR. POTTER. We ran two pilots with smaller firms, and we looked at the performance of those smaller firms. Based on the performance, we would have to scale up with thousands of firms—the systems cost and the people cost is really high. I think Susan tried to make clear in the memo that we have to look at the marginal cost of adding counterparties versus the marginal benefit, and what we found is that these large market makers are really efficient for some of the things that we need to do.

We found that in the case of MBS. There's a footnote on the ECB, which has 2,000 counterparties, of which 350 are regulars in their temporary open market operations. They're basically utilizing 60, but really only 20 to do their permanent open market operations right now. So we're learning. What I think is—and this goes to Governor Powell's question—there is a lot of change in the industry right now, and we just need to be flexible, which is why in 2017 we'll be revisiting some of these issues. And we're happy to give you more information on what we thought about the tiering as well.

MR. LACKER. Okay. You don't see an obvious impediment to that, other than maybe the Treasury's objection?

MR. POTTER. There are many systems and technology and cost impediments relative to the marginal benefit.

MR. LACKER. Oh, no, I'm not talking about broadening the pool, per se. I'm talking about the two tiers.

MR. POTTER. Again, we should be careful. We have a pretty important public interest in the Treasury market of the United States, and we wouldn't like to undermine the ability of the Treasury to issue debt at the lowest cost to U.S. taxpayers.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. The staff asked for reactions to some of the questions they posed. I would think it would be useful to have further conversation and discussion about both of these topics. In terms of the first issue about revising eligibility requirements, I welcome what some refer to as trying to be more strategic about the deliberation: What exactly are the risks, and what are we trying to achieve through the program? The more we can elevate it to that level, I think the more helpful our discussion within the Committee will be, so I encourage the staff to do what they can to help the Committee to get to that level.

The same on the transparency front. Madam Chair, both you and your predecessor have fostered transparency within this Committee. So an immediate reaction from somebody who participates in these meetings is that, well, we should be transparent. So, again, I think trying to think about the costs and the benefits—how those changes fit into a more overarching strategic framework, into what we're trying to accomplish—would be useful. But it would certainly be useful to have further conversation and discussion about these issues. Thank you.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. I just wanted to add that I support continuing to look at this, including the longer-run issues around these counterparties. Disclosing the FX counterparties by name, I think, is one step, but I assume you've also thought about talking about our procedures for how we select them—so it would be similar to how we treat domestic operations when we describe the selection procedures. Just listing the names could reinforce this idea that we only deal with a narrow set of players, as opposed to describing the process and procedure more.

MS. McLAUGHLIN. One thing that we didn't dwell on as much in the memo, another element of transparency, is that we do have counterparty policies on the website for all of our

OMO counterparties and also currently for FX. We're updating that, and we're also planning to publish one for the foreign reserves management counterparties as well.

MS. GEORGE. I think that would be important. Thank you.

CHAIR YELLEN. Governor Brainard.

MS. BRAINARD. I want to also support the proposal on transparency. I don't see, actually, the costs, and I think the benefits are innumerable.

MR. POTTER. So, if I gave you the names of these FX counterparties, they'd line up pretty well with a legal action that the Board and the U.S. Department of Justice just took, so there is some—

MS. BRAINARD. I understand that. But the flip side of that is, they are our counterparties currently.

MR. POTTER. That's right.

MS. BRAINARD. So we're not actually changing our interactions with them.

MR. POTTER. Yes, exactly.

MS. BRAINARD. All we're doing is disclosing to the public the reality, which seems wise to me.

CHAIR YELLEN. Other comments? [No response] Okay. Thank you very much. Before we move to the economic go-round, I need a motion to ratify domestic open market operations since our April meeting.

VICE CHAIRMAN DUDLEY. So moved.

CHAIR YELLEN. Without objection. And let me say that our Board meeting has now concluded. Okay, let's go to the economic briefings now. Glenn Follette is going to start us off on the chart show.

MR. FOLLETTE.[3] Thank you, Madam Chair. As you know, the recent spending data have been disappointing, on the whole. Indeed, as shown on line 1 of panel 1, after taking on board the indicators that became available after we closed the Tealbook projection last week, we now estimate that real GDP contracted at an annual rate of ¼ percent in the first quarter, with net exports, line 5, subtracting 1¾ percentage points off growth. Private domestic final purchases, displayed on line 3, also softened noticeably, with weaker readings for both consumption and business investment.

As outlined in panel 2, a key challenge has been to assess how much of the first-quarter weakness should be carried forward. As discussed in a Tealbook box, we now judge that some of the softness reflects residual seasonality—the magnitude of which is subject to considerable uncertainty—where we expect the low reading in the first quarter will be offset by strong readings in subsequent quarters, primarily the second quarter. In addition, we suspect similar transitory effects from the harsh winter weather and the disruption of supply chains from the labor disputes at West Coast ports.

But some of the weakness in Q1 appears to reflect more persistent factors. The appreciation of the dollar has imposed a substantial drag on net exports over the first half of the year, and we expect more of the same through next year. In addition, the negative effects of the drop in oil prices on drilling have left a deep imprint on investment during the first half of the year. The black line in panel 3 indicates that business fixed investment fell in the first quarter, reflecting a plunge in drilling and mining investment, shown by the blue portion of the bars—and another enormous drop in drilling appears to be underway this quarter. As shown in panel 4, the combined effects of the strong dollar and the slump in oil prices resulted in declines in manufacturing output, the red line, and total industrial production, the black line, in the first quarter, and the data in hand indicate further weakness in the current quarter. Finally, disappointing readings on personal consumption, despite the boost to purchasing power from the low oil prices, have led us to assume less momentum in consumption over the remainder of the year.

So we see a wide range of evidence that there has been some deceleration in demand, but there are also indicators that the GDP data exaggerate the magnitude of that deceleration. For one, payroll employment growth, shown in panel 5, has been well maintained, albeit at a slower pace than during 2014. In addition, gross domestic income increased at a moderate rate in the first quarter, and surveys of manufacturing and nonmanufacturing purchasing managers are more upbeat than would be consistent with the GDP data.

Putting all of this together, we see a somewhat weaker trajectory for real GDP growth in 2015 than we had written down in the March Tealbook. For the current

[3] The materials used by Mr. Follette and Ms. Wilson are appended to this transcript (appendix 3).

quarter, we estimate that real GDP will increase 2¾ percent and then ease a bit to a 1¾ percent gain in the third quarter.

As shown on line 1 in panel 6, the Blue Chip forecasters seem to assess the Q1 weakness much as we do: Since March, they have downgraded their estimate for the first quarter, but they continue to anticipate above-trend growth in the second quarter and see average growth over the first half as likely to be considerably weaker than they were expecting three months ago. As shown on line 5, the median nowcast across the Federal Reserve System also falls in this middle ground—better than in the first quarter, but not recovering the ground that was lost then.

Your next exhibit reviews our medium-term outlook. As indicated by the black line in panel 1, we project real GDP to increase at a moderate rate throughout the medium term, a pace that is little changed relative to the most recent couple of Tealbooks. The red line provides a comparison over a longer time period—namely, one year ago—and as you can see, the June 2014 Tealbook forecast for GDP growth was visibly stronger than the current projection.

As noted in panel 2, the downward revision since last year is largely the result of the surprising appreciation of the dollar as well as a somewhat softer foreign outlook, topics which will be explored by Beth Anne. The drag generated by these two factors has been offset to a small extent by the effects of lower paths for interest rates, shown in panel 3, and the drop in oil prices. Compared with outside forecasters, the Tealbook has a lower path for real GDP than either the Blue Chip consensus or the Survey of Professional Forecasters, owing to more drag coming from net exports in our projection.

Panel 4 examines the sources of growth of aggregate demand in the staff projection. The left bar displays the average contribution to GDP growth by sector over the past five years. For example, the blue portion of the bar indicates that rising consumption contributed about 1¾ percentage points to aggregate demand growth, on average, and business investment, the red portion of the bar, contributed nearly ¾ percentage point per year. In 2015, business investment is expected to be quite weak, owing to the plunge in drilling and mining. The orange portion of the bars displays the substantial drag arising from net exports that we anticipate this year and next, owing to the appreciation of the dollar and lackluster foreign growth.

Personal consumption is the main driver of aggregate demand this year; by comparing the height of the blue bars to the black line, you can see that consumption accounts for more than all of GDP growth this year and substantial portions in 2016 and 2017. The robust increases in consumption reflect strong gains in real income, owing in part to the drop in oil prices, as well as the boost to spending from the elevated wealth-to-income ratio displayed in panel 5.

One implication of the dissonance between recent data on aggregate demand and the more upbeat labor market data noted earlier is a decline in business-sector productivity, shown by the black line in panel 6. After debating whether to nudge

down our estimate of the trend, the green line, we perhaps let hope triumph over experience and decided to leave it alone for now. Accordingly, we assume that productivity growth will step up over the medium term. This is one factor behind the projected slowing in the pace of job growth and the flatter trajectory for the unemployment rate over the medium term.

Your next exhibit provides more information on the labor market. The black line in panel 1 indicates that we expect the unemployment rate to average 5.5 percent in the second quarter, one tenth below the first-quarter average, and continue to edge down one tenth per quarter over the remainder of the year and then flatten out over the medium term. The red line displays the June 2014 projection. While the unemployment rate has fallen faster than we had anticipated a year ago, the flat contour over the medium term results in a somewhat higher rate in 2016 and 2017 than we showed last June.

As noted in the bullets in panel 2, the upward revision to the unemployment rate in 2016 reflects the lower path for GDP in the current projection, while the lower starting point is consistent with the disappointing news on productivity we have received. Outside forecasters generally project a somewhat steeper decline in the unemployment rate over the medium term. For example, the Blue Chip consensus forecast puts the unemployment rate at 4¾ percent by the end of 2016, and the Survey of Professional Forecasters has a similar outlook. Their lower unemployment rates than those in the staff projection are consistent with their stronger outlooks for real GDP growth.

Besides the falling unemployment rate and solid gains in payroll employment, most other labor market indicators also continue to improve. For example, the labor force participation rate, shown by the black line in panel 3, has held steady for a year, and the gap between the actual rate and its estimated underlying trend, the green line, has narrowed, reducing an important element of labor market slack.

In addition, as shown by the black line in the panel 4, job openings as measured by JOLTS are now above pre-crisis levels, and the quits rate, the blue line, has moved up over the past year, suggesting workers have increasing confidence in their ability to find better job matches.

Moreover, labor compensation seems to be accelerating, though in view of the noise in the relevant series, it is hard to know for sure. The black line in panel 5 shows that the employment cost index rose 2¾ percent over the 12 months ending in March, compared with the 2 percent rate observed over most of the recovery. Evidence from two other measures that we monitor—compensation per hour, the purple line, and average hourly earnings, the red line—is mixed.

Panel 6 provides some results from a recent inquiry conducted by the Reserve Banks. One of the questions we asked business contacts was whether they plan to change prices in response to changing compensation costs. As shown in the table, 10 percent replied that they would fully pass on changes in costs, while 23 percent

responded that they would partially pass through the changes, and nearly half reported that they would not change prices in response to their changing compensation costs. These responses are also consistent with work by the staff that indicates that the linkage between nominal wage growth and price inflation is loose.

Your next exhibit reviews inflation. As shown on line 1 in panel 1, after falling 2 percent at an annual rate in the first quarter, total PCE prices are expected to increase at a 2 percent rate in the current quarter and 1½ percent in the third. Much of this fluctuation reflects movements in energy prices, line 3. But core PCE price inflation, line 5, is also projected to move up in the current quarter from its low first-quarter reading.

As shown by the red line in panel 2, core prices rose at an annual rate of 1½ percent over the three months ending in April, and we expect similar readings for the next few months. Nonetheless, core inflation was only 1¼ percent over the prior 12 months, the black line. Falling core import prices, shown in panel 3, have been holding down core inflation over the past couple of quarters and are expected to continue to weigh on inflation over the near term. But as these effects wane and slack continues to be taken up, core inflation should pick up.

Our projection of the four-quarter change in core inflation is shown in panel 4. Core inflation is projected to be only 1¼ percent this year and then to rise to 1½ percent in 2016 and 1¾ percent in 2017. As shown by the red line, this projection is just a touch lower than a year ago. Total inflation, the black line in panel 5, is projected to be similar to core inflation after the direct effects of last winter's drop in energy prices dissipate, and our projection over the medium term is unchanged from a year ago. As noted in the bottom-right box, the lower path for core inflation in 2015 and 2016 reflects the indirect effects of lower oil and import prices on core. Our forecast for inflation is a bit lower than that of outside forecasters. According to the Survey of Professional Forecasters, inflation will move up a bit more quickly, nearing 2 percent in 2016. Similarly, the Blue Chip consensus has CPI inflation at 2¼ percent in 2016. Beth Anne will continue the presentation.

MS. WILSON. Thank you, Glenn. When I queried colleagues about what they would most like in a chart show, they said "brevity," which, unfortunately, will preclude me from delivering my stirring rendition of "American Pie: The Quarter Net Exports Died." [Laughter] That said, I will begin with a riff on trade. As discussed by Glenn, net exports (line 1 in the table) subtracted almost 2 percentage points from first-quarter GDP growth. Some of this drag reflects temporary factors—importantly, port disruptions and residual seasonality. Data on shipping containers processed at West Coast ports (panel 2) indicate that disruptions to inbound containers (the red line) in January and February were made up in March, leaving little net imprint on first-quarter imports. But the recovery of outbound containers (the blue line) looks incomplete, leaving Q1 exports low, on average, and likely boosting this quarter's figure. We have also found evidence of residual seasonality in exports for Q1 but not for imports, which further supports a payback in the current quarter. Thereafter, we have growth in exports and imports largely returning to our

models, which see a net exports contributing a drag on GDP growth of roughly ¾ percentage point in the second half of this year and next year, similar to that in the April Tealbook.

More generally, since last year, net exports have become a major headwind to the U.S. recovery, as can be seen by comparing the red and black lines in panel 3. This primarily reflects the unexpected strength of the broad real dollar (panel 4)—which, in contrast to the steady depreciation we had projected last June, has risen 10 percent, reflecting the relative strength of the U.S. economy and expectations that we will be normalizing monetary policy before other major central banks. Consequently, we have the dollar climbing a bit further this year, under the assumption that we are the liftoff leaders, before resuming a trajectory of slight depreciation.

The effect of the dollar's appreciation on the contribution of net exports to GDP growth is shown in panel 5. As the contour of the black line reveals, we now think the dollar's appreciation since last summer began to depress net exports strongly last quarter, and we see the effect intensifying throughout this year before waning only slowly over the course of the next two years. The dollar is not the only factor weighing on net exports. Looking at panel 6, the contribution of net exports to output growth has been lessened by a downshift in our path for foreign growth since this time last year, which I discuss in your next exhibit.

The black line in panel 1 presents our current path for foreign growth, measured on a four-quarter basis to smooth out those pesky first-quarter dips. After slowing over the past year, foreign growth is expected to achieve a 3 percent pace by the middle of next year, noticeably weaker than what we had projected last year.

This revision primarily reflects a step-down in our projection for the emerging market economies—panel 2—in which, instead of rising by late last year, growth fell further. Undaunted, we have EME growth climbing to nearly 4 percent by the end of 2016, but this is almost ½ percentage point below what we had last June. I would note that, although we have taken down our projections for China and emerging Asia some, this revision is really a story about Latin America "losing its mojo." Falling commodity prices have laid bare structural and political weaknesses in a number of economies—importantly, Brazil—and reduced the payoff to energy reforms in Mexico.

We also weakened growth in the advanced foreign economies—panel 3—in which the bounceback from Japan's consumption tax has underwhelmed and falling oil prices have sapped Canada's strength. But the AFE forecast is little altered beyond the near term. In general, highly accommodative monetary policy, healing credit markets, and—for some countries—lower oil prices and depreciated currencies are all supportive of growth. In particular, the euro area has been an uncharacteristic source of strength. We have growth continuing to firm and, as indicated in panel 4, we take comfort from the return to credit growth (the bars) and the steady decline in the unemployment rate (the black line).

That said, as discussed in panel 5, one threat to our forecast comes from current euro-area member, Greece. As Simon discussed, Greece and its official-sector creditors are once again dancing perilously close to a default cliff, as negotiations to unlock financing to get Greece through the summer broke down over the weekend. If an agreement is not cobbled together soon, there is a significant risk that on June 30 Greece will be unable to make its payment to the IMF and its current EU aid program will expire. In this event, conditions could deteriorate quickly, with deposit flight and possibly reduced ECB liquidity provision forcing capital controls, bank holidays, and the potential for Greek exit.

Knowing what will happen is probably best left to oracles. For our part, we do not rule out a significant worsening in the situation but assume that the fallout is limited by the lack of financial market exposure and by euro-area firewalls. Consequently, though we have built in a small drag to euro-area growth stemming from Greece, our baseline is one in which Greek developments do not derail the euro area or the global recovery. We are not naïve, however, to the significant risks that attend this forecast.

I have two additional observations. First, as evidenced by panel 6, market response, though negative, is still well below what we have seen in earlier high-drama Greek moments. What is critically different now is that the establishment of the ECB bond-buying programs, EU financial backstops, and progress on banking union have helped to delink fears of Greek exit from that of full euro-area breakup and, thus, better positioned Europe and the global economy to endure a "Greek tragedy." Ironically, however, by reducing the sense of urgency concerning a Greek exit, these institutional improvements may have actually increased the risk of it happening. Second, although all attention is now focused on a short-term agreement to get Greece through the summer, this will not solve the underlying problems. To put Greece on a sustainable path while remaining within the euro area, the Greek government will have to deliver a fundamental reform of their economy and other euro-area members will have to deliver significant further funding.

Shaking off Greece blues and turning to exhibit 7, our projection of foreign growth settling in at a moderate, near-potential pace by the end of our forecast period is associated with a return to modest inflation (panel 1) in both the AFEs and EMEs, as oil and nonfuel commodity prices (panel 2) stabilize at low levels. Against this background, we assume monetary policy remains quite accommodative, as policy rates (panel 3) remain low and central bank balance sheets (panel 4) are still elevated. I should note that, as seen in panel 5, the jump in long-term yields witnessed over the intermeeting period, although sharp, still leaves 10-year rates at very low levels.

A key question going forward, and one at the heart of the secular stagnation debate, is whether the current depressed level of interest rates is indicative of a permanent downshift in rates or whether, as growth firms, interest rates will rise closer to pre-crises levels.

Turning to exhibit 8, to look at this question for the AFEs, I examine one important determinant of the level of interest rates: the equilibrium interest rate, or the short-term real interest rate consistent with output at potential and stable inflation. Here, I present estimates of the equilibrium rate in the AFE economies using two approaches, outlined in panel 1 and discussed in more detail in a box by Andrea Raffo in the international section of Tealbook, Book A. The first approach focuses on identifying cyclical movements of the short-run equilibrium rate around its steady-state value, which is assumed to be constant over time. It uses an estimated dynamic stochastic general equilibrium, or DSGE, model consisting of a Phillips curve equation, an IS equation, and a Taylor rule.

Panel 2 shows the evolution of the AFE cyclical aggregate equilibrium interest rate based on this approach. According to the model, the AFE equilibrium real interest rate plunged in the aftermath of the global financial crisis and currently stands in negative territory, about 3½ percentage points below its steady-state value of nearly 2 percent. Moreover, the effects of the recession are very persistent: Absent additional shocks, the AFE aggregate equilibrium interest rate by 2020 is projected to still be more than ½ percentage point below steady state. Thus, viewed within this framework, the current low level of interest rates does not necessarily imply a lower long-run level of the equilibrium rate; the current level could rather be consistent with slow adjustment of rates to the steady state.

Other evidence, however, including that based on the framework in Laubach and Williams (2003), suggests that the long-run value of the equilibrium interest rate in the United States may drift over time. Their approach starts from an empirical framework that includes an IS equation and a Phillips curve equation and focuses on estimating the link between slow-moving changes in the equilibrium interest rate and in trend growth of output. Should you have any questions on this approach, you should feel free to bring it up with them directly. Their machinery generates this result that, indeed, the long-run equilibrium rate in the United States, shown by the black line in panel 3, has declined significantly over the past decade.

Applying a similar methodology to data for the AFEs, we find that the average AFE equilibrium rate (the red line) has also fallen steadily and is currently negative. This result suggests that AFE policy rates may remain much lower than in the early 2000s for structural, rather than cyclical, reasons. Should this be the case, AFE policymakers may find it more difficult to face future recessions using only conventional tools.

However, one should be cautious about inferring that the equilibrium interest rate is permanently lower. These estimates are very imprecise, and the underlying determinants of the equilibrium rate can change over time. Some factors that have been cited as likely pushing down the equilibrium rate, such as declining working-age population, seem hard to change, but other factors, particularly relevant to open economies, may give cause for hope.

For example, some of the decline in equilibrium rates has been attributed to the global savings glut—the phenomenon that, before the global financial crisis, especially in the mid-2000s, countries with large current account surpluses (the red bars in panel 4) were exporting their savings to advanced economies, particularly the United States, which ran current account deficits. For the period ahead, we anticipate that the negative pressure on rates stemming from these flows will ease from its peak, as the current account surpluses of the oil exporters narrow and the Asian economies rebalance some toward domestic demand.

Finally, in an open economy setting, equilibrium interest rates in the advanced economies—importantly, the United States—may be affected not just by domestic potential output growth, but also by equilibrium interest rates and potential growth in the rest of the world. In contrast to the United States and the AFEs, world potential growth (the black line in panel 5) has been stable, as the share of world GDP represented by the faster-growing EMEs is rising over time, which may argue for a higher steady-state value of the equilibrium rate than if only domestic potential growth mattered. Thank you.

MR. TETLOW.[4] I will be referring to the packet labeled "Materials for Briefing on the Summary of Economic Projections." Exhibit 1 shows the trajectories of your economic projections conditional on your individual assessments of appropriate monetary policy. As illustrated by the top panel, most of you project that real GDP growth this year will average somewhat less than its longer-run pace. All of you see GDP accelerating appreciably in the second half of 2015, and project that growth will exceed its longer-run pace in 2016. For 2017, nearly all of you see real GDP either growing at, or decelerating toward, its longer-run rate. All of you project some further reduction in the unemployment rate by the end of next year; indeed, a sizable majority of you see the unemployment rate within 0.2 percentage point of its longer-run normal value in late 2016. In addition, about half of you project that at the end of 2017, the unemployment rate will be below your estimate of its longer-run normal rate. As shown in the third panel, headline PCE inflation is expected to come in at or below 1 percent this year, but to climb to 1½ percent or more in 2016. Even so, nearly half of you anticipate that headline inflation next year will run more than ¼ percentage point below your longer-run objective. In contrast, a sizable majority of you project that headline inflation will be within 0.1 percentage point of the Committee's goal in 2017. The final panel shows that you project only a slight decline in core PCE inflation this year and that you expect a gradual rise over the remainder of the forecast.

Exhibit 2 compares your current projections with those in the March Summary of Economic Projections and with the June Tealbook. As indicated in the top panel, you responded to the evidence of weak economic activity early in the year by marking down significantly your forecasts of real GDP growth in 2015; however, most of you ascribed the first-half weakness in activity largely to transitory factors, and so your medium- and longer-term projections differ only a little from what you wrote down in

[4] The materials used by Mr. Tetlow are appended to this transcript (appendix 4).

March. As shown in the second panel, the central tendency of your forecasts for the unemployment rate edged up 0.1 percentage point or so in 2015, with a number of you attributing the revision to the weaker-than-expected first-half data. According to several of you, the scant differences between your March and June projections of GDP growth and the unemployment rate in 2016 and 2017, despite recent indications of a weaker near-term trajectory for expenditures, is due in part to the monetary policy response to that weakness that you incorporated in your forecasts. As the bottom panels indicate, your projections of both headline and core PCE inflation for all three years were very similar to what you wrote down in March.

The revisions you made to your forecasts for real GDP growth in 2015—which reduce the midpoint of the central tendency by 0.6 percentage point—were a bit larger than the change in the staff outlook. As a consequence, the Tealbook forecast for economic growth in 2015 remains below your central tendency, but by a smaller margin than was the case in March. Otherwise, the Tealbook forecasts for economic growth and inflation continue to run near the bottom of your central tendencies over the projection period, and the staff's projections of the unemployment rate remain at about the upper end of your central tendencies.

Exhibit 3 summarizes your assessments of the quarter in which you judge that the first increase in the target range for the federal funds rate will be appropriate, along with the economic conditions you anticipate at that time. As shown in the top panel, a majority of you currently view the third quarter of 2015 as likely to be the appropriate time to commence tightening. Since March, nine of you pushed back your prescribed date of departure from the effective lower bound by one quarter. As indicated by the panels at the bottom, your current projections of the unemployment rate and for core inflation at the time of initial tightening show a bit more dispersion in this forecast than in March; however, the medians of the unemployment rate, at 5.3 percent, and of core inflation, at 1.2 percent, are unchanged from before. All but four of you project that the unemployment rate at the time of the first increase in the federal funds rate will still be above its longer-run normal level, and all but one of you project that core inflation will be well below the Committee's longer-run objective for headline inflation of 2 percent. Nonetheless, all of you project further progress toward the Committee's objectives after departure from the effective lower bound.

Exhibit 4 provides an overview of your assessments of the appropriate path for the federal funds rate at the end of each year of the forecast period and over the longer run. Most of you now consider a lower federal funds rate than you had projected in March to be appropriate over some part of the projection period; how you implemented this view varied from person to person. Nine of you now judge that the outlook warrants a somewhat later date of initial tightening, although not all of the 9 see this as justifying a lower federal funds rate at the end of this year. All told, 10 participants thought that the current outlook warranted a lower federal funds rate at the end of 2015, of which 8 thought this easier stance of policy should continue at least until the end of 2016. Two of you indicated that modestly lower estimates of the longer-run level of the real interest rate also played a role in reducing the path for the

nominal federal funds rate. On the numbers, your mean federal funds rate projection for 2015 has come down 19 basis points to 0.58 percent, although the median federal funds rate projection for that date is unchanged from March at 0.63 percent. The median projections for the ends of 2016 and 2017 are 1.63 and 2.88 percent, respectively; both are down 25 basis points from what they were in March.

Exhibit 5 shows your assessments of the uncertainty and risks surrounding your economic projections. As shown in the figures to the left, your views regarding uncertainty have not changed in a material way. A sizable majority of you judge the level of uncertainty about your individual projections of GDP growth and the unemployment rate to be broadly similar to the average level over the past 20 years, with only slightly less agreement on headline and core inflation. The panels to the right indicate that a large majority also continues to see the risks to real GDP growth and the unemployment rate as broadly balanced. As reported in the third and fourth panels to the right, 11 of you now see risks to headline and core inflation as balanced—3 more than was the case in March. A few of you have indicated that your confidence in the likelihood has increased of inflation moving toward the policy objective of a 2 percent rate.

Finally, exhibit 6 takes a closer look at recent assessments you have made of the appropriate path for the federal funds rate. Unlike in exhibit 4, the blue dots in the top panel of this exhibit show your projections for the federal funds rate for the end of a single year—2016—but for different forecast vintages, from September 2013, the first SEP in which you supplied a forecast for 2016, to this meeting. The blue line connects the median values of your federal funds rate projections for these eight forecasts. As you can see, the median of your views with regard to the appropriate federal funds rate has varied over time. In particular, from the low level recorded in the December 2013 SEP, the median climbed more than 100 basis points by September 2014, but then more than retraced that increase to reach its nadir with this projection.

Building on some analysis that was presented to you at the March meeting, I look at your policy prescriptions through the lens of a policy rule—in particular, the noninertial Taylor (1999) rule, shown in the middle panel. As in the staff's SEP briefing in March, I use your individual SEP submissions for 2016 as the right-hand-side variables in the Taylor rule equation, while also employing your estimates of the longer-run normal level of the unemployment rate and the longer-run real federal funds rate. The median of those 17 estimates at each forecast date is plotted as the solid red line back in the panel at the top. Three points emerge from this exercise. First, the median Taylor-rule-implied policy rates for 2016 have been persistently higher—averaging around 1½ percentage points higher— than the median of the rates you viewed as appropriate. Second, the median of your federal funds rate prescriptions has varied more than the median of the Taylor-rule-implied rates. This suggests that the variables that appear on the right-hand side of the rule formula, including those longer-run levels for the unemployment rate and the real federal funds rate, do not encompass the factors that influence your forecasts—or at least they do not do so consistently. Third, over the most recent three projections, the gap between

the median Taylor-rule-implied rates and the median of your projections has widened somewhat.

Finally, before leaving this top panel of this exhibit, let me note the black dashed line. It shows the Taylor-rule-implied federal funds rate computed by taking the medians of your projected values of the rule's right-hand-side variables to obtain a single federal funds rate reading per vintage—as opposed to taking the median of 17 projections of the federal funds rate, a method we followed in constructing the red line. As you can see, the policy prescriptions calculated using these two methods are quite similar; this is noteworthy because the calculation underlying the black dashed line can be performed with the information you currently provide to the public, whereas the calculation behind the red line requires knowledge of your individual projections.

The bottom panel of the exhibit is devoted to this discrepancy between participants' federal funds rate projections and your Taylor-rule-implied rates, with the individual residual values shown by the green open circles. There are some noteworthy outliers among these residuals, but the bulk of the values are reasonably well clustered. The two lines in the panel are medians, analogous to the red and black lines in the upper panel. In particular, the green solid line connects the median values of these residuals, while the black dashed line shows deviations of the median federal funds rate projections from the median Taylor-rule-implied rate by forecast. Note the close correlation of these two lines—the black dashed line, especially—with the blue line in the top panel. This pattern highlights the fact that much of the time variation in your federal funds rate forecasts stems not from changes in the projected variables that appear on the right-hand side of the rule equation—unemployment and inflation—but rather from other, unspecified factors.

How to interpret these residuals is an open question. We can infer that whatever explains them has been persistent and is expected to continue. One interpretation is that they represent your practicing "risk management" in the face of the effective lower bound problem and other asymmetric risks in the current economic environment; another is that they represent your perception of a temporary, if persistent, decline in the equilibrium real interest rate. Either interpretation could serve as justification for "keeping the target federal funds rate below levels the Committee views as normal in the longer run." That concludes my remarks.

CHAIR YELLEN. Thank you. Questions for any of our presenters? The floor is open. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I thought this was a very rich presentation. I thank the staff for all the elements of it. I had two quick questions. One is on figure 5 in exhibit 2 of the "Economic and Financial Situation" presentation. It's the exhibit

labeled "Medium Term Outlook" on page 2 of 8, and figure 5 is a wealth-to-income ratio picture. Have you looked at doing that using medians—using the Survey of Consumer Finances, or something like that, to get a median for a wealth-to-income picture?

MR. FOLLETTE. To look at how the distribution of wealth-to-income is moving?

MR. KOCHERLAKOTA. Yes. To give a little context to my question, I hear persistent and consistent reports from our directors that they're observing signs of a two-track recovery. And if that's what's going on—if we see growth in inequality that's large during this recovery period—we might want to be looking at other moments of the distribution of wealth besides simply the mean.

MR. FOLLETTE. Right. It is possible to get some breakdown of wealth by groups—for example, if we use the data from the Survey of Consumer Finances. The question is whether that wealth distribution is becoming much more concentrated over this time period and whether the MPCs are very different across groups. And I'm not sure of the answer to either of those questions.

MR. KOCHERLAKOTA. I think it would be informative to look at something like the median wealth-to-income ratio or maybe even the median net-worth-to-income ratio to see if we see the same kind of recovery in that as this seems to depict.

My other question actually goes all the way to something Simon said, which is about the kind of reversals we've seen in German bund yields and the effect of that on broader economic conditions in Europe. At least for me, the rise of bund yields was very outsized compared with what I would have expected, even in light of the improvement that we've seen in the European economy. Given that, I would think that that might lead to a drag on European economic performance. Are we seeing anything like that? Is that likely to happen?

MS. WILSON. We have it built in. We don't have anything currently, since it just happened, but we have built in a slight drag to our euro-area forecast coming from the tightening of financial conditions. When we looked at the underlying factors that might explain the large downward movement in bund prices, we could not explain much of the downward movement with these underlying factors. So, on the move down, we didn't completely incorporate that into our forecast. We moved slightly in that direction, and now we've moved slightly the other way.

MR. KOCHERLAKOTA. Thanks.

CHAIR YELLEN. Additional questions? Vice Chairman.

VICE CHAIRMAN DUDLEY. I have a question about the staff's view on productivity growth. We've had these very bad draws on productivity growth, and you've talked about how you expect it to return to its trend rate. What's the staff's underlying story about what we're seeing? Is it mismeasured GDP? Is it less capital deepening? Is it that we just don't understand it? Are there competing theories about why we're seeing such lousy productivity numbers? And how does that influence how we should think about the outlook? Which weight do you put on that?

MR. FOLLETTE. Just as a little background to that, over the forecast period—2015 to 2017—we've got productivity growth, in terms of the trend, of around 1.6 percent, which is similar to the pre-1995 experience. What we don't have is it going back to the experience that we had from 1995 to 2007.

Over the course of this recovery so far—as you know—from around 2010 to 2014, we've had around 1 percent productivity growth. So there will be a decent step-up from that. A portion of that step-up is because there's more capital deepening in the forecast period than we had before that, and a portion of it probably reflects the idea that some of the scarring of the economy

from the financial crisis fades over time. But most of the forecast step-up reflects the fact that we don't really understand the slowdown from 2010 to 2014, and we expect some of that to unwind. I think there is a strong view among people that there is mismeasurement of productivity growth and that some of that has gotten a little bit larger over time as it has become more difficult to measure some of the effects of technological advances on product quality.

VICE CHAIRMAN DUDLEY. But, are we, all of a sudden, then going to measure it better? That's what you're implying. I guess I'm focused more on just the last year. We've had really poor productivity growth over the last four quarters, and—

MR. FOLLETTE. It's not that much worse than the prior—

VICE CHAIRMAN DUDLEY. It's 0.3 percent.

MR. FOLLETTE. We've had a bad five years.

VICE CHAIRMAN DUDLEY. And the reason why I think it's so germane is because it's really relevant to the forecast in terms of how growth translates to labor market improvement. And so it seems to me you have to have a view on what productivity growth is going to do to understand how growth is going to translate into employment. It doesn't sound like we really have a good theory of what we are seeing right now. Is that unfair? I mean, I don't have a good theory either.

MR. WILCOX. We have a view that performance is not likely to recuperate by going back to its pre-crisis trend rate of increase. We think it's not going to remain as bad as it's been. All of the surprises on trend productivity growth have been to the south of our expectations since the crisis. We've attributed quite a bit of that to multifactor productivity growth. Some of it has been due to a lack of capital deepening.

Our models are not all that surprised by the amount of investment that's going on at the moment. We don't perceive a great big deficit in investment, and some work by Stacey Tevlin and Eugenio Pinto suggests that while the capital stock is growing quite slowly, you can understand that on the basis of two factors. One is that the overall recovery is itself pretty tepid, and so the standard accelerator mechanism suggests that tepid business investment is warranted. And the other is that the growth of the labor force has slowed a lot. If you rescale the capital stock on a per capita basis, you find that growth of the capital stock is pretty well within its historical norm.

We think there are some very tentative signs that are encouraging about the growth of multifactor productivity. But we were pretty close this time around to downgrading our assumptions about structural productivity once again. This would be the *n*th in a long string of downgradings. And I don't think it's going to take much to cause us to get the plane out and take another few shaves off the slope of that trajectory that Glenn showed in panel 6.

VICE CHAIRMAN DUDLEY. Thank you.

CHAIR YELLEN. President Williams.

MR. WILLIAMS. Thank you. I have a comment regarding Beth Anne's equilibrium interest rates. I wanted to go into some of the econometric technicalities there.

If you look at panel 2 in exhibit 8—and this is what you said, but I'd just like to highlight it for everybody else—that dashed line from the DSGE model for the AFEs is a forecast built into the model. The model has shocks that will fade over time, by assumption, and that's why it goes back very slowly, as you pointed out, to 2 percent. But if you notice, in the actual estimates, none of that has yet occurred. And at the Federal Reserve Bank of San Francisco, my colleague, Vasco Cúrdia, looked at a couple of DSGE models—one similar to the Federal

Reserve Bank of New York's model, another one developed in the Federal Reserve. And for the United States alone, they show the very same pattern: a drop for the United States of *r** in the DSGE model to basically negative 3 or 4 percent, something like that, and *r** remains still at that very low level.

So, even though these models tells you we are going to go back to normal by assumption, it is striking that even in the first quarter of 2015, there is absolutely no evidence of a return of *r** back to a normal level. So whatever headwinds are holding this down—and in these models, it's a combination of supply and demand shocks—they are as strong today as they were three to five years ago in the U.S. models. And this gets me back to Laubach-Williams in panel 3. Again, in that model—and apparently in your analysis using the AFE version of the model—there is absolutely no sign, even through 2015:Q1, of any waning of these headwinds. I know it's not popular to push the secular-stagnation theory, and I'm not really trying to do that—perhaps the lawyer here will question that. But I think it's worth reminding ourselves that we still haven't seen—at least based on DSGE models, the models that the Board uses, the models that we use elsewhere—we haven't seen any sign of a waning of headwinds yet, based on this method, at least.

MR. WILCOX. Hear, hear.

MR. WILLIAMS. Oh, don't you agree I needed a question?

MR. WILCOX. Well, not entirely. [Laughter] I'm not sure that there is a convenient exhibit here. But, in Claudia Sahm's Board briefing yesterday, there was a nice exhibit that showed the GDP gap over recent history and the future. What that GDP gap shows is that we have made a lot of progress—by our estimate, anyway—toward closing resource utilization slack. And—while I would hesitate to "preach L-W to W"—a sort of mechanical interpretation

is that what that suggests is that you have succeeded—by at least one definition of *r**—in getting *r* below *r**, on our projection now at the end of 2018, anyway. So this is conditional on our projection. We have the GDP gap a little bit positive, which is to say, actual output is above potential output.

Now, you could come back and say, "Well, that's fine. That's all a matter of projection." But we've made a lot of progress over the past several years, and the Tealbook-consistent estimate of *r** is something like minus three-tenths at the moment. We've got an actual *r* that's considerably less than that at the moment. So, I'd hark more to Beth Anne's admonition that there is a lot of uncertainty that surrounds these estimates. It's not apparent to me that we're operating with an *r** that is quite as bleak as what's shown here. I think you're making progress with the current policy setting toward getting resource utilization back up to its sustainable level.

VICE CHAIRMAN DUDLEY. But one doesn't rule out the other.

CHAIR YELLEN. Yes. They're not inconsistent.

MR. WILLIAMS. The real interest rates are quite negative.

CHAIR YELLEN. Yes.

MR. WILCOX. Remember that what's shown here—again, it is a little ironic, but what's shown here is the long-run equilibrium *r**. So your view would have to be that it's going to remain permanently that bleak.

MR. WILLIAMS. Well, that's the debate, right?

MR. WILCOX. Yes.

MR. WILLIAMS. The one side is that the headwinds will abate, they'll wane, and we'll move back to 2 percent or whatever. And the other is that, for reasons that we don't fully understand, a number like negative 0.3, like you mentioned, may be around for the next 5 to 10

years. And I don't think we have any evidence, at least so far, that distinguishes between those two hypotheses. That's all I'm saying. I'm talking about flat priors. But I just wanted to make the point that because those dashed lines, which are always shown, can somehow indicate that we're seeing it come back. And that's—what did you say? That's "hope ahead of experience." [Laughter]

MS. WILSON. One thing I would note is, one aspect of your approach is that you can decompose the equilibrium rate into the component that's linked to potential output growth and the component that's linked to a residual. And what we've seen when we've done that is that the part that's linked to a residual accounts for a large part of the decline. That is, the decline is not explained by the behavior of potential growth, and that does suggest, I think, greater odds that the decline will be reversed. There are reasons to think potential output growth could recover, but the residual could also encompass a number of factors—headwinds, a global savings glut, changes in preferences, risk aversion, and deleveraging—that we think may go away.

MR. KAMIN. It might be also worth noting—returning to panel 2, looking at the cyclical version—that the calculation for AFEs actually bounces back a lot right after the global financial crisis reaches its height in 2008 and 2009. It then goes back down again, probably largely reflecting the euro crisis and its effects on our AFE aggregate combined, a little bit later, with the effect of the consumption tax increase on Japan. So both the euro area and Japan have experienced these secondary reverberations that do, to some extent, reflect the initial crisis but could be thought of as additional shocks that maybe the U.S. economy was not subject to.

MR. WILLIAMS. I would just repeat the point that the U.S.-based model's r^* is still very negative and isn't subject to that right now.

MS. WILSON. And if you looked at this for Canada, for example, you would see it going back much faster.

CHAIR YELLEN. We had two two-handers, President Mester and then President Kocherlakota.

MS. MESTER. Can you remind me of what the error bands around this estimate were?

MS. WILSON. Huge. [Laughter] In Laubach-Williams, they say, for various versions of their model, 0.9 to 2.8 percentage points. So, huge.

MR. KOCHERLAKOTA. But those error bands are symmetric, right? They go on the downside as well as the upside?

MS. WILSON. Right. So that creates a big, wide band.

MR. KOCHERLAKOTA. I think that questioning has exhausted what I wanted to say, Madam Chair. Thanks.

CHAIR YELLEN. Okay. Other comments or questions? [No response] Seeing none, why don't we begin our go-round on the economy. We'll start with President Williams.

MR. WILLIAMS. I won't talk about $r*$. Thank you, Madam Chair.

I view the very weak reading on first-quarter real GDP growth as mostly anomalous, with essentially no signal about the underlying pace of growth for the rest of this year or next year. It's clear—and I think the Board analysis and the Tealbook did a very nice job on this—that a variety of transitory special factors were at work, although the precise quantification and when they will be offset in later quarters is still open to quite some debate.

Like others, my staff has examined this issue and found that imperfect measurement of seasonal patterns played a large role in depressing reported Q1 numbers. Most of this residual seasonality appears to be caused by the BEA's bottom-up methodology that seasonally adjusts

the individual subcomponents of GDP but not the aggregate number directly. And the BEA uses this procedure to create the national income accounts. They are logically consistent at every level of disaggregation, and that makes perfect sense for their purposes, but for monetary policy purposes, it's more useful to have the most accurate top-line measure of the broad economy. That is, it's best to focus on eliminating seasonality in the aggregate GDP series and not worry so much about how the subcomponents should be adjusted.

To provide such a top-line correction to the data, my staff conducted their own second-round seasonal adjustment of the published data on three measures of aggregate growth: GDP; GDI; and the Federal Reserve Bank of Philadelphia's GDPplus measure, which is a smoothed combination of GDP and GDI. After this correction, GDP is estimated to have grown about 1½ percent in Q1, GDI about 3 percent, and GDPplus about 2¾ percent. Based on these corrected numbers and relative to a trend growth rate of 2 percent or even lower, I am hard-pressed to describe the first-quarter growth really as weak or lackluster or disappointing.

In addition, the second round of seasonal adjustment informs about when the residual seasonality that acts to understate Q1 will be balanced by overstated growth later this year. While the Tealbook assumes the unwinding of special factors will result in stronger Q2 growth, my staff's estimates push most of the overstatement of growth into the third quarter. What does that mean? It means we shouldn't be looking for a Q2 spike in growth. Instead, most of the seasonal effect will likely show up in an elevated Q3 growth rate. Now, looking at the more recent data since Q1, recent spending indicators have generally been moving in the right direction and are pointing to, I think, a solid trajectory for growth and good momentum.

We got some very important, positive news on the economy on Sunday night. That is, of course, the Warriors game. [Laughter] For anyone who has experienced this with me before,

you can imagine there's nothing more dangerous than a Federal Reserve Bank president with a calculator, Haver database, and Wikipedia. So I have the data here, and the Warriors and the Cavaliers are in the NBA championship. The Warriors have actually played in three previous championships and won three previous championships, and I've collected the data on what happens to GDP growth in the year following a Warriors championship. By the way, Blake, two of those were in Philadelphia. Average real GDP growth in the year following a Warriors championship is 3.9 percent. Now, I did look into the database to see what would happen following a Cavaliers championship, but, of course, there is a lack of data. [Laughter] So, I think we all bring our parochial interests to the table around our sports teams, but we can all agree—for the good of the economy and to reduce the uncertainty regarding a Cavaliers victory—we should all be supporting the Warriors tonight in what I expect to be the final game of the series.

All in all, with solid underlying momentum in fundamentals, I expect growth to average about 2¾ percent over the next several quarters or perhaps even higher, then slow to a more sustainable pace. I see consumer spending as a primary driver of growth, supported by elevated household wealth and solid income gains owing to rising employment and higher wages. In that regard, I am encouraged by the signs of a pickup in compensation growth, with private-sector ECI up about 2¾ percent over the past year. And employer costs for employee compensation are up about 5½ percent over the last year, suggesting solid growth and higher-paying jobs. This rise in income seems to have buoyed the spirits of households as well, and we saw the pickup or the rise in expected income growth reported recently in the Michigan survey.

I view the risks to this outlook as broadly balanced. Many have mentioned the unsettling crosscurrents coming from abroad. We heard about the situation in Greece, but obviously I hear

a lot also about Asia and China. With regard to Asia, I was largely reassured during my recent trip to Singapore, then Hong Kong, then Beijing, where I was joined by Governor Powell. Our discussions with Asian policymakers suggested that emerging market economies are acutely focused on a U.S. monetary policy liftoff. Rest assured everyone asked about that. And there was some concern about a "tightening tantrum," in which there is fallout from spikes in market volatility and capital flows. But the general assessment was that U.S. policy normalization has been well telegraphed. In addition, the taper tantrum of 2013 has served as a warning to leaders in the region, and they appear to be prepared to cope with any resulting effects on capital flows.

We also found policymakers in China ready and willing to do whatever it takes to ensure strong growth in that country. For example, the indications that their growth projection might slip from 7.1 percent to 7.0 percent fostered consideration of additional stimulatory policy initiatives. Indeed, the central Chinese government recently reversed a policy intended to add discipline to local government borrowing when it became concerned that this would damp infrastructure spending and growth.

With regard to the U.S. labor market, I expect the unemployment rate to fall below my 5.2 percent estimate of the natural rate by the end of the year. The standard U-3 measure of unemployment is aligned with other measures of slack as well, such as the broader U-4 and U-5 measures of labor market underutilization, which include people not actively searching for a job but available and interested in work. It's actually interesting to see that, unlike earlier points in the recession and the recovery, U-4 and U-5 are no longer indicating greater slack than does U-3. Indeed, using all the available data back to 1994, the current levels of U-4 and U-5 are identical to their historical averages for all months when the unemployment rate was at its current level of 5½ percent. In contrast, the broadest U-6 measure of labor underutilization,

which includes involuntary part-time workers, is about 1 percentage point higher than its average during months where U-3 was 5½ percent.

My staff has examined the factors behind the elevated level of involuntary part-time jobs using state-level data. They find that much of the earlier increase in involuntary part-time jobs was explained by cyclical factors. However, they also uncovered some evidence of an important role for changes in the compositional features of the labor market, most notably the industry job shares and workforce demographics, that help explain the elevated level of involuntary part-time jobs today. Indeed, these more persistent compositional factors account for much of the currently elevated number of involuntary part-timers beyond what one would expect on the basis of the 5½ percent unemployment rate. Based on these findings, I conclude that the signal about slack given by U-6 is roughly in line with the evidence from the other measures of unemployment.

Further supporting evidence for there being a relatively modest degree of slack in the labor market is provided by the pickup in several measures of employee compensation, as mentioned earlier. The historical pattern is that nominal wage growth doesn’t really shift up until late in the recovery when the economy is approaching full employment. And we’re, I think, getting to that stage now, and I think the compensation data are following the usual script in that regard. To sum up, my view is that numerous indicators point to some slack still being out there in the labor market, but likely no more than implied by the U-3 unemployment measure.

With regard to inflation, I continue to anticipate that we will achieve our 2 percent inflation objective by the end of next year. Certainly the stars are aligned for such a return, with oil prices edging higher, the dollar edging lower, and, importantly, full employment in sight. Still, there is no question that we are in a global environment of very low inflation, and the actual

data—inflation data—have yet to provide a clear signal that we are on track. So, for me, the key outstanding issue for policy is obtaining more confidence that inflation will make a timely return to 2 percent, and for that we will just need to see more data. Thank you.

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. My forecast does not have a "Golden State" adjustment factor, so it's not quite as optimistic as President Williams's. My SEP submission does not differ significantly from the Tealbook forecast and has not changed much from the March meeting, although I assume in this submission that the first tightening will be in the fourth quarter, not in September. The biggest change from my previous submission is the marking down of 2015 real GDP growth to reflect the weak data we received for the first half of this year. The data bearing on second-quarter real GDP growth have been surprisingly weak after allowing for the fact that the bounceback from the array of first-quarter special factors is likely artificially elevating reported growth for the current quarter. If the Tealbook adjustment to transitory factors is accurate, second-quarter growth adjusted for these factors may fall short of potential growth. Put differently, the weather and other transitory factors only partly explain the weakness in the first half of the year, since data both before and after the winter storms have remained relatively weak.

Although the May retail sales numbers and revisions to earlier months provide some comfort that consumption will not be particularly weak this quarter, it remains slower than I would expect on the basis of its strong fundamental drivers. The apparent desire of consumers to save rather than spend the windfall generated by lower oil prices puts at risk the consumer-led recovery that I and many others foresaw at the time of the March SEP submission.

The May payroll employment report provides further evidence of healing labor markets. However, I am cautious about the labor market outlook for several reasons. The unemployment rate has, at least for the moment, leveled off at 5½ percent—basically unchanged since February. Under my projection of only moderate growth in the second half of this year, we will likely return only gradually to my 5 percent estimate of the full-employment unemployment rate.

It is notable that the labor market conditions index shown in the Tealbook indicates only modest growth in the first quarter and is negative for the average of the first two months of this quarter. Although I would not take too literally the magnitude of the change in labor market conditions implied by the LMCI, I would interpret the index as indicating some slowdown in labor market conditions relative to last year. And, of course, the labor market conditions would likely slow further if we do not see the expected pickup in growth in the second half of this year.

Progress on returning inflation to its 2 percent target over the forecast horizon remains disappointing. Core PCE inflation over the past year is currently at 1.2 percent, well below what many of us were forecasting at the beginning of this year. Sifting through the various indicators of price pressures provides little evidence that prices have yet begun trending toward 2 percent. It is still possible that transitory factors, such as exchange rate and energy pass-through, are playing a noticeable role, and that once these factors fade, progress toward our inflation goal will occur. However, I place some weight on the possibility that the current low inflation readings reflect an anchoring of inflation expectations below our 2 percent target. Another possibility is that the equilibrium unemployment rate is running below my estimate of 5 percent.

In light of the uncertainty surrounding the inflation outlook, policy guidance should not just rely, as it does now, on being "reasonably confident that inflation will move back to its 2 percent objective over the medium term." Policy should place more weight on data rather than

forecasts that indicate such a return is in train. In a sense, that is why we have moved to data dependence in our policy decisions. To be specific, becoming reasonably confident that we will trend toward 2 percent inflation requires evidence that core PCE inflation is closer to the 1½ percent growth that we had been expecting earlier this year, that real growth is growing faster than we have seen so far in the first half of this year, and that the growth is sufficiently high to produce a further tightening in labor markets.

There have been significant benefits to being as patient as we have been to date. Broader measures of unemployment have continued to improve, though they still remain elevated. Tighter labor markets are beginning to provide modest evidence of a gradual increase in nominal wages and compensation. And we have not tightened financial conditions at a time when Europe is going through a particularly difficult time. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. My base-case economic and policy outlook has growth resuming in the second quarter and accelerating to around 3 percent in the third and fourth quarters. My base case has job gains continuing at a healthy rate in excess of 200,000 per month and other labor market data indicating that tightening continues. The base case has household spending picking up in the second quarter, coincident with an acceleration of wage and income growth. And, finally, my base case has core inflation at least stable, near-term inflation data showing slight firming, and inflation expectations remaining stable.

I have been processing both anecdotal inputs and incoming data using this simple test: Does the information, on balance, support my outlook or cast doubt on it? Although there are some encouraging signs, not quite enough conclusive evidence has yet accumulated to give me

adequate comfort that my outlook is achievable. So let me survey quickly some of the information I have put through this test.

Our contacts with the business community in my District over the intermeeting period pointed to a somewhat slow, but not unsatisfactory, second quarter. Sentiment about the pace of business activity in the second half remains positive, with a hint of caution. The St. Louis and Atlanta Bank boards met together last week. And President Bullard may have different "takeaways," but I noted that most directors in attendance indicated they believe the first-quarter weakness was an anomaly, but most—or a majority—would not entirely dismiss the possibility of a prolonged period of weak growth.

Those contacts in my District exposed to overseas demand and the dollar exchange value continue to report negative effects. Our port contacts reported a sharp drop-off in export traffic. Because of the importance of strong consumer spending to my forecast, I have been especially attentive in this recent cycle to reports on the consumer. Last week's positive retail spending report was a step in the right direction. Contacts tied to the new car market continue to report exceptionally brisk sales, along with strong production activity. But soft-goods retailers continue to see lackluster sales growth, and many expressed disappointment that this year's lower gasoline prices have yet to translate into a stronger appetite for nondurables. At the same time, we heard a belief on the part of casual dining and tourism contacts that lower fuel prices are contributing to some strengthening in their sectors. The picture that comes through is one of a discriminating consumer who is spending very selectively.

Perhaps the most significant change of sentiment since the previous meeting relates to labor markets. The assessment of our District contacts of labor market conditions moved this cycle strongly toward a general description of labor markets as "tight." This view was broad

based. We heard more mentions than in the recent past of firms having to boost starting wages to attract new hires, make counteroffers to retain employees, and compete with more liberal benefits and bonus incentives. Those not yet experiencing these broad pressures noted the inevitability of rising wages. Overall, I interpret the weight of recent anecdotal inputs from my District contacts as supporting my base case.

I won't belabor the evidence of all of the recent incoming data, but I'll mention those that have most influenced my reading of the economy. Early in this quarter, the Federal Reserve Bank of Atlanta's GDPNow tracking model was showing second-quarter GDP growth more consistent with the weak first quarter than the hoped-for bounceback. With the recent trade, jobs, and retail sales reports, our tracker rose markedly and now has second-quarter growth just short of 2 percent. This rise is encouraging, but we still have second-quarter growth in our forecast at this point at around a 2 percent annual pace—well below what I was looking for.

The first half still looks weak. A wage growth measure recently constructed by my staff that builds on the methods of the Federal Reserve Bank of San Francisco indicates that nominal wage growth is picking up. We conclude that the improved ECI numbers posted in the first quarter will likely move even higher this quarter. These indications of wage growth, combined with our latest anecdotal feedback on the subject, form the main reason I believe my base case remains on track.

Employing a dashboard approach to inflation, I've been somewhat encouraged by indications that shorter-horizon PCE and CPI measures have been firming from their 12-month readings. I've noted that the recent pickup in the Federal Reserve Bank of Dallas' trimmed mean PCE measure and the market-based core PCE number. I take the recent data in general as encouraging.

As regards my official forecast for this meeting, I lowered my 2015 growth estimate to account for the soft first-quarter number but otherwise haven't materially changed the projection from that I submitted in March. My growth projection is ½ percentage point above the revised Tealbook outlook for the year and about 25 basis points higher in 2016 and 2017. I have inflation running about 25 basis points above the Tealbook over the forecast horizon. I have the risks to my outlook as balanced for inflation but to the downside for growth, reflecting in part the global economy. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Prichard.

MR. PRICHARD. Thank you, Madam Chair. Economic activity in the Third District continues to grow modestly. Our latest Business Outlook Survey, which will be published on Thursday morning of this week, indicates that manufacturing conditions improved in June. Roughly twice as many respondents reported an increase in activity as indicated a decline in activity. The current employment index edged down a bit for both May and June but remains positive. The indexes for current prices paid and received turned positive in June after several months of negative readings that were largely due to the decline in energy prices and the strong dollar. Contacts continue to be optimistic regarding the near term, as reflected in the index of future general activity. Fully half of our participants expect an increase in the level of business activity in the next six months, with relatively few forecasting any decline.

Conditions in the District's labor markets continue to improve. Employment growth edged up 1.8 percent in April and labor force participation rose as well, leaving the unemployment rate roughly unchanged. Another bright spot in the region is our service sector: The Nonmanufacturing Business Outlook Survey index for current conditions increased substantially in May and remains elevated. Respondents also continue to be optimistic about all

future activities. Anecdotal evidence from our contacts also correctly anticipated the strong retail sales report for May.

The multifamily sector led a modest rebound in the housing market in April, with a healthy 3.5 percent increase in the value of residential construction. However, the overall housing market remains quite depressed. Single-family permits declined further in April and have been, at best, flat for about the past two years. With the exception of Philadelphia itself, April existing home sales are reported to have slowed in most of the urban areas in our District. Contacts report that homebuilding activity was subdued in May. House prices appreciated moderately in April, definitely behind the pace of the nation as a whole.

Turning to the nation as a whole, we agree with many of President Williams's observations, especially concerning the seasonal adjustments to GDP—not so much the forecast for the NBA. But we view the decline in GDP in the first quarter as mainly reflecting temporary factors and problems with seasonal adjustment, which I reported at the previous meeting and, again, President Williams expanded on today. So I remain optimistic that the economy will rebound in the second quarter and the second half of the year. Indeed, the data on retail and vehicle sales for May suggest the rebound in consumer spending may already be under way.

After marking down real GDP growth for the first half of the year, I see real GDP growth picking up in the second half and growing at 2 percent for the year as a whole. I foresee growth in 2016 slightly above trend at 2.7 percent and then gradually returning to longer-run GDP growth of 2.4 percent in 2017. I expect the unemployment rate to decline to my estimate of the natural rate of about 5.2 percent by the end of this year and to fall slightly further in 2016 and 2017. Inflation gradually returns to the FOMC's target over my forecast, although headline inflation runs at only 0.8 percent through 2015 after being flat in the first half due to the fall in

energy prices. In 2016, inflation accelerates to 1.8 percent and settles at 2 percent at the end of 2017.

My view of appropriate monetary policy now envisions a start to normalization in September of this year, with a gradual tightening of policy throughout the forecast horizon. I anticipate a federal funds rate of 0.63 percent by the end of this year, 2.1 percent by the end of 2016, and 3.63 percent in 2017, which is close to my long-run value of the federal funds rate of 3.75 percent. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Holcomb.

MS. HOLCOMB. Thank you, Madam Chair. Like the staff, I may be viewed as letting hope triumph in assessing the Eleventh District economy, but there is more positive news about the Eleventh District than there was at the time of the previous meeting, and we are heartened by the strength of the Texas economy as we face multiple challenges.

Texas employment expanded in April after having declined in March. Year to date, this puts us at an annualized growth rate of just under 1 percent. This compares with 2014 growth of 3.6 percent and long-run average growth of 2.1 percent. Initial jobless claims fell for the second straight month after big increases in the late fall and early winter, and the unemployment rate has held steady at an expansion-low 4.2 percent. Our Texas Leading Index was up in April, too, after seven straight months of declines. Of course, employment is still falling in areas like Houston that are closely tied to the energy industry. We believe conditions in those regions will get worse before they get better.

And the May jobs number, when it comes, may show a negative effect from the rain and flooding that we've had in our region. According to one Texas retailer, wet weather reduced sales by 12 percent through May. On the other hand, in a nice example of how every dark cloud

has a silver lining, an auto dealer told us sales are up because of the many cars that were damaged by hail and flooding.

And the Texas drought is officially over, which will benefit agriculture and beef production and is also good news for oyster lovers. As one of our directors reported, the oyster harvest suffers when salt levels are too high, as has been the case along the Texas coast because of low rainfall. The heavy rains this spring will boost oyster production over the next two to three years. Seventy percent of oysters consumed in the United States come from the Gulf Coast.

The current conditions of our Manufacturing and Service Sector Outlook Surveys deteriorated in May. At 13.5, the manufacturing production index is now at the lowest level in six years. The service sector revenue index remains in positive territory but moved sharply lower. Aided by somewhat higher oil prices and a decline in energy price uncertainty, indexes measuring expected future business conditions generally improved. The future-oriented survey questions asked about conditions six months from now, but respondents typically see only two to three months ahead. Hence, respondents appear to expect improvement by late summer. In the meantime, it's definitely the service sector that is keeping our regional economy afloat. Employment in private-sector producing industries in Texas has grown 2.2 percent year to date, while the goods sector has contracted over 5 percent.

All eyes not scanning the heavens for signs of still more rain are focused on trends in the oil and gas industry. The general feeling is that while there may be further declines in drilling in the near term, the worst will soon be over. The Texas rig count is falling at a much reduced pace, and rig counts in neighboring states have bottomed out. U.S. oil production has continued to expand despite the smaller number of rigs in operation. Indeed, the Energy Information

Administration has increased its 2015 production growth estimate from 6.4 percent to 8.3 percent since our most recent meeting. In the words of one of our directors, "Our guns are still blazing."

Contacts suggest two explanations. First, drilling costs are down sharply—20 to 30 percent since the beginning of the year—reflecting a buyer's market for oilfield equipment and services and strong efficiency gains. Completion times have fallen from 30 days to 2 weeks or less, in some cases to as little as 4 days. Second, responding to increases in the spot price of oil and the flattening of the futures price path, firms have begun drawing down the so-called fracklog of drilled but uncompleted wells, bringing them into production. According to a Dallas-based consultant, these drawdowns could add another 375,000 barrels per day to U.S. oil output over the next six months—about 4 percent of total U.S. production.

Continued high domestic oil production coupled with increases in production overseas raises the prospect of a world supply overhang. Our contacts see downside risks for energy prices in the near term but increases to about $70 per barrel in mid-2016. The EIA is less optimistic from a producer perspective and has revised its own 2016 WTI price forecast downward from $70 to $62. Market measures of oil price uncertainty have diminished, but implied confidence bands remain wide.

Our projections of GDP growth, unemployment, and core inflation, prepared by macroeconomists at the Federal Reserve Bank of Dallas, are within the central tendency of the latest SEP projections for every year between 2015 and 2017, and in the longer run. They are more optimistic than the Tealbook baseline forecasts. It's our belief that accommodative financial conditions will drive the unemployment rate past the natural rate late this year to reach 5 percent in the first quarter of 2016. With longer-term inflation expectations anchored at

2 percent and low and shrinking labor market slack, trimmed mean PCE inflation rises to 1¾ percent by early 2016 and averages 2 percent for the year as a whole.

Our inflation forecasting approach has done well over the course of the recovery. In particular, it has not systematically overpredicted inflation as one would expect if longer-term inflation expectations had slipped below 2 percent or if the unemployment rate had been understating slack. With the unemployment rate falling faster and further than in the Tealbook and inflation rising faster and further, it should come as no surprise that we see the data as warranting a relatively steep trajectory for the federal funds rate, as will be discussed tomorrow. Thank you.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. I hope I don't give anybody the wrong impression, but I really did enjoy Helen's forecast on Gulf oysters just now. [Laughter] And since President Williams has continued his tradition of cherry-picking sports championship data, I just wanted to point out that last night Chicago won the Stanley Cup, and—wait for it—yes, Madam Chair, there are Hawks in Chicago. [Laughter]

I'd like to commend the staff for some really terrific analyses in the most recent Tealbook and the presentation today. I got a lot out of your clear discussion of the equilibrium real interest rate today and in the memos.

The reports from my directors and other business contacts were pretty similar to those from last time. Most continue to expect a pickup in growth in the second half of the year, but their degree of conviction does not seem particularly high, and their spending plans seem to reflect this wariness. For example, the CEO of United Airlines reported that business travel was weak at all the major carriers. And I also heard a number of comments that, taking into account

the slow growth in demand, CEOs in general currently do not foresee much need, over the next 6 to 12 months, for ramping up capital investment or hiring.

But the moods seem more like continued caution than actual anxiety regarding any slowing. Indeed, I did hear a few relatively optimistic reports. One came from Caterpillar, who said some of their oilfield equipment customers had become more positive about their ability to operate profitably now that the price of oil seems to be stabilizing at around $60 per barrel. And the auto sector is pretty upbeat. Demand has been strong, causing Ford and some others to push up their light vehicle sales forecast for the year to around 17 million units, which is a bit above the Tealbook forecast. But if we are looking for boosts to consumer spending over the next few years, it probably won't be coming from autos. The sector already has contributed very strongly to this recovery. It's running at a high level, and at 17 million units, it's hard to imagine that there can be much upside vehicle demand that's going to add to GDP growth.

With regard to inflation, I didn't hear any meaningful new reports of wage or price pressures from my contacts. Indeed, steel and other commodity prices remained low, which could present some downside risk to the inflation outlook.

My own forecast is pretty similar to what I've been hearing from my business contacts. I'm cautiously optimistic about better growth and continued labor market improvements in the quarters ahead. Of course, Federal Reserve forecasting credibility has taken a beating throughout this recovery, as our optimism in January has given way to much more subdued actual growth outcomes, although I'm looking forward to the public pronouncement of President Williams's seasonal adjustment on the first-quarter GDP data—maybe that will change things. This forecasting reality is another reason to temper our more enthusiastic projections. And on

inflation, I'm not optimistic at all. I don't see inflation rising to target in anything like a reasonable time frame.

Turning to the specifics, our projection of GDP has growth running between 2½ and 2¾ percent over the remainder of this year and next. Our assumptions regarding potential output growth are somewhat stronger than the Tealbook's, so this GDP path translates into a similar reduction in resource gaps. And by the end of 2016, we have the unemployment rate down to around 5 percent, which is my current assessment of the natural rate. On the inflation front, the apparent stabilization of the dollar and oil prices have been favorable developments, as have been the recent increases in TIPS breakevens, although I would note that breakevens still remain well below their normal and year-ago levels.

However, I've become less sanguine about the message from survey measures of long-term inflation expectations. For sure, the SPF 10-year outlook for PCE inflation has been remarkably stable despite many years of low actual inflation. One interpretation is that these professionals simply write down our announced 2 percent target for 10 years out. But there is another inflation measure that the SPF regularly reports—namely, the 10-year CPI forecast—and this tells a different story. This 10-year CPI forecast has become more volatile since the crisis, but generally it has trended down. And on net over the past three years, it's fallen more than 30 basis points and is now about 2.1 percent. Given the usual 35 to 40 basis point wedge between PCE and CPI, the two SPF 10-year forecasts seem at odds, and that is troubling.

What's more, this downward drift in the SPF long-run CPI outlook has an important influence on the inflation forecast produced by the Federal Reserve Bank of Chicago's DSGE model. Our model includes a time-varying unobserved inflation benchmark. This benchmark acts as a long-run attractor for the path of inflation. As I understand it, the Tealbook inflation

forecast is informed by a similar type of stochastic trend. The 10-year SPF CPI forecast is an important factor informing the Chicago model's inflation benchmark. However, there are many shocks that can cause the benchmark to deviate from the SPF. In other words, there's plenty of scope in the model for the downward drift in the SPF CPI expectations to be explained by shocks that do not affect benchmark inflation and, hence, would not show through in the model's longer-run inflation forecast. However, that does not turn out to be the case right now. The model currently interprets the SPF 10-year CPIs and other incoming data as a string of mostly negative shocks to the inflation benchmark that have pulled this measure down almost 25 basis points over the past couple of years.

These shocks have long-lasting effects in the model. As a result, the model's PCE inflation forecast is significantly below our 2 percent target for many years to come. According to this analysis, the low inflation we've experienced the past several years has already fed through into public perceptions, which is making it more difficult for us to achieve our inflation objective. On the basis of this DSGE work, projections from other models that we've run, and commentary from my business contacts, I'm having a hard time writing down a forecast that gets inflation returning to target within a reasonable time frame. My projection has PCE inflation getting back to just 1.7 percent by the end of 2017, and I can see important downside risks to this forecast. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. My esteemed colleague from the Twelfth District has argued that you should root for the Golden State Warriors because in the year after a Warriors championship, GDP growth tends to be high. But I want to let you know that it's perfectly fine for you to root for the Cleveland Cavaliers, and I would encourage you to

do so, because any good central banker knows that correlation does not imply causation. [Laughter]

So let me talk about the Fourth District. The Fourth District economy is recovering from the first-quarter pause in economic activity. Contacts outside energy, development, and extraction as well as their suppliers generally report a pickup in activity in the second quarter. Commercial construction contacts were particularly upbeat, reporting a broad-based recovery. The auto sector is also one of the very bright spots, and bankers noted that demand for business and consumer credit continued to increase.

One of our directors, who runs a community bank, says his customers see the economy as back to normal, with one likening it to riding a bicycle without any hills: boring, but pretty comfortable. Our survey of District business contacts across all sectors yielded a diffusion index of contacts reporting better versus worse conditions that improved substantially in June to 36 percent from the near 20 percent level seen in March and April.

Conditions in the District's labor markets continue to improve. For the year ending in April, District payrolls grew at 1.3 percent. This pace has been edging up since the start of 2014. The growth rate is slower than the 2.2 percent seen in the nation, but that's typical. Regional employment growth has been slower than the U.S. average in recovery since the 1980s. Over the first four months of the year, the Fourth District unemployment rate has been stable at around 5.2 percent, lower than the national rate of 5.5 percent.

The responses from nearly 100 firms that the Federal Reserve Bank of Cleveland staff contacted as part of the Federal Reserve special survey on hiring plans and compensation indicate that demand for workers remains solid—63 percent of our respondents expect to increase employment over the next 12 months. This is the highest share from the five

comparable surveys conducted since January 2012. Only 8 percent of respondents said they expected to decrease employment over the coming year.

Across five broad sectors, real estate and construction, retail, and business services showed the strongest hiring plans, while banking and industrial producers showed somewhat less strength. In terms of compensation, 66 percent of contacts who reported increasing starting wages are doing so only in selected occupations, including engineering and IT. Anecdotal reports from our business contacts indicate that, in some cases, these wage increases have been significant. Somewhat more than one-half of the contacts reported that over the past 12 months, their ability to retain employees has remained unchanged, but over one-third said it has become harder. Some firms are raising prices to pass on some of their cost increases, but, in general, price pressures remain stable.

For the national economy, my read of the incoming data since our most recent meeting is that the data are consistent with the first-quarter weakness having been largely due to temporary factors, including the severe winter weather, the West Coast port strike, and seasonal adjustment issues. And I want to compliment the staff on the box in the Tealbook, which I found quite useful in disentangling some of the special factors that contributed to the first-quarter pause. The effect of other factors—like the earlier sharp drop in oil prices, which has caused the energy and mining sector to cut back activity, and the appreciation of the dollar, which has affected manufacturing and trade—are not likely to reverse quickly. But over the last few months, energy prices have stabilized and the appreciation of the dollar has slowed, and this should help lessen the drags on these sectors. Our nowcast has second-quarter GDP growth rebounding, as a number of monthly indicators have improved. One area that has been a concern is the extent to which the weakness in first-quarter consumption would linger, but May light vehicle sales and

retail sales point to strengthening consumer spending. Activity in residential investment is also accelerating.

Labor markets continue to improve. The two employment reports we've received since our most recent meeting show solid growth of nonfarm payrolls and further reductions in labor underutilization. Initial claims for unemployment insurance are quite low, and the JOLTS job openings rate reached a new cyclical high in April. In addition, by a number of measures, nominal wages and labor compensation are beginning to pick up. In my view, we are near our goal of maximum employment. Despite the first-quarter slowdown, the fundamentals supporting the expansion remain sound. These include improving household balance sheets, strengthening labor markets, and highly accommodative monetary policy.

Being a data-dependent central banker and in light of the weakness in the first quarter, I've reduced the growth rate for 2015 in my baseline projections. But I continue to see growth picking up over the remainder of the year to about 3 percent late this year and next before slowing to my estimate of trend growth in 2017. I expect consumer spending to pick up, supported by gains in employment and income. Although we haven't seen much of a response yet, I continue to expect lower energy prices to help buoy consumer spending. Research by the Federal Reserve Bank of Cleveland staff shows that across a range of statistical models, large reductions in oil and gasoline prices should give a sizable boost to consumer spending, although the timing of such a response varies depending on the model.

With above-trend growth later this year and next, I expect further improvements in labor markets, with the unemployment rate falling to 5.2 percent by the end of this year. This is below my estimate of its longer-run level, which I put at 5½ percent. This means the economy will no longer be underutilizing labor resources. I note that this view is consistent with a number of

slack measures provided by the Board staff on page 20 of Tealbook, Book A. It's also consistent with research by my staff that estimated the longer-run normal level of unemployment using five different conceptual approaches and found that the degree of underutilization of labor resources has been significantly reduced.

The news on inflation over the intermeeting period was positive. Inflation measures are moving higher in the second quarter, as oil prices have stabilized and some of the transitory factors weighing on core inflation have waned. The Federal Reserve Bank of Cleveland's inflation nowcast has headline PCE inflation rebounding from a minus 2 percent annual rate in the first quarter to 1.9 percent in the second quarter, and core PCE inflation moving up from 0.8 percent to 1.4 percent. The Federal Reserve Bank of Cleveland's median CPI rate has remained near 2.2 percent for the past seven months despite sharp movements in headline inflation rates and some softening in core inflation. After dipping earlier this year, the Federal Reserve Bank of Cleveland's 10-year inflation expectations edged up further in May to the levels seen last year, and survey measures of long-run inflation expectations have remained essentially unchanged.

The combination of stable inflation expectations, stabilizing oil prices, my forecast of above-trend growth, and further improvement in labor markets makes me reasonably confident that inflation will gradually return to our 2 percent target over the medium run by late 2016 or early 2017. As I have discussed at earlier meetings, there is considerable uncertainty associated with any inflation forecast, including my own. But based on Federal Reserve Bank of Cleveland staff work, I do not see that uncertainty as being exceptionally elevated. This is also consistent with the Board staff's view, as indicated in Tealbook, Book A, on page 67.

My projection depends on appropriate policy. In my view, we are very near or already at full employment, and I am reasonably confident that inflation will gradually return to our goal of 2 percent over the medium run. So an economic case can be made for increasing the federal funds rate from essentially zero at this meeting. But, as we haven't prepared the markets and the public for that, I wouldn't view it as appropriate policy. Instead, my projection incorporates liftoff in the third quarter and a gradual rise in interest rates thereafter throughout the forecast horizon.

Of course, there are risks associated with my forecast—and with any forecast. Consumer and business spending may fail to pick up. The positive developments in economic activity in Europe and Japan may not be sustained. The Greek fiscal situation is still very uncertain. In addition, we have recently seen some relatively large moves in the benchmark bond yields, with various explanations being offered.

As the economy gets closer to meeting the conditions we've set out for liftoff, I believe we should expect increased volatility in financial markets. Markets are becoming increasingly sensitive to our policy communications. And as Governor Fischer has said, central bank communications can be a tricky business. I'm glad that we're focusing attention on this important issue, I appreciate the staff memo on communication at and after liftoff, and I will have more to say about this in the policy go-round. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. In the midst of what looks like a weak first half for the U.S. economy, we think that the data have, on balance, surprised to the upside over the last several weeks. This gives us confidence that the economy will bounce back in the coming quarters in terms of GDP growth. We think that measured GDP growth will average

about 3 percent over the last three quarters of 2015, and that the unemployment rate will fall below 5 percent.

We continue to view the staff forecast for unemployment as not credible. It calls for an unemployment rate at the end of 2017, two and a half years from today, just three-tenths lower than what it is today. That's more pessimistic on this dimension than the Blue Chip. We think a more reasonable forecast calls for further cyclical improvement in unemployment and, indeed, in the associated labor market conditions index as well. In the two expansions in the 1990s and 2000s, unemployment reached much lower levels. Those expansions arguably featured much less monetary policy accommodation than we have in train today.

Anecdotal reports from around the Eighth District suggest that businesses remain generally optimistic for the remainder of this year. A major hotel chain reported that the outlook for the travel and tourism industry is upbeat. The furniture industry in northern Mississippi is expanding. In the Louisville zone of the Eighth District, wages have increased 3½ percent from one year ago. The District's hiring plan survey indicates that two-thirds of businesses looking for new employees are raising starting salaries compared with a year ago. These and other anecdotal reports, including those at the joint St. Louis–Atlanta board meeting, give us confidence that the underlying growth in the U.S. economy is relatively satisfactory, and that residual seasonality or other measurement error accounts for much of the apparent weakness in real GDP growth during the first half of 2015. This view is consistent with the relatively strong labor market reports we have received so far this year.

Despite my relatively optimistic view of the U.S. economy, the Committee has emphasized the data dependency of policy, and therefore I think it has been entirely appropriate for financial market participants and this Committee to push back the likely date of liftoff in

response. My only comment in this regard is that this effect should appropriately work in the reverse direction as well. In particular, data that surprise us in a positive sense compared with the relatively dour staff forecast might be expected to pull forward the date of liftoff in order to maintain the appropriate level of policy accommodation. Indeed, we expect even modestly strong economic data to cause just such a reaction in financial markets, and we think the Committee should be prepared to move in such a circumstance.

The remainder of my comments focus on *r**. I began arguing last year that relatively small unemployment and inflation gaps suggest that the U.S. economy is close to normal in terms of our target variables. In particular, unemployment at 5.5 percent is not too far from estimates of a reasonable long-run level—certainly much closer than it has been over the past five years. Similarly, an appropriately smoothed measure of inflation, like the year-over-year Federal Reserve Bank of Dallas trimmed mean, shows a value of about 1.6 percent, just four-tenths below the Committee's stated target. Both of these gaps are likely to become even smaller in the quarters ahead. I have calculated that, in terms of how close we are to our goals using a quadratic objective function, we are closer in recent quarters than we have been about 90 percent of the time during the postwar era. By this measure, we are doing very well indeed with respect to our target variables.

If we put these relatively small gaps into standard Taylor-type rules, recommended policy rates tend to be much higher than today's policy setting, as shown on page 2 of Tealbook, Book B. These rules have served as a description of relatively good monetary policy in the past, so why deviate today? One idea is that the intercept term in a Taylor-type rule, *r**, is not constant but is instead time varying, and that today's value is particularly low. This might justify a low policy rate even in the face of relatively small unemployment and inflation gaps. I want to make

two points on this. Number one, is this the argument we want to make? Number two, how should we measure *r**?

On the first question, whether this is the argument we want to make, I interpret the nature of the argument to be that today's zero policy rate is not providing as much accommodation as one might otherwise think, because *r** is, in fact, time-varying and happens to be low today. Yet, in other portions of the Committee rhetoric, we have argued that a zero interest rate policy, combined with a large balance sheet, is in fact providing a large and appropriate amount of accommodation to combat perceived headwinds inhibiting U.S. macroeconomic progress. From that perspective, I see it as a bit of a cross-purpose to suggest that, in fact, our policy is not as powerful as it would appear according to standard calculations.

On the second question of how to measure *r**, a few of you noted the recent Federal Reserve Bank of St. Louis Fed blog post by Bill Dupor. The idea of the post was to calculate *r** using various ideas in standard theory on benchmark real interest rates and compare them to the Laubach-Williams calculation. The alternative calculations tend to suggest that, while *r** may be lower today than it has been historically, it is not so low as to suggest that the Committee is not being accommodative with its current policy setting. This may be one way to reconcile the compelling idea that *r** should be time varying with the idea that the ZIRP is likely very accommodative by conventional metrics. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. I think we're doing pretty well timewise, and I'd like to suggest that we take a break for 20 minutes.

[Coffee break]

CHAIR YELLEN. Let us resume. President Lacker.

MR. LACKER. Thank you, Madam Chair. Our Fifth District surveys indicate that economic activity is expanding at a faster pace in the service sector this month and that the manufacturing sector is no longer weakening. According to preliminary figures from our June survey—due out June 23 and confidential until then—our manufacturing diffusion index, which declined late last year, rose to a small positive reading, largely due to a pickup in new orders. Our services index rose from plus 13 in May to plus 22 in June. Reports from our directors and business roundtables were very positive this month, consistent with these survey results.

The divergence in performance between the southern and northern parts of the Fifth District continues. The Carolinas are positively booming, whereas the reports from the rest of the District are more varied, but even in the north, the tenor of the reports has been improving of late. District labor markets also continue to improve. Our special hiring survey indicates that half of all respondents are now planning to increase employment, a 10 percentage point increase relative to earlier in the year. Our surveys also indicate that a continuation of broad-based wage increases in the service sector is in train, and a reversal of the recent weakening of wage growth in manufacturing is visible as well. We've seen more frequent reports as well of employers offering higher wages to attract new employees or raising wages across the board for all existing employees.

The national level of the reports we've received since our April meeting have provided more evidence that the first-quarter pothole in real GDP growth was transitory and not as deep as first thought. The Tealbook now attributes 1½ percentage points of the decline in first quarter GDP to special factors, such as residual seasonality; weather; labor dispute at West Coast ports; measurement error; upward revisions to Q1 trade and retail sales data, among others; and the release of the QSS, implying more strength in the first-quarter than otherwise. In addition, the

May employment report was strong and included significant upward revisions for March and April.

The outlook for consumer spending is pivotal, in my view, and here the picture is quite positive. Sure, we've had some flat months this winter, but even so, the staff now estimates that personal consumption grew at a 2¼ percent annual rate in the first quarter. To put that in context, we saw exceptionally strong growth in the second half of 2014, and as of April, consumption was up 2.7 percent year over year, well above the average growth rate for this expansion.

The May retail sales report suggests healthy spending growth will continue in this quarter. Moreover, even though the Tealbook is showing that the consumer spending forecast was marked down for the remainder of this year, it is still projecting over 3 percent for this quarter and the second half, which is quite strong compared with earlier in this expansion, when consumption was averaging 2¼ percent.

This sustained increase in consumer spending growth no doubt has something to do with improved balance sheets, but my sense is that the improvement in labor markets over the past year has been very important as well. That improvement has been evident in traditional labor market indicators. Payroll employment growth over the past year has averaged 255,000 per month. In contrast, as of a year ago, 12-month payroll employment growth had never averaged more than 215,000 in this recovery.

The JOLTS data tell a similar story. Job openings have increased 22 percent year over year, including a 5 percent jump in May alone. The unemployment rate has declined close to 1 percentage point over the past year, and at 5.5 percent the unemployment rate is now so close to

estimates of the natural rate that I seriously doubt any of the differences are statistically significant.

In addition to anecdotal evidence on wage pressures, we've recently seen significant wage increases in the national data. Over the past year, 12-month ECI nominal wage growth has increased from about 2 percent to close to 3 percent, and even the average hourly earnings figure has ticked up in recent months. I expect this broad and sustained improvement in labor market conditions to continue to support strong spending growth going forward.

On the inflation front, despite a substantial swing in headline inflation over the past year, inflation expectations have remained stable and core inflation has rebounded to about 1½ percent—the average over the past three months for core PCE inflation, I might add. I think that the evidence is conclusive now that the dip in inflation is behind us. In the absence of sizable changes in oil prices and the value of the dollar, I'm reasonably confident that headline and core inflation will return to target.

To summarize, we've seen strong evidence that first quarter weakness was transitory. It is now apparent that we are in the midst of the longest sustained improvement in household spending growth we've seen in this recovery, and inflation is likely to move toward 2 percent.

I'd like to close with a comment on what seems to be the latent variable *du jour*—namely, the equilibrium real rate. Maybe it's the latent variable of the year, I don't know. Several participants last time urged more research on r^*, and there's been a lot of commentary on r^* today. It's hard to object to more research, but I'm not sure we should get our hopes up. I'll point out that, by itself, saying the federal funds rate is low because the equilibrium real rate is low is sort of empty. Robert Tetlow presented pictures in which our federal funds rate's deviations from a Taylor rule prescription were attributed to the residual. Anything you attribute

to a residual in a Taylor rule can be handed off to the constant term, the *r** term, so an equivalent interpretation is our own individual *r** efforts.

Presumably, we set the funds rate to what we believe it should be, and, presumably, we all now think that it should be below where you'd expect it to be, on the basis of current values of inflation and output gaps, and historical correlations between real rates and inflation and output gaps. But virtually any setting for the funds rate can be rationalized by assuming a shift in the intercept term for the correlations between the real funds rate and output–inflation gaps. So, by itself, it doesn't have much content, in the absence of independent information brought to bear about what the equilibrium funds rate is. That requires using identifying assumptions, either by applying a statistical model or applying some economic theory.

Now, those estimates are going to be model dependent, the point President Williams made. There are only a few of these out there right now, but, personally, I'd be surprised if the procedures yielded estimates of the equilibrium real rate that were very closely aligned. In fact, President Williams's comment was essentially pointing out the discrepancy between the Laubach-Williams model estimate and the staff's estimate.

Some statistical methods for parameterizing the real rate process imply that the long-term real trend rate has drifted down—that is, the level has drifted down permanently. But there are other parameterizations that are equally plausible and that imply that the long-run trend rate hasn't fallen much over the last couple of decades, and what we're in the midst of is a transition dynamic back to the long-run trend. I think this exactly describes, to some extent, the difference between President Williams and the staff. Now, this isn't to say that such exercises are going to be useless. It just says that they're not going to be terribly enlightening unless we are

exceptionally clear about the nature of the underlying identification assumptions that drive the difference in results.

One last observation. This is a personal peeve—I think this terminology is terrible. The notion of "equilibrium" used here corresponds to the idea of a system at rest, as in Newtonian physics, essentially, and within economics that usage has been outmoded for four or five decades now. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. I think I swore not to talk about *r** anymore, but can I have one moment? I actually did not imply in my earlier comment that there was a disparity between the different *r** estimates. The model that Thomas and I developed was really looking at a medium or lower frequency object—the permanent component of *r**, if you will. The DSGE models were looking at a higher-frequency, quarter-by-quarter view of what the equilibrium real interest rate is—I think that's true of what we did in San Francisco and I think that's true of what the Board staff did. These are describing different aspects of the same phenomenon—that is, the neutral real interest rate defined in different ways, estimated in different ways, tells you the same thing. It's very depressed relative to historical averages—it's been depressed for many years. These are different objects that they're looking at. I actually see the results as being consistent because the fact that one number was minus three and the other number was zero was a somewhat different constant. So I actually don't see that as inconsistent. I think that's enough.

MR. LACKER. Madam Chair?

CHAIR YELLEN. President Lacker.

MR. LACKER. To some extent you've illustrated the point I made about the importance of different conceptual approaches to this. But let me ask you a question about Laubach-

Williams. If you took your data set and, instead, over the last eight years the funds rate had been 3 percent, would it deliver a low real rate estimate?

MR. WILLIAMS. What do you mean, if the funds rate had been 3 percent over the last eight years?

MR. LACKER. Take your data set.

MR. WILLIAMS. Yes.

MR. LACKER. Take out the funds rate. Put in 3 percent instead of 0.

VICE CHAIRMAN DUDLEY. Assuming that everything else was the same?

MR. LACKER. Yes. Right?

VICE CHAIRMAN DUDLEY. Everything else wouldn't be the same.

MR. LACKER. No, of course it wouldn't, but the point is that your estimate is basically saying the real rate has been low lately, which we all know.

MR. WILLIAMS. No, it isn't, but maybe—I think that Thomas is planning a future event focused on r^*.

MR. LACKER. Perhaps you can illuminate us in the future.

MR. LAUBACH. The plan is that we will come back to the Committee in October with a broad discussion.

MR. WILLIAMS. Good idea.

MR. LAUBACH. With input from around the System.

CHAIR YELLEN. Very good. President George.

MS. GEORGE. Thank you, Madam Chair. You'll be relieved to know I have nothing to add to that discussion. [Laughter]

The Tenth District economy continues to expand even as low oil prices and weaker farm incomes weigh on several states. Unemployment remains very low, averaging 4.3 percent for the seven-state region as a whole. Employment in the energy sector, however, continues to fall, and some District oil and gas firms are at risk of default. However, the recent rise in oil to $60 per barrel, along with better-than-expected availability of financing, has allowed firms to refrain from making deeper capital spending cuts, and the pace of layoffs has slowed. Some firms even expect a moderate rise in drilling activity in the second half of 2015, although prices need to rise a bit further for activity to be sustainable. Anecdotes from around the District suggest that some workers laid off in the energy sector have been able to readily find new employment in other sectors, such as trucking and construction.

The strong dollar continues to weigh on regional factory activity, but overall services activity and hiring plans remain solid. Realized and projected farm incomes have declined further as low crop prices persist. As a result, demand for farm loans rose. Loan repayment rates softened notably, and crop land values declined in crop-intensive states. On the positive side, rainfall in many parts of the District improved drought conditions dramatically, boosting the outlook for 2015 crop yields.

For the national economy, my growth outlook for the medium term is little changed, although I did revise my 2015 forecast to reflect a weaker-than-expected first half. As others have noted, the slowdown appears to be somewhat overstated by the GDP figures. Growth in private domestic final demand remains positive and, based on analysis by my staff, is far less prone to having issues with seasonal adjustment than headline GDP. This measure has increased 3.4 percent over the past four quarters, its fastest pace since 2010, and, importantly, we do not see a significant slowdown in other timely indicators. For example, daily inflows of withheld

income and employment taxes did not show any slowing or unusual patterns during the first quarter.

Consumer spending appears poised to grow. Vehicle sales surged in May to their highest level in close to a decade, and after revisions, core retail sales over the last three months now look much better than before. Furthermore, I see upside risk to consumption growth, as stronger nominal wage growth, rising consumer confidence, and savings from lower gasoline prices could boost consumer demand in the second half of this year. In addition, households' expected income growth over the next year, as reported in the University of Michigan survey, moved up in June to the highest level since the crisis.

The labor market continues to improve, as over 200,000 jobs have been added in 14 out of the last 15 months. The Federal Reserve Bank of Kansas City's labor market conditions indicators show that the level of activity improved in May and, importantly, the momentum indicator remained at a high level, suggesting continuing improvement in coming months. If progress continues at a pace consistent with the past six months, the index tracking the overall level of activity, which covers 24 different labor market indicators, will be back at its historical average in September.

I see additional evidence of a well-functioning labor market based on a more detailed look at worker flow data in the Current Population Survey. Based on my staff's calculation, the fraction of workers flowing into stable employment—defined as an employment relationship lasting at least three months—is back to pre-recession levels. If job stability reflects a quality match from the perspectives of both the employer and employee, this suggests that the labor market is producing matches of similar quality to the last business cycle peak. My staff has also found in the CPS that employment growth has shifted toward higher skill occupations.

I view the risks surrounding my outlook as broadly balanced. Important downside risks stem primarily from abroad, such as a possible slowing in emerging markets or spillovers associated with the situation in Greece. On the other hand, possible surprises to consumer spending, housing construction, or wages are upside risks to my growth outlook.

Finally, with regard to inflation, the rise in the foreign exchange value of the dollar, the decline in energy prices, and unusually soft medical prices have been pulling down inflation. As the effects of these temporary factors wane and with the unemployment rate already close to its natural rate, I expect above-trend growth to lead to a strengthening in inflation. Thank you.

CHAIR YELLEN. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I'm going to spend my time today on the inflation outlook. Many around this table have rightly expressed the desire to guard against the risk of model misspecification in formulating inflation forecasts. So to mitigate this risk, my staff and I went through a suite of inflation forecasting models in preparation for this meeting.

My summary of this survey is that the balance of risk to inflation remains very much to the downside. More specifically, the outlook in Tealbook, Book A, is that inflation will remain below 2 percent until 2019. The Survey of Professional Forecasters' median outlook is that inflation will remain below 2 percent through its forecast horizon, which ends in 2017. All three Federal Reserve System DSGE models predict that inflation will remain below 2 percent through their forecast horizons.

At the Minneapolis Reserve Bank, we have a purely statistical model that we use for forecasting purposes—by "purely statistical," what I mean is, we don't layer onto it presumptions of the credibility of our target or a Phillips curve relationship. However, the model

is allowed to detect those things in the last 30 years of data if it's able to find them. That model's modal projection is that inflation will never return to 2 percent. It simply is not able to find enough of the Phillips curve relationship in the data for the past 30 years or enough evidence of the credibility of our inflation target to warrant getting back to 2 percent inflation.

So I count that as six different model- and judgment-based inflation forecasts. Now, I continue to favor market-based—as opposed to model-based—inflation outlooks as the basis for policy. I won't drag you through the details there, but, again, market-based outlooks tell a similar low-inflation story over the medium term.

Now, this stands in contrast to the forecast that Robert went through from the Summary of Economic Projections. Nearly two-thirds of the forecasts in the Committee have inflation back to 2 percent or more at the end of 2017. Some of you probably have access to models or information that lead you to forecast a more rapid return of inflation to target. If you're able to do so, it would be great to share those sources of information and modeling with my staff. We'd be very interested in understanding how people were getting to different conclusions about where we stand on inflation. Some of you might be seeing the Phillips curve as having more slope than we do. You might see the natural rate as being higher than we do—or Board staff do, for that matter. It would be interesting to understand why. It would be useful to share that. At least here in Minneapolis, we would be very interested in understanding what leads others to see more inflationary pressures than we were able to find right now.

Now, it's often emphasized that there are standard errors associated with these point forecasts, and I agree with that. These associated standard errors are quite large. In light of those standard errors, I think the right way to read them is as a simple summary statistic of the balance of risks for inflation over the medium term. That builds in a symmetry assumption of

how those errors are affecting the outcomes of inflation. If I tell you a point forecast, we can basically see what the likelihood is of inflation being above 2 percent or below. The low point forecasts are telling us that the probability that inflation will return to 2 percent over the medium term is under 50 percent, arguably considerably so, but that depends on a little more judgment and digging deeper to see exactly what those numbers look like.

Now, this is all about the medium term. I think these medium-term forecasts do not provide the full picture of the relevant inflation risks. I see little risk of inflation being stuck at, say, 2½ percent over the next 10 years. The Committee has the tools and the will to forestall this outcome.

In contrast, I see considerable risk that the Committee's actions could lead inflation to be stuck at, say, 1½ percent over the next 10 years. I think this is consistent with some of the discussion that President Evans offered about the CPI forecast that we see in the Survey of Professional Forecasters. Certainly they're not forecasting 1½ percent PCE inflation over the next 10 years, I'm not saying that, but there's a distribution of possible outcomes. I just don't think it's plausible that we're going to see 2½ percent over the next 10 years, but I think it is plausible that we could see 1½ percent over the next 10 years. I don't sense a will or a desire to use the tools needed to forestall that latter outcome. After all, if you look back, the FOMC's choices have led annual PCE core inflation to run below 2 percent in every month since late 2008, with the exception of a few months in late 2011 and early 2012. Over the past two years, the Committee has continued on a course of removing accommodation. Go back to, say, May 2013. I think we basically have been on a path of removing accommodation pretty much in the teeth of the troubling inflation forecast that I've just described.

These outcome-based data suggest that the FOMC views PCE inflation under 2 percent—even over very long periods of time—as being an acceptable outcome of monetary policy decisionmaking. My assessment that the FOMC lacks the will or the tools to defend the inflation target from below seems to be shared by financial markets. The market-based five-year, five-year-forward measures of expected inflation declined sharply in the second half of last year. Some observers insisted at the time that this decline would prove temporary, and they might yet be proved right—time will tell, I guess. But the relevant metrics continue to remain low by historical standards. Even though we've seen very sharp reversals of nominal bond yields, the inflation breakevens remain low.

So what? There's nothing hugely scientific about an inflation target of 2 percent, right? Couldn't we have a true inflation target of, say, 1½ percent even if we had a stated inflation target of 2 percent? I think there's a couple of answers one could give. One is that, as a publicly accountable institution, presumably the outcomes we're trying to achieve should match up with our stated goals, but let's leave that aside. Let's talk just about economics.

The problem is that a lower inflation target will lead to worse real outcomes. If inflation breakevens are 1½ percent rather than 2 percent, then nominal yields would be 50 basis points lower on average. That means it will take a smaller shock to the natural real interest rate to hit the zero lower bound. Our tools in those circumstances are costly, especially with the size of the balance sheet that we're currently maintaining. So our stays at the zero lower bound will lead to employment shortfalls, and those are why we should care—I think that's easy for us all to see. If we want to meet our employment mandate in a more systematic fashion over the next decade, we should be doing more to buttress the credibility of our inflation target. I'll have more to say about how to best do so tomorrow, Madam Chair. Thank you.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. My views can be characterized quite succinctly: somewhat less confidence on growth and the further improvement in the labor market, and somewhat more confidence that inflation will return to our 2 percent objective over the medium term, assuming that the labor market continues to show further improvement.

On the growth side, I think I share the opinions of everyone else that the results have been somewhat disappointing, with growth in the first half now likely to come in at about a little bit over 1 percentage point. Now, some of this can be attributed to special factors: the unseasonably cold, snowy winter; residual seasonal adjustment problems; transitory factors such as the sharp decline in oil and gas investment. But all that said, it is disappointing, especially the weaker-than-expected trajectory of consumer spending. However, last Thursday's retail sales report for May was strong and there was a sizable upward revision in sales for March, so maybe some of the shortfall in consumer spending relative to expectations is already resolving itself.

The consequences of the weakness in economic growth for the labor market had been much milder than one would expect—the circle squared by extraordinarily weak productivity growth—but I don't believe that productivity growth is going to continue to be so poor. I suspect that payroll growth will slow markedly unless we get a meaningful pickup in the economic growth rate. Now, the good news is, I do expect the growth rate to pick up as some of the transitory negative influences on growth fade. I also take some cheer from the most recent set of employment reports because, with both hours worked being up sharply and wages rising more quickly, that implies we'll see faster real disposable income growth, which should help sustain consumer spending. However, I am nervous that if productivity growth returns to a more

normal performance, the growth pickup could still not be strong enough to sustain the solid payroll gains that we've seen over the past year. So that's the reason I've become slightly less confident that we'll see further improvement in the labor market over the remainder of the year.

Now, with respect to the poor productivity figures that we've seen recently—the 0 percent rise in non-farm business productivity over the last four quarters and the sharp decline in the fourth quarter and the first quarter—I asked this question of the staff, but I don't have a good explanation either. While it's true that weak capital spending implies less capital deepening and this is having a negative consequence for productivity growth, that, I think, can only explain a portion of the slowdown over the past year.

With respect to the collapse of the past two quarters, I think this is even harder to explain. Even if innovations cease completely, and there's certainly no evidence of that, productivity growth should keep expanding for quite some time, as earlier innovations diffuse throughout the economy. Perhaps real GDP growth rates will be revised up, or perhaps the poor performance is a temporary artifact that stems from businesses becoming more confident, hiring more workers, and then this translating into a particularly poor measure of productivity during this transitional period. But whatever the source, I view this as a conundrum that does increase my uncertainty about the labor market outlook.

With respect to inflation, I am becoming more confident, subject to the labor market continuing to improve, that inflation will return toward our 2 percent objective over the medium term, and that this reflects three things. First, we're seeing further tightening of the labor market, and this seems to be translating to somewhat greater upward pressure on wages. Second, some of the transitory influences holding down inflation—namely, the earlier decline in oil and gas prices and the effect of the stronger dollar on nonpetroleum import prices—seems likely to

dissipate. Evidence of a cyclical recovery in Europe and Japan has led to greater stability in the dollar, for example. Third, measures of inflation compensation have increased since earlier in the year, with the Board's five-year, five-year-forward measure of inflation compensation rising by about 25 basis points from its low point in January.

So what does this imply for monetary policy? Well, I'll talk mostly about this tomorrow, but I still think we're on track for liftoff in September. I haven't changed my SEP federal funds rate path from what I submitted at the March meeting: two rate hikes of 25 basis points each in 2015—one in September and one in December—and I'll have more to say on that tomorrow.

Finally, how should we think about the sharp backup we've seen in bond yields recently? My own view is that it's warranted, and better now than later. The yields have been pulled down mainly by European QE, which had depressed bond term premiums, and soft Q1 activity measures that implied a potentially later liftoff of U.S. monetary policy. Even with the rise to a little bit below 2.4 percent, 10-year Treasury yields are not particularly high, especially if you think we're going to start a journey back to 3½ percent or so for the nominal federal funds rate later this year. Remember, after the taper tantrum we were at about 3 percent. The current yield curve implies a 10-year Treasury note yield in five years' time of only about 3 percent. So even with this backup, we're not really discounting a big rise in 10-year rates going forward.

To me, it's better to have this occur in steps and away from the date of liftoff rather than one big jump around or following liftoff. So with the backup in the yields now, we have a yield curve that is quite a bit steeper than normal. Considerable tightening is already discounted in its shape, so I think that reduces the chance that we'll see a really sharp rise in yields when we actually do lift off. At least that's my hope at this point. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. In April, I—and I believe most of us around this table—were concerned that the underlying performance of the economy might be slowing more persistently than it had in the first quarter of 2014. We were concerned in particular about slowing job gains, declining industrial output, and weakness in several spending categories. Most seriously, I was worried that the underlying, strongly positive thrust of economic activity—especially in the labor market, in which monthly increases in employment had averaged more than 260,000 in 2014—could be slowing. And that fear was supported by the March increase in employment of only about 120,000.

It is worth emphasizing that the labor market has, for some time, been much stronger than the GDP data. Since early last year, the unemployment rate has declined more than 1 percentage point. The difference in the behavior of output and employment has been puzzling since the start of the recovery, and it was particularly stark in the first quarters of 2014 and 2015, when GDP declined and, except in March 2015, hiring remained strong. The staff generally takes the view that when the employment and GDP data appear inconsistent, the employment data are more likely to be accurate than the output data, which is to say that we should be putting more weight on the behavior of the employment data than on that implied by the GDP data if there is some error in the data, which is entirely possible.

The data coming in since our April meeting have reinforced the view that the weakness we saw in the first quarter was likely mostly transitory and should reassure us that the underlying strength of the labor market continues despite the March weakness. Consider the recent data. Real core retail sales have risen at an annual rate of 3½ percent so far this year, and auto sales have been extremely strong. Services data for the first quarter were also strong. Housing investment growth has stepped up considerably since the second half of last year. Specifically,

residential investment is estimated to be rising at a 9 percent annual pace in the first half of this year, and that takes into account today's data, which is up from a 3.5 percent gain in the second half of last year. And we are finally beginning to see a pickup in compensation. The 12-month change in the employment cost index has moved appreciably higher, which is in turn consistent with the ongoing improvements in the labor market. The employment-to-population ratio has continued to rise this year, the participation rate has leveled out, the share of workers working part time for economic reasons has diminished further, and job openings have jumped.

Anecdotal evidence reinforces these data. In the Beige Book, most Districts reported improvements in the housing sector, with some describing the market as "very active" or "strong." And as noted in the summary of Districts' hiring plans sent to us by Board staff members Glenn Follette and John Stevens, the number of respondents expecting to increase employment over the coming 12 months was as strong as it was in December and higher than it was in the preceding four annual inquiries.

I've also been gathering my own anecdotes, mainly from the newspapers, which means I am far from keeping up with the presidents on this front. I've long been wishing to have an interlocutor, and I found one in an e-mail. Somebody wrote to me and said that his cousins in Hannibal, Missouri, which is in Jim Bullard's District, had recently switched from riding in the rodeo to driving trucks for the local paint factory, which had boosted pay to attract workers. My interlocutor remarked to his cousins that with their being drawn back into the workforce with higher wages, we must be at or close to NAIRU. One of the cousins responded that he was not sure who or where "NAIRU" is, but if they're hiring, they'd certainly look into it. [Laughter]

All in all, we should be encouraged by the continuing signs of progress in the labor market. We're now getting close to the natural rate of unemployment, as defined by participants

in the SEP. When exactly we will reach it is hard to say, because the Committee's views on the natural rate can change, and because there are some margins of slack remaining that aren't adequately captured by the difference between U-3 and the estimated natural rate of U-3. But the unemployment rate is already very close to the natural rate.

As for inflation, I remain reasonably confident that we will see inflation beginning to move back toward our 2 percent target before too long. Core inflation through May was 1.2 percent, a figure that was partly held down by the pass-through of lower oil prices and also by the recent declines in core import prices. The price of oil now seems to be in a new range, from which it is as likely to move up as to move down. And the Board staff forecast that core import prices will resume increasing early next year, which will help support core inflation going forward. As the influence of declining oil, energy, gas prices, and import prices starts to wane, we will begin to see the core inflation rate moving up. And for the same reason—the relative stabilization of oil prices and the stabilization and possible increase of import prices—we are likely to see total inflation rising as well. This might not start to happen by September or even this year, but I believe it will happen before long, by which I mean within a year. And those will be the inflation rates relevant to any changes in monetary policy we put in place in the next few months.

I'm reassured that inflation expectations have remained pretty steady, despite the very low levels of headline inflation. But, overall, it's not the inflation numbers today that persuade me that we'll see inflation rising over our projection horizon; rather, it's my conviction that economic slack has been diminishing and continues to diminish, and that the Phillips curve will reassert itself as the incoming evidence is beginning to suggest. I also put weight on the fact that the SEP results show unanimity on the point that inflation will converge to 2 percent—a

unanimity that reflects the view that, over the course of time and—noting what President Kocherlakota said—we can and will attain the target inflation rate. I don't doubt that the Committee will follow a policy that is aimed at that goal.

Now, needless to say, I also have concerns about the outlook. In particular, consumer spending has been disappointing, particularly when we consider how real incomes have been boosted by lower gasoline prices, and industrial production data have also been disappointing of late. In addition, we all continue to be aware of the significant downside risks associated with developments in Greece. On the upside, it's also possible, of course, that the weakness in the first quarter will prove as transitory as last year's weakness, and that growth in labor market performance in the remainder of this year could turn out to be more robust than is now forecast. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. Well, obviously, as I think just about everyone has noted, the data over the course of the last couple of weeks has been very encouraging. Stan noted that, at the April meeting, there was a lot of concern. I think, actually, the concern lasted well into May, so I'm a little more cautious than a lot of people in declaring our uneasiness over, just because it really was the retail sales number and the jobs number—which were, again, undoubtedly good—which turned the tide of some fears that we might be backsliding significantly.

Having said that, it is hard to argue, certainly, with the jobs number, and I think there is actually a broader story here, which is that the performance of the labor market has not just been on the unemployment rate side. As several of you have noted, the slack, which many people saw as not reflected in the unemployment rate over the last few years, did turn out to be there, and it,

too, now seems to be contracting somewhat. I take the fact that the labor participation rate has been flat for the last 18 months as actually very good news, because demographics would suggest that during this period labor participation should have been declining, and, thus, the flatness suggests that people are in fact being pulled back into the labor market. The question of how much additional slack remains, I still think, is a salient one, and not as easy to answer as the unemployment rate itself might suggest. So I'm slightly more cautious but join in the general view that we are in a much better position today than we might have thought we would be finding ourselves in just a few weeks ago.

Like Vice Chairman Dudley, I also think that what has happened with European sovereigns is basically a good news story. That is, the extension of negative rates along the yield curve in Europe over the first few months of this year was obviously something that was not sustainable, and potentially its reversal could have been quite destabilizing. So the fact that those have reversed, particularly the bund yields—in part because of good economic news in Europe and in part, I think, just because people realize that the positions they were taking were not sustainable in any case—is probably a good thing, notwithstanding the fact that it has been accompanied by a modest amount of tightening of financial conditions in the United States.

Having said that, first, I can't come up with a wholly satisfactory explanation of why the reversal went as far as it did. Second, I'm not sure that rates can actually go much further up without negating the benefits of QE in Europe, so we may still have the potential for some dollar strengthening, particularly once we've raised rates here. And, third, if there are significant problems in Greece, I think all bets are off with respect to what happens to sovereign yields throughout Europe, and certainly with regard to a potential spillover effect on the dollar.

The observations about sovereign yields reminds us that a number of questions are lurking just off the path of this prolonged recovery, many of which pertain to the issue of whether developments that predated the crisis have been accelerated or at least become more manifest since then.

In recent work by economists throughout the System, there have been three suggestions along these lines, and I will briefly mention them. First, President Williams has already alluded to the paper by Rob Valletta and Catherine van der List of the Federal Reserve Bank of San Francisco, who use a cross-state study to find that some portion of the unusually elevated number of workers who are part time for economic reasons may be due to structural factors, such as industry and age composition. Noting that the ratio of PTER to unemployed persons has been rising since 2002, they suggest that some of these factors may be persistent, in which case the part-time-for-economic-reasons ratio may not return all the way to its pre-crisis level.

Second, Andrew Figura and David Ratner of the Board staff have looked behind the outward shift in the Beveridge curve and argue that the secular decline in the labor share of income from roughly 70 percent to 63 percent since 2000 has been driven by forces that have also increased the incentives for firms to post more jobs. So, for example, if diminished worker bargaining power is behind the decline in the labor share, then the return to posting vacancies will be higher for employers. Andrew and David find empirical support for their argument in the fact that industries and states in which the labor share has fallen more have seen higher increases in job postings. The implication of this research is that even if the long-awaited shift of the Beveridge curve back to its pre-crisis position does not occur, the permanent rightwards movement may not itself reflect an increase in structural unemployment. And if the curve were eventually to shift back toward its pre-crisis position, the implication would be that the natural

rate is even lower than some expect. On the other hand, if the labor share of income were to reverse its decline while the curve stays shifted to the right, that would imply a higher natural rate, although I should note that Andrew and David place a substantially lesser likelihood on that third outcome than the first two.

The third paper is one by Ekaterina Peneva and Jeremy Rudd of the Board staff that models the relationship of labor cost to price inflation in recent years, finding little evidence that a change in the former has a material effect on the latter. This is the latest in a line of research that many of us have referred to during these meetings over the last couple of years, suggesting that the past few decades have seen a break in the previous relationship between labor costs and broad price measures. The authors cast doubt on explanations such as downward nominal wage rigidity for explaining the phenomena that we've seen over the past couple of years.

Now, not surprisingly, each of these three interesting pieces of research leaves some questions unanswered. The work on PTER focuses on a pretty short and, in macroeconomic terms, pretty unusual time period. In addition, some of the factors identified by the authors as structural, such as industry and age composition, tend themselves to move with the business cycle, so it may be a little bit difficult to disentangle what is structural from what is cyclical.

The Figura-Ratner work does not directly measure the loss of bargaining power, but instead shows the relationship that's theoretically consistent with such a shift. And, of course, the Peneva–Rudd paper itself notes that its undermining of labor costs as a key explanatory factor driving inflation leaves unanswered the question of the most important dynamics that are determining price inflation today.

But these three recent lines of research are yet another reminder that relationships observed and established in the pre-crisis period may actually have been changing in ways that

the Great Recession has made more palpable. And I mention them today not simply to advertise the interesting work being done around the System, although that's probably a worthwhile thing to do, but also because I think they're trying to help inform the monetary policy decisions that we're going to have to make over the next several meetings. In particular, the Peneva-Rudd paper, adding itself to that line of research to which I alluded earlier, does for me, at least, put into sharp relief the question of when one can be reasonably confident that inflation will return to the 2 percent target. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I will begin, as others have, with the questions that hung in the air at the time of the April meeting. Specifically, was the first quarter really as bad as it seemed? And, second, how much signal should we take for the path forward? I would agree with many voices around the table that incoming data since the April meeting tentatively offer encouraging answers on both questions.

The discussion in Tealbook, Book A, on special factors in the first quarter, which I found very useful and thoughtful, suggests that underlying growth was in the range of 1 percent in the first quarter. Some other outside estimates see an even greater one-time effect and, thus, stronger underlying growth. So I'm inclined to believe that there was no sharp break in the pace of underlying growth in Q1, especially with real GDI growing at 1.4 percent and monthly payroll gains of nearly 200,000.

As for the second quarter and the rest of the year, incoming data have picked up since the April meeting, particularly in those areas in which there had been the worrisome weakness. The April and May employment reports showed job gains reaccelerating after a lull in March. The May retail sales estimate also struck a significantly more positive note, with solid growth for

May and upward revisions for March and April. And since growth is so heavily dependent on the consumer at the moment, that news was particularly important.

The Michigan survey also provided more support for that positive spending narrative, with a significant uptick in confidence and the highest ratings for personal financial prospects and wage expectations since before the crisis. I also found the staff memo that Glenn Follette had taken part in writing to be striking a generally positive note on labor market conditions as well. Housing starts have also strengthened, and although I don't expect a lot out of this sector in terms of being a major engine of growth, a small positive contribution is welcome.

Turning to my SEP submission, I have marked down a slightly stronger growth rate for real GDP this year than is shown in the Tealbook and about the same as the Tealbook thereafter. On the unemployment front, I also believe that there is a significant chance that unemployment will drop faster and further than in the baseline forecast, given the payroll and productivity forecasts. Compared with the relationship we've seen over the course of the last couple of years, the Tealbook forecast calls for unemployment to drop significantly more slowly for a given amount of payroll growth for reasons—perfectly possible reasons—that I've spent many happy hours discussing with the staff, but I guess I'll just go for now with what's been happening for the last couple of years. By putting a little more weight on the recent trend, I've got unemployment declining to around 5 percent by the end of this year and dipping below 5 percent in 2016 and 2017. With the economy slightly tighter, I've got inflation getting to 2 percent by 2017. More on that tomorrow. These changes do happen to bring my forecast into closer alignment with the run of public forecasts I've seen, as I think was implicit in Glenn's earlier presentation.

Market expectations for the path of policy rates have moved up significantly since the April meeting, and appropriately so. Although Treasury rates have run up recently, we've seen similar or larger moves often over the last 30 years, even in the good old days before the post-crisis decline in liquidity. Although volatility in the Treasury securities market has increased in recent months, that leaves the MOVE index, which measures volatility in fixed income markets across the curve, closer to but still below typical volatility levels for the decade before the financial crisis. And I guess the best way to make sure that we don't trigger undue increases in volatility is to continue to avoid surprising the markets unnecessarily. In any event, both short- and long-term rates now seem to me to be better aligned with economic fundamentals than they have been, and that gives me some cause for hope—optimism that we can avoid an episode of harmful volatility.

There's also been much greater volatility in the euro area, particularly in German fixed income markets recently, but this seems to me to relate principally to some correction after the strong initial reaction to the ECB's quantitative easing program. And I would echo Governor Tarullo's and Vice Chairman Dudley's comments, at least that I don't take any negative signal for our normalization process—those are my words—from what happened in Europe during the intermeeting period.

I will close with the observation that the Tealbook baseline and my SEP submission are based on the assumption that no important fallout arises from the ongoing Greek crisis. The range of possible outcomes is wide—and of possible implications is even wider. That situation is likely to continue to complicate the liftoff decision the Committee will face later this year. Of course, it's also possible that the next three months will clarify the likely path of events. Time will tell. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Madam Chair, the mixed data since we met in April haven't fully resolved questions about the economy's underlying momentum. While it's clear that some portion of the weakness in the first quarter resulted from a combination of transitory factors—residual seasonality, bad weather, and the port strike—it also appears likely that the economy's underlying momentum may have softened because of somewhat persistent effects from exchange rates, oil prices, and cautious consumers. While the data in hand pertaining to the second quarter are mostly reassuring, they don't suggest a sufficient bounceback to compensate for the first-quarter weakness and certainly are not as strong as what we saw this time last year.

Even after incorporating the positive first-quarter Quarterly Services Survey and the May retail sales and housing permits data, it now looks as though real GDP will advance at a disappointing 1¼ percent annual rate over the first half of the year. The most likely explanation for the persistent component of this weakness is that the negative effects of the recent rise in the exchange rate and the reduction in oil prices on net exports and business investment have been larger than expected, likely subtracting around 1½ percentage points from growth over the first half of the year, while the positive effects, which should be reflected primarily in consumer spending, have not materialized as projected.

The lackluster pace of household spending is surprising, in view of the variety of factors present that would normally be supportive. Real interest rates remain quite low by historical standards. Housing wealth and equity wealth have each increased at double-digit rates on average over the past two years. Robust job gains and falling energy prices have contributed to increases in real incomes of 3½ percent over the past year. And households appear to understand these favorable conditions, as consumer sentiment is at relatively elevated levels.

And yet reported real consumer spending likely increased only a little over 2 percent in the first quarter, and even the four-quarter increase of around 3 percent is short of what the fundamental determinants of spending and historical correlations would suggest. Spending on new homes has also been disappointing, and starts remain far below the trend increases consistent with population growth, although the May data on single-family permits was a bright spot.

It's at least possible that household behavior continues to be shaped by the experience of the financial crisis and the Great Recession, with an increased perception of tail risks and concerns among many consumers that increases in income and wealth may be highly contingent and subject to reversal. If, as a result, households are reluctant to spend out of any gains, the headwinds holding back aggregate demand may prove somewhat persistent.

Developments abroad are another source of potential ongoing headwinds. Slow growth in aggregate demand abroad and its effects on the exchange rate of the dollar continue to weigh on goods production in the United States. We learned earlier this week that manufacturing production declined in May. That will be a reduction in manufacturing output of over 1 percent at an annual rate over the past six months after increasing at close to 5 percent in the preceding 12 months; staff models predict that recent increases in the value of the dollar will remain a significant drag on net exports for some time to come. That projection is based on a relatively stable dollar and a pickup in foreign growth, but the risk of a messy Greek exit from the euro zone has increased of late, as has the risk of persistent weakness in aggregate demand abroad. Most immediately, negotiations between official creditors and the Greek government are at a very delicate stage, and it's not clear a compromise solution is attainable. At the same time,

incoming data on foreign GDP growth were once again weaker than expected, with China's growth outlook murky, and commodity producers negatively affected.

Despite this, our labor market continues to improve. May's employment report offers a welcome reassurance on this front. Employment gains have averaged close to 220,000 in 2015, down from the pace of 2014, but as many have noted, still at a very respectable pace. The unemployment rate, which had fallen at close to one-tenth of a percentage point per month over 2013 and 2014, has declined only one-tenth percentage point over the past five months, but it appears that resource slack continues to diminish, now concentrated in other margins such as the participation rate, which is very welcome.

Although aggregate measures of wage growth remain relatively low, on balance, here too we're seeing signs of acceleration. Both the 12-month changes in the employment cost index and average hourly earnings have moved up recently, and other indicators also point upward. These are, of course, very welcome indications, but I'll want to see sustained momentum to be convinced this represents a broad-based, convincing step-up in wage growth. The change in average hourly earnings is not yet meaningfully different from the 2 percent average pace of the past several years, and the staff's current estimate of the four-quarter change in the other main gauge of wage growth, business-sector compensation per hour, is only 1¾ percent in the first quarter.

The continued disconnect between very robust improvement in the labor market and disappointing overall economic growth raises questions about why productivity growth has been so miserable and the extent to which this reflects headwinds from the crisis, which may be reversed, or some more sustained structural change. This issue is so central to our assessment of

the output gap, resource slack, and appropriate policy that it's important to get a better understanding of it in our analysis as we go forward.

Finally, turning to inflation, core PCE inflation has increased from the low monthly rate seen around the turn of the year, with the annualized three-month change in prices at around 1½ percent in May compared with ½ percent in January. Consumer energy prices seem likely to increase at a double-digit annualized rate this quarter and boost a change in total PCE prices to close to 2 percent. But the support to inflation from energy price increases will also be transitory, and measures of the underlying pace of price increases, such as the 12-month change in core PCE prices or the Federal Reserve Bank of Dallas' 12-month trimmed mean rate, are still noticeably below our 2 percent target. So while the downside risks to the inflation outlook have diminished, there's still no sign of core inflation moving above the 1½ percent pace it has remained near over the course of the recovery.

So, overall, the slowing in the pace of the economic improvement since the beginning of the year is difficult for me to dismiss entirely as an anomaly based on the data we have to date. It's therefore of substantial value to gather more information about the underlying momentum in economic activity in the coming months before we take action. Thank you, Madam Chair.

CHAIR YELLEN. My thanks to everyone for a very thoughtful round of observations on the economic outlook, and I'll try to conclude the go-round, as usual, by attempting a summary of some main themes, and then I'll add a couple of remarks of my own.

Starting with the labor market, I think it's fair to say that everyone viewed incoming data as indicating at least a modest improvement in labor market conditions. Nonfarm payroll employment rose 280,000 in May. The March and April gains have been revised up since they were first published. Average monthly payroll gains over the last three months now stand at

about 210,000, which is a solid pace, but as several of you noted, that's down substantially from what we saw around the turn of the year. Various measures of indexes for labor market conditions also show modest improvement.

The unemployment rate in May stood at 5½ percent. It was unchanged from the latest data at the time of our April meeting, but broader measures of labor market underutilization, such as U-6, have declined a bit. In addition, the employment-to-population ratio has drifted up further.

On the question of whether our U-3 measure is an adequate summary of labor market slack or whether broader measures really signify that there's more slack than U-3 indicates, we continue to discuss that issue. I would note that President Williams described research by staff of the Federal Reserve Bank of San Francisco suggesting that U-3 remains an adequate index taking into account the effect of structural changes on the differential between U-6 and U-3.

Several people noted that the labor force participation profile has been essentially flat over the last year and a half, and that does represent progress, judged against Tealbook's estimate of an underlying trend that's declining.

Several of you mentioned that the JOLTS report showed higher job openings. In fact, that series has achieved a new high. And President George mentioned work on the measures of the quality of job matches that also show improvement.

I would describe nominal wage growth as relatively subdued, but that said, there are certainly hints that wage growth may be picking up a bit. You noted that average hourly earnings has ticked up a little bit to 2.3 percent in May, slightly faster than the comparable figure in March.

The ECI for March rose 2¾ percent on a year-over-year basis, and that's up about ½ percent from the December reading. But readings from hourly compensation—it's a pretty erratic series—still are only coming in around 2.1 percent. A number of you described reports from your business contacts—your interlocutors—and mentioned a variety of anecdotes indicating that they do see emerging wage pressures, and perhaps it's no longer restricted to particular jobs and sectors.

So, overall, labor market conditions continue to improve. I think many of you noted that you saw room for further improvement toward our objective of maximum employment. Governor Tarullo mentioned some interesting research by Board staff looking at the outward shift of the Beveridge curve that suggests that if it eventually shifts back, that would likely signify that the full-employment unemployment rate has actually declined, possibly significantly; but several of you noted that, in your view, there remains little or no slack in the labor market.

Turning to aggregate spending and production, I think most of you see the news as reasonably favorable on balance. Most of you read incoming data as suggesting the first-quarter stall that was measured in real activity was likely temporary, in line with our expectations at the time we last met, and that we are seeing a pickup in activity. But a number of you expressed caution about just how large that pickup is going to be and your assessment that we need to see additional data to judge how strong the underlying momentum in spending is.

After folding in the latest spending data, the staff now estimate that real GDP growth was about flat in the first quarter but is likely to expand 2¾ percent at an annual rate in the current quarter. And other data-filtering exercises that are carried out around the System also indicate a substantial pickup in output growth this quarter.

We had an interesting discussion, I think, about residual seasonality. The Tealbook estimate is that this likely subtracted almost 1 percentage point from real GDP growth in the first quarter, and the Tealbook estimates that we will see almost an equal and opposite effect in the current quarter. So for the first half of the year as a whole, residual seasonality shouldn't distort the data. However, President Williams mentioned research by his staff that suggests there was a very significant effect in the first quarter, but it won't all be reversed in the second quarter, and a lot of it will only show up in Q3—correct me if I misunderstood that.

Consumer spending in the first half of the year looks like it was more solid than we assessed at our April meeting. Retail sales in May rose somewhat faster than anticipated in Tealbook, and sales in April and March were revised up. Several of you mentioned that motor vehicle sales jumped, although likely part of that was a one-time spike that paid back for earlier weakness.

Anecdotal reports and other information suggest that we've not seen a very strong response of spending to the boost from declining energy prices—it's a little bit of a mystery. An interesting Board staff briefing in our pre-FOMC meeting looked at international evidence that suggests there's no clear evidence of a boost to consumer spending from the decline in gas prices in other countries as well. But several of you noted anecdotal reports suggesting at least some spillover to categories like travel and restaurant sales.

Several of you noted consumer confidence remains at a pretty high level, which bodes well for continued moderate growth in household spending, possibly something stronger. And if indeed we do have rising nominal wage growth coupled with solid growth in hours, there will be a significant boost to income that should boost spending going forward.

On the business spending side, indicators of business sentiment have been less reassuring and business investment has been somewhat disappointing, with drilling activity continuing to contract sharply and orders and shipments of capital goods staying flat. The cutback in drilling has also depressed industrial production, both directly and through downstream effects on manufacturing. The softness in business spending has been offset to some extent of late by a stronger-than-expected pickup in residential investment, and recent data have been somewhat encouraging with respect to housing.

We did have some discussion of the implications of the recent weakness in labor productivity, which, as of the first quarter, had risen only ¼ percent on a year-over-year basis. Many of you noted this is going to be a very important factor in determining how the labor market performs in the period ahead. If this poor performance continues, we may see continued substantial improvement in labor market conditions and upward pressure on inflation even if real GDP growth remains tepid. But if, as the staff is projecting, productivity growth was to return to a more normal level, we would need to see and be confident that we have a meaningful pickup in output growth just to stabilize the unemployment rate near its current level.

Finally, many of you mentioned continued risks coming from abroad, obviously including the still-unsettled Greek debt situation and the possibility that a disorderly outcome could have adverse consequences for us through exchange rate effects and other channels. And a number of you noted risks stemming from China and growth in emerging markets.

On the inflation front, incoming data came in pretty close to staff expectations. Very few of you noted any significant change in your outlook. Total PCE inflation was only 0.1 percent over the last year. Core PCE prices, which is, I think, a better indicator of the underlying trend, rose only 1.2 percent. These were largely in line with Tealbook predictions. However, many of

you noted that crude oil prices have stabilized, and the real exchange rate is stable or up only slightly since the last FOMC meeting. And while there will be a very long lag between the stabilization in oil prices and an upward move in headline inflation, we are not likely to see a big upward movement until close to the end of the year. Eventually, the downward pressure of those huge declines in energy prices near the end of the year will drop out, and headline inflation will move up toward core. A number of you noted that the appreciation of the dollar is depressing import prices, and our staff estimates that that's taking probably ¼ percentage point off core inflation this year.

With respect to the likely behavior of core inflation in the period ahead, the staff estimate that for the rest of the year it should be running close to 1½ percent, and your updated SEP projections look like they are consistent with that assessment. So when we turn to the critical issue of whether recent developments have made you reasonably confident or increased your confidence that the level of inflation will actually move up to 2 percent over the next couple of years, a number of you noted that the fact that the dollar and oil prices have stabilized does raise your confidence that headline inflation will move up toward core. An important question, however, with core inflation still running below 2 percent, is, what will happen to that core rate over time? A number of you indicated that as long as the labor market continues to improve, you have confidence that the Phillips curve will assert itself. And with stable inflation expectations, inflation will tend to move up toward 2 percent over time, although we have to be sure that growth is strong enough to get that outcome. But several of you expressed deeper concerns about whether or not that's a reasonable prediction. President Evans emphasized the fact that there's some evidence in the Survey of Professional Forecasters that CPI inflation expectations have drifted down. President Kocherlakota expressed concern about whether inflation will move

up, whether our inflation target is credible, given the Committee's apparent lack of determination to move inflation up over time, and he also noted that it looks as though the risks around a 2 percent medium-term inflation forecast may not be symmetric—they may be weighted to the downside.

So let me stop there with those comments. Would anybody like to comment or correct anything, if I garbled what you have said? [No response]

Okay, then let me add a couple of comments of my own, and they'll be directed toward what we have learned and what we haven't learned since our previous meeting. Back in April, we faced a wide range of surprisingly weak readings on the labor market and real activity more broadly. We thought this softness was largely transitory, but we couldn't be sure it wasn't the beginning of a more serious stalling of the expansion. And now, it seems to me, that with payroll gains running close to 210,000 in the past three months and real GDP now apparently expanding at least at a moderate pace, that we were experiencing a temporary pause in activity.

That said, the Tealbook estimates that real GDP is going to expand at only a pretty paltry 1¼ percent annual rate in the first half of the year, even with a decent rebound in activity in the current quarter. And the tone of some key monthly indicators has remained persistently soft. So it's unclear whether real GDP over the rest of the year will be strong enough to sustain further improvement in the labor market, even with the funds rate near zero. We can't expect any support from net exports this year, in view of the weak state of the global economy and elevated level of the dollar. Indeed, the potential for things to worsen on this front is, in my view, material. For example, a disorderly resolution of the Greek situation could put further upward pressure on the dollar. We can't expect much support from government spending, in light of fiscal realities at the federal, state, and local levels. Residential investment isn't likely to be a

significant source of strength either, even with the recent uptick in permits and starts. In part, this is simply because housing is such a small share of GDP. But beyond that, I think it's unlikely, as long as credit availability remains so tight, that housing construction will contribute a lot to real GDP growth anytime soon.

I mentioned that business fixed investment has been weaker—at least weaker than I expected so far. I know a lot of it reflects the contraction in drilling, which should be temporary, especially now that oil prices have flattened out. But the softness extends beyond this category. Maybe it is expected—and I think it is in line with staff expectations—that firms would be reluctant to engage in much capital spending in an environment of only slow growth and aggregate demand, both at home and abroad. But, at any rate, business surveys do point to only moderate investment growth, at best, in coming months, and that leaves consumer spending. While household spending now looks to have expanded at a solid pace during the first half of the year, growth, nonetheless, has slowed noticeably since the second half of last year. And, as I mentioned, that occurred despite the very large boost to real income from lower energy prices. It raises the possibility that we may have overestimated the stimulus from this windfall, both to date and over the rest of the year. The Tealbook projects real PCE growth to pick up to 3½ percent in the second half of this year. It also projects that the saving rate will decline appreciably. But if the saving rate were to instead move just sideways through the end of the year, then real GDP would likely increase only 1 percent or so for the year as a whole.

Of course, even mediocre GDP growth would not necessarily be inconsistent with further improvement in labor market conditions if the pace of productivity gains remains very low. If that were to occur, we could see employment continuing to rise steadily and the unemployment rate falling to 5 percent relatively soon. Depending on the accompanying inflation data, such an

outcome would likely warrant increasing the federal funds rate even though overall economic activity was expanding quite slowly. But a development of that type would also imply that the economy's equilibrium real interest rate is lower than we now estimate, suggesting both the need to tighten policy less in the longer run and also a greater risk of returning to the zero lower bound—in short, a more gradual trajectory for interest rates.

On the inflation front, incoming information has similarly clarified some issues and left others unresolved. On the positive side, the data have come in more or less as expected, and I think they convincingly demonstrate that the current very low readings on inflation are substantially the result of transitory factors—namely, oil prices and the dollar. So I feel reasonably confident that by early next year, PCE inflation on a 12-month basis will be back to the neighborhood of 1½ percent, assuming that energy prices and the dollar do remain roughly stable.

On the other hand, I'm uncertain whether inflation will continue climbing after that point and reach our inflation objective within two to three years. For me to be reasonably confident on this score, I'd have to see both further improvement in the labor market and evidence that GDP growth is likely to stay sufficiently strong to complete the return to full employment even as interest rates rise. I suppose I'm in the camp that's prepared to believe in the Phillips curve, but it's going to take, in my mind, confidence the labor market will improve. And without that assurance, I would worry that resource utilization might not prove to be persistently tight enough to bring inflation back to 2 percent over the medium term, even if inflation expectations remain well anchored.

To anticipate our policy discussion, I think we need more information before we can confidently say that conditions warrant raising the federal funds rate. It's unrealistic to expect

that all doubts will be erased by our September meeting, but at that point we will have received six labor reports since we first stated the conditions necessary to initiate tightening, and that's a solid basis for assessing whether labor market conditions have improved sufficiently to initiate tightening.

As the year progresses, we'll also get additional readings on real activity and productivity, and I think we'll be in a better position to judge the likelihood that growth will stay strong enough to keep the economy moving back to full employment, and, thus, for us to be reasonably confident that inflation will gradually move back to 2 percent.

So let me stop here. What I'd like to do is to turn things over to Thomas, who's going to give us his briefing on our policy decision. We'll then go to dinner, and tomorrow morning we can begin right in on our policy round.

> MR. LAUBACH.[5] Thank you, Madam Chair. I didn't quite muster the courage to break decisively with dress code in this room, but in appreciation of President Williams's gift that I have here with me, I managed to slip seven mentions of "data dependence" or "data dependent" into my text.
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> I will be referring to the handout labeled "Material for Briefing on Monetary Policy Alternatives." At the April meeting, the Committee decided that economic conditions had progressed to the point that the decision to begin normalizing policy could be taken at any meeting, starting with the current one. Therefore, we thought it appropriate that the alternatives include a draft postmeeting statement that announces the beginning of policy normalization and a note that communicates related operational decisions. I will return to those later in my briefing. Under the assumption that the Committee will not choose to raise the target range for the federal funds rate at this meeting, the key issue, taking as given your principle of data dependence, is how to characterize the economic outlook and related risks. The remaining three alternatives approach this issue in various ways.
>
> Before turning to these alternatives, my first exhibit reviews some evidence regarding whether market participants understand that the Committee is now on a meeting-by-meeting basis regarding the timing of liftoff, and that its decisions are data dependent. I focus on three questions: whether uncertainty about the economic outlook is reflected in an appropriate degree of uncertainty about the timing of the first tightening, whether interest rates are correspondingly sensitive to incoming

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

economic information and its implications for the outlook, and whether investors appear to appreciate the data dependence of the pace of tightening beyond your first move.

The upper-right panel shows the average of primary dealers' probability distributions regarding the meeting at which you will first raise the target range of the federal funds rate. As Simon noted, while the highest probability is on September, roughly equal probability is attached to liftoff at a later date. The probabilities are spread out across future meetings, as they ought to be in light of your message of data dependence and the inherent uncertainty of future economic developments. The middle-left panel shows that quotes on federal funds futures also imply a risk-neutral probability distribution that is consistent with data dependence. Both panels indicate that, since your April meeting, the odds of liftoff at the September meeting have increased, partly reflecting the reduced probability placed on liftoff at the current meeting in the wake of the string of soft spending data. The odds of liftoff after September are little changed, on balance, consistent with your assessment that economic weakness in the first quarter will prove to be transitory.

The middle-right panel provides some evidence regarding the second question, whether interest rates are as sensitive to incoming economic news as one should expect. The panel shows indexes for the response of the 2-year and 10-year Treasury yields to macroeconomic news, where the shaded region shows the period since the federal funds rate reached the lower bound. As shown by the red line, from 2010 until the end of 2012, the sensitivity of the 2-year yield fell to almost zero as markets—correctly—anticipated that short-term rates would remain at the lower bound for at least a few years. Since then, the sensitivity has retraced much of this decline and is now closer to normal levels, as economic news now has a meaningful effect on expectations of short-term rates over the next two years. The sensitivity of the 10-year yield, by contrast, has declined from its recent peak during the taper tantrum and is now at a historically normal level.

Sadly, from a macroeconomist's perspective, macroeconomic news explains only a small fraction of overall interest rate variations. The lower-left panel shows that, more generally, uncertainty about the level of short-term interest rates one year ahead has followed a broadly similar path to the red line in the middle right, and since early 2014 it has begun to move back toward more normal levels, although it still has some way to go. The fact that uncertainty about the federal funds rate one year hence remains well below historical norms could, in turn, reflect the strength of market participants' conviction of a very gradual pace of tightening once it begins. The panel in the lower-right shows the average probability distribution across primary dealers of the federal funds rate target increases during the first year of tightening, conditional on the federal funds rate target not returning to its current range. These probabilities are tightly clustered around roughly 100 basis points per year, with only negligible odds on economic scenarios under which the Committee would tighten at a pace faster than what was considered "measured" in the mid-2000s, indicated by the vertical line. It is not clear whether the high probability mass around roughly 100 basis points per year reflects a high degree of confidence that economic

conditions will evolve in a manner consistent with this gradual pace, or whether it represents a lack of appreciation of the data dependence of future monetary policy.

Summing up, the evidence presented on this exhibit suggests that there is a healthy dispersion of probabilities over when the economic conditions for the first tightening will have been met, and financial market prices seem reasonably responsive to economic news. Yet, financial markets may still throw a "liftoff tantrum," either because they come to anticipate a greater likelihood of a historically more-normal pace of tightening, or because the data I am reviewing are unreliable guides to market expectations.

Turning to your consideration of today's decision and the postmeeting statement, the bullet points at the top of the second exhibit outline how the draft language in alternatives A, B, and C address the range of possible assessments that the Committee might make about economic developments over the intermeeting period and their implications for progress toward the Committee's criteria for beginning normalization. Alternative B would indicate that the economy is expanding moderately and would continue to characterize the labor market in terms of the pace at which underutilization is diminishing. Although the Committee would acknowledge that inflation is still running below 2 percent, it would temper that observation by noting that "earlier declines in energy prices" have been a factor in holding down inflation and report that "energy prices appear to have stabilized." The assessment of the outlook in paragraph 2 of alternative B is basically unchanged: The Committee continues to anticipate that, with appropriate policy accommodation, the economy will expand moderately, leading to further progress toward the Committee's goals. And alternative B would repeat the guidance in paragraph 3. All told, the draft language in alternative B would communicate that some progress has been made since the last meeting on both of the Committee's criteria for policy firming, but that the Committee, while expecting further progress, remains data dependent and will decide on the stance of policy on a meeting-by-meeting basis.

By retaining all future meetings as live options, alternative B would allow for the possibility that policy firming could begin in July or September. At the same time, it would also leave open the possibility that data on the economy might evolve in a way that would warrant a later start.

While alternative B would not tip your hand regarding the likely timing of when the conditions for liftoff will have been met, alternatives C or A would send such a signal. With the language in alternative C, the Committee would convey the view that it has seen appreciable progress toward meeting its criteria for beginning policy normalization and thus it would likely be read by the public as suggesting that the first increase in the target federal funds rate is close. In contrast to alternative B, paragraphs 1 and 2 of alternative C would use language more closely tied to the Committee's stated criteria for increasing the target range for the federal funds rate. In paragraph 1, the Committee would indicate that it has seen "some improvement in labor market conditions," and by omitting the reference to underutilization of labor resources, might leave the impression that such underutilization has mostly vanished.

In addition, paragraph 2 would express greater confidence in the outlook for inflation, indicating that "the risk of inflation running persistently below 2 percent has diminished."

The views on economic activity and the outlook in alternative A would instead suggest that the Committee has seen little further progress toward meeting the criteria for the start of policy firming and would likely push out market expectations for policy tightening into the tail of the current distribution. Paragraph 2 would indicate that the risks to the outlook for economic activity, the labor market, and inflation are all to the downside. The concern about inflation would be sufficiently strong that the Committee would strengthen the criteria for policy normalization, stating in paragraphs 3 and 4 that inflation would need to be anticipated to reach 2 percent within one to two years and that the Committee is prepared to use all its tools to meet that criterion.

As I noted at the beginning of my briefing, I want to conclude with some remarks on alternative C′ and on the staff proposal for communicating details of the Committee's operational approach to implementing policy when policy firming commences. We would very much appreciate your comments on these during the Q&A period and the policy go-round.

As highlighted in the first set of bullet points at the bottom of the page, the most significant change that you will need to make to a postmeeting statement announcing the initial increase in the target range for the federal funds rate will be to update the forward guidance about how the Committee will approach subsequent adjustments in the target range. Following from the existing forward guidance, the proposed language in paragraph 3 of alternative C′ would, first, reiterate that the Committee's decisions will be made in response to economic and financial developments and their implications for the economic outlook, so as to promote the mandated objectives. In line with your current SEP responses, the draft language in C′ would explicitly note that the Committee expects that the economic outlook will warrant a gradual increase, and would retain the assessment that even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below longer-run normal levels. However, in order to communicate that the Committee's assessment of the appropriate path for the federal funds rate might change as economic conditions evolve, the proposed language adds that adjustments to the target range will be data driven.

The final set of bullet points focuses on the staff's proposal that the postmeeting statement be accompanied by a document providing the operational details associated with a change in the federal funds rate target. Rather than repeat the details covered in the memo that you received last week, I will just briefly highlight what we see as the advantages of this approach. The Committee's previous communications regarding policy normalization have indicated that adjustments to the target range for the federal funds rate will remain its primary means of conveying the stance of monetary policy, and that the Board's adjustments to the IOER rate and the Committee's instructions to the Desk regarding the operation of the ON RRP

facility—and possibly other tools—are intended to be used to help maintain the federal funds rate within the target range. We propose that the Committee's postmeeting statement focus clearly and simply on your decision about the stance of policy and the reasons for that decision, while avoiding the possible distractions that could arise from including additional information on the use of, and possible adjustments to, supporting operational tools. A separate document concerning implementation details may prove to be particularly useful in the event that the Committee needs to make an intermeeting adjustment to the operational tools after the commencement of policy firming to keep the federal funds rate in an unchanged target range. In addition, the document on policy implementation would consolidate information about the use of these tools without highlighting their differences in governance.

Copies of all four draft alternatives and their associated policy directives are attached to my exhibits. Note that the draft directive for alternative C′ incorporates the changes that were discussed in the June 10 memo, while the draft directive for the other alternatives offers the option of making several changes proposed in the same memo that are intended as "housekeeping" items to bring the directive up-to-date. If you will turn to page 14 of your packet, you will see that the first change is to eliminate the reference to managing conditions in reserve markets—which is not how you are now conducting policy—and add the specific reference to the federal funds rate target range. In the second paragraph, the rewording of the first sentence avoids the possible misinterpretation that "its policy" refers to the Desk's rather than the Committee's. And, finally, the last sentence, which was added in December 2008 when emergency lending and the first LSAP were having substantial effects on the balance sheet, seems no longer necessary. In particular, the Rules of Organization dictate that the SOMA manager is responsible for keeping the Committee informed about market conditions and transactions made for the SOMA, and these reports have become a regular feature of each meeting.

If you have thoughts on whether these changes should be made to the directive at this time, please note them in your discussion during the go-round. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Why don't we have a round of questions for Thomas, and then we'll be in a position to begin tomorrow morning. Questions? President Rosengren.

MR. ROSENGREN. Well, I just have a question on the tradeoff between data dependence and forward guidance. When I look at the probability that you have in your top-right panel in exhibit 1, we have a roughly 45 percent probability of moving in September, and presumably, if the data comes in as forecast, that probability would improve on its own as we get into July.

I guess the goal would be to get that much closer to 80 or 90 percent, since we wouldn't be comfortable that 45 or 55 was quite enough. And I just want to think about what the relative benefit of getting that additional increase would be as we get into September, particularly if the data surprises us in August and we end up having to backtrack. So we've moved into an environment in which we've tried to avoid forward guidance, and we've really highlighted data dependence in speeches and in what we've put into the statement.

Can you give me the relative cost and benefit of adding in language that moves away from data dependence—to tip our hat a little bit more—and how much additional benefit we would get from tipping our hat versus what happens if we tip our hat and turn out to be wrong?

MR. LAUBACH. So I don't have a clear view on what should be some kind of target value for this probability. Would it be ideal if, in fact, market expectations were close to 100 percent right before the meeting? It would seem to me that probably there is going to be some residual uncertainty simply because your assessment of economic conditions and whether they warrant liftoff or not always will involve a certain amount of judgment—that is very difficult to boil down to a simple formula. So my sense is that you wouldn't want to raise that probability too high, in that you would want to avoid leaving the impression that expectations are being completely piled up on liftoff at a particular meeting—that would be a serious impediment.

My thinking here is more that market participants should simply be sufficiently attuned to the fact that you may judge the data as being consistent with liftoff being warranted at that meeting, so that it is not being perceived as a breakdown in communications. More generally speaking, my sense is that there was a time when forward guidance could be used in a fairly hard data-dependent sense, like we did with your threshold strategy, in which you could make firm commitments that before 6½ was crossed, the conversation would not even begin. At this point,

however, when you are so close to these criteria, I think it is just very difficult to lay out very precise, specific guidance of exactly which economic conditions we will see as warranting liftoff ex ante. I'm afraid I'm not giving you a very precise answer, but I think that probabilities in this range or higher should be fine.

MR. POTTER. I could give some history, just quickly. If we look back to September 2013, the probability of a taper, on average, was around 50 percent. And at the time, most people thought that the Fed would taper, there was a pretty wide range of views there, and that was about that actual meeting.

I think if the average was 70 percent—and the history shows that it doesn't really get much higher than that unless there's been a direct telegraphing that it's going to happen—if there's still a big wide range of views, so some people are still at 30 and some are at 90 or something, then that's not a great situation to be in because we don't know who the marginal investor is. Is the marginal investor the one at 30 percent or the one at 90 percent? But right now, the spread, which is the only thing I emphasized—nearly everyone is between 30 and 70 percent. So they think it's reasonable that the data could come in and you would decide to lift off in September—that's sort of what you were trying to say on the data dependence. But the issue of how you're going to feel at the September meeting about these probabilities, I think, is fundamentally different. I remember Governor Powell trying to think through that for the taper decision, whether 50–50 was reasonable enough or not. It might be a 50–50 decision in September.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. I just want to add something to that. The market is going to have an SEP in front of them that they can look at, which has projections for

unemployment, GDP, and inflation. So if the data evolve in a way consistent with that, they're going to start putting the pieces together. I think the issue is going to be, if the data diverge significantly from that forecast, the question is then how much of a divergence do you need before you start to change your expectations. But I think if you take the SEP as it's written today, if things evolve pretty much in line with that, then the probability in September is likely going to harden as opposed to dissipate, particularly because the market will have this information in front of it.

MR. POTTER. I think it really depends on the messaging in July, the minutes, and any speeches that are made, as well, though, how high the probability is.

VICE CHAIRMAN DUDLEY. Of course.

CHAIR YELLEN. Let's see. I've got two two-handers. First, President Bullard, then President Rosengren.

MR. BULLARD. I just wanted to follow up on what Vice Chairman Dudley said. I think as you get close to the meeting, the probabilities do tend to coalesce. There are very few meetings at which you come in and the market is really 50–50 on what we're going to do, because the data have come in in some way that kind of dictates. And you can see that for this meeting, where the probability has fallen under 5 percent. So, basically, everyone in the market decided we're not going to do anything now.

MR. POTTER. When I look back, it's not quite that black or white. It is definitely true recently that you've had the probability close to zero, but in meetings where a big policy action is being taken, it's not as if everyone is at 100 percent—they might get to 75 or 80. So it's not as black and white as the zero at this meeting, for which there's been less discussion. If you're

getting close to a policy change, there's been more discussion, and that tends to push the probability up.

CHAIR YELLEN. President Rosengren.

MR. ROSENGREN. Just a follow-up to what the Vice Chairman said, that one of the changes relative to what we used to do is that we have an SEP now. It should convey the degree of certainty among the participants around the table with when rates are going to go up. Regarding the marginal benefit of using language to characterize what's already embedded in the SEP, I'd just be interested whether you think the SEP adequately gives that degree of certainty or variation based on the participants' projections for the funds rate, and whether it is actually that much of a benefit to add language from meeting to meeting on top of that.

VICE CHAIRMAN DUDLEY. I think that's a very fair point. You have this new innovation, so you're communicating a lot. Do you actually need something in the statement that reinforces that or not?

The problem with the SEP, of course, is that no one knows who the dots are, so there's still some residual uncertainty in the SEP. Also, the things that you write down in the SEP submissions don't fully summarize everything that's relevant to you. So, for example, the forward momentum in the economy, what was happening in terms of a debt limit, what was happening in terms of the European situation—those could be things that you can't really factor into the SEP.

I was writing some notes to myself about C′ tomorrow, and I think there is a very interesting question that we need to think about: Do we want forward guidance once we lift off, or is the SEP sufficient to communicate our expectations? Now, the reason to have forward guidance initially when we take off is, we're worried a little about a taper tantrum, right? We

want to reassure people in order to underline that, no, we don't think we're going to go very fast, so you shouldn't go very fast either. But I think it's a legitimate issue that we need to discuss some more.

CHAIR YELLEN. Governor Fischer.

MR. FISCHER. Could I ask, Simon, what exactly is in this chart? Is this the—

MR. POTTER. It's Thomas's chart, I think. Is this the federal funds rate?

MR. FISCHER. Thomas, what's in these data? Is this every individual giving a probability of what is—

MR. LAUBACH. Which chart are you looking at? The upper right?

MR. FISCHER. Let's take the one implied by federal funds futures.

MR. LAUBACH. That's a more complicated thing. So, very quickly, the upper right—the primary dealer survey asks the question two different ways. It asks each dealer for the modal date for liftoff and it also asks for the whole probability distribution. And this here is based on averaging over the individual respondents' probability distributions. So that's what you see in the upper right. In the middle left, this is something based on staff calculations of a so-called step path—namely, what staff is constructing is based on futures data, the probability of individual steps in the funds rate at each meeting.

MR. FISCHER. So, I am not going around, saying, "I am a September guy and nothing is going to move me off that." I'm a guy who's going around, saying, "Well, there's a 70 percent probability here and a 20 percent there."

MR. LAUBACH. I think that's most directly addressed by the upper-right chart, because that is telling you that the average dealer is not all centered on one date, but that, in fact, there is a fair dispersion. The average dealer puts only a 45 percent probability on September and 45

percent distributed over other meetings. So 45 percent doesn't strike me as a whole lot of conviction. There is, you know, a preponderance, but there's also a fair probability that—

MR. FISCHER. Do we know where the average dealer puts his money?

MR. POTTER. We don't, and that's one of the issues with this chart. And we faced this during the taper tantrum. The marginal investor could have a quite different belief from what we're measuring, which is why we started the Survey of Market Participants—that's the buy-side survey. And the two surveys are lining up pretty well right now. One of the things you might face in September is they look quite different. And then, how would you feel about what the market reaction is going to be at that time?

MR. FISCHER. All right. So if we can take the average probability distribution at the timing of liftoff, the top-right one, let's suppose we go along the path we expect to be on and the data are reasonable, if not absolutely decisive. We'll have a decision to make in September, but it won't be totally clear to market participants what we will do. So the probability weight will pile up a little bit on September from the left, and the question is, what happens on the right in the market? And if some of them move off to the right—saying, for instance, the Committee is showing some reluctance to pull the trigger or something—then when we do pull the trigger, we're going to have a lot of noise in the market, I assume. And if it all piles up on September 16 and 17, because everybody thinks it's obvious that's what we are going to do, then we'll have less noise in the market at the time of the decision. We'll just have the noise a few weeks before.

MR. LAUBACH. Well, how much noise it's going to cause is really an open question, right? My expectation would be that, of course, if over the next three months, say, the employment reports all come in strong, the inflation data come in strong, you would see a

substantial move of probabilities from the right toward the September bar. How strong a market reaction that would cause is difficult for me to anticipate.

MR. POTTER. The advantage we have over the slowing of the asset purchase programs is that we have the federal funds futures data. So that should aggregate in a way some information about who the marginal investor is. The disadvantage we have is, they have to work out where the effective rate will trade within the range. So we won't be as precise on this first one to complement what's in the upper chart. When the decision was made to taper, the probabilities showed at that meeting were, on average, a 25 percent chance that the taper would happen. But everyone realized in the next couple of meetings it was going to happen, and you just got over that uncertainty. In the end, that was quite positive.

So, for example, if everyone thinks it's really between two meetings—September and December, and that's what we see—it might not matter as much when you actually decide to go. But if there's a lot of weight on 2016, then there's probably an indication in moving of what the reaction function is at that point, which could have implications for the markets.

MR. FISCHER. So why don't we leave out the "they don't know where it's going to trade in the range." Let's simplify by just assuming that we're going to fix a number rather than a range because the range adds a level of complication that we don't want to deal with analytically at the same moment.

MR. POTTER. That would be great, and if we were credible that we could hit that point, that would really help. But I don't think at the moment we're credible that we could hit a point target.

MR. FISCHER. Okay, Thomas. I'm finished.

MR. LAUBACH. One other point, and I may come to regret these words, but my expectation would be that, literally, if the only thing that would shift is, say, probability mass from December toward September, that, in itself, would be my expectation, and it shouldn't cause a very strong market reaction. I think more interesting is what happens further out along the yield curve because, as you've seen from Simon's charts, a bigger puzzle is why far forward rates are still very low. So if this was associated with a market pull-up in forward rates further out, it could be because market participants somehow changed their views about the fundamental strength of the economy or because they changed their views about the reaction function. Then you could get a substantially larger response of longer-term rates.

MR. FISCHER. Okay. Thank you.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I had a one-hander, but I'll convert the first part of it into a two-hander to contribute to this really important conversation. I think that I'm more concerned about uncertainties being present in September. As I listen to you speak, Madam Chair, and I listen to the Vice Chairman speak, I think that a key element that both of you stressed was the disconnect that we've seen between the employment data and the data on real activity.

We're going to get a lot of information about employment before our September meeting. We're going to get considerably less, I think, about GDP and therefore won't know how the center of the Committee resolves the potential for ongoing disconnect. I listen to the nowcast from Atlanta, 2 percent for the second quarter—that might be sort of where we're at in terms of GDP numbers in September—but we may continue to see ongoing labor market improvement. How that gets resolved will be very important. I think that messaging will be very complicated,

and so I think there could well be more uncertainties going into the September meeting than we face right now at the June meeting.

I had one last thing about that, which is that I think the opportunities for messaging between July and September are more limited just by the nature of the calendar. We don't talk as much in that time frame, so I think that will, again, add to the challenge.

My second comment was on the interpretation of Thomas's charts as having to do with telling us that markets have learned to be data dependent and data sensitive in their assessments. I thought that was a nice try, but it was pretty heroic. One of the plausible theories about what the Committee's forward guidance did was that it tamped down on the influence of any individual speaker's effects on market beliefs. You are basically shutting down the noise factor that comes from having some presidents out there talking.

MR. LACKER. Just presidents?

MR. POTTER. It doesn't apply to the Chair.

MR. KOCHERLAKOTA. No, when the Chair speaks, I think it's much closer to being the heart of the Committee. The Presidents and the Governors are speaking more for themselves. So one theory is, we've created more noise by getting rid of forward guidance—a lot of data-dependence, so who knows what's going to happen? I've had the conversation with reporters: "What do you guys mean by data dependence?" And then I just show them John's T-shirt, and they say, "Oh, that's great. Now I get it." [Laughter] So all of this is about unconditional variances, and you've nailed it—unconditional variance has gone up. The only chart that really speaks to the conditional part is the middle one on the right, but it's weak evidence.

My final comment is that there are actually people who have suggested that we have TV cameras brought into the FOMC room to record what's going on here and show it, probably on

C-SPAN 2 or 3. If we were being broadcast live, Thomas has brought forward the drinking game for our viewers, which is, every time he says "data dependence," viewers have to take a shot. [Laughter] So I can see more hope for this broadcast idea than I had thought before.

MR. FISCHER. We notice you're getting out before we implement all of this. [Laughter]

CHAIR YELLEN. President Williams.

MR. WILLIAMS. I have a very pedestrian question, and it's just a question. Thomas, you opened this up, but Simon has got to deal with it—it's on page 14, this issue about the directive. I'm just naïve or ignorant on this. The existing sentence says, "In particular, the Committee seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to ¼ percent."

I thought that was kind of right, and I thought that would be very right when we raise the range from 25 to 50 basis points. I thought it was exactly the right sentence, and you're suggesting striking that out and fixing the next sentence, which is actually the problem: "The Committee directs the Desk to undertake open market operations as necessary." I thought we weren't doing open market operations and we had no plan to do open market operations for the next couple of years in order to hit the range. My understanding of our policy strategy is, we set IOER, we use overnight reverse repo with some cap. Now, you can call that—

CHAIR YELLEN. Those are open market operations.

MR. WILLIAMS. I know, but that's not the way it's been interpreted for the decades in which this kind of statement has been made. I just find it a funny change to make at this time when we have this other statement out there that says our strategy of normalization is to use IOER, to use overnight reverse repo and other facilities, and we're being very explicit about how

these are done, and, really, there's no active role for open market operations—when I say "active," I mean the kind of things that we traditionally have done. So I was curious. This is a question. What is wrong with just saying, "The Committee seeks conditions in reserve markets consistent with the federal funds rate trading in a range from 0 to ¼ percent"?

MR. POTTER. If you say that without anything else, are you saying you would delete the next sentence?

MR. WILLIAMS. No, I would just modify it in a way that you find appropriate.

MR. POTTER. I think when we were thinking about this, this was a "legacy" sentence. So some changes were made to the directive a couple of years ago to modernize the first sentence in it, and in particular when you go to C′, which is on page 15, the idea is that you have the first sentence—that's what the FOMC seeks. And then the Committee has directed the Desk to undertake open market operations as necessary to maintain the federal funds rate, and these are the open market operations that we'd like to do.

MR. WILLIAMS. Right.

MR. POTTER. So it's supposed to be clear to the market and the public that that's what we're talking about, and it still leaves open—if necessary, if it turns out that the federal funds rate is firm in some unusual way—that we have the directive that we could do the more traditional operation, which would be a repo operation. We're not sure how effective it would be, but that's the thinking that we have, and it's more just trying to clean up the language, and for me this gives a signal of being ready if it was introduced in the directive for the June minutes, because it should be pretty clear to market participants what you could slot in if you did lift off, which is this next statement. And we're really not trying to affect directly, each day, the amount of reserves on banks' balance sheets to achieve that goal. It will be through the open market

operations of this type, where we're really interacting with the repo market more to push up rates through arbitrage and other things that are going on, such as interest on excess reserves.

MR. WILLIAMS. I understand everything you said. It just seemed to be a funny thing to be changing now because we put so much effort into this normalization plan, and it looks like there's something happening here. I don't know, but that was just my question.

MR. POTTER. If the Committee directs the Desk to undertake open market operations as necessary to maintain such conditions—that's conditions in reserve markets—but we're really doing the effort through the temporary open market operations in the repo market. That was the thinking. But I agree with you. You don't have to change it. You could just leave it in and slot in the—

MR. WILLIAMS. And then change it when we actually lift off. Okay. I was just asking the question of why you want to do it now, and you've answered.

MR. POTTER. Yes.

MR. FISCHER. So the one that matters is C′.

MR. POTTER. Yes.

MR. WILLIAMS. What I was confused by was why we would try to do that now.

MR. POTTER. Because we'd be ready at every meeting just to slot it in. Instead of having confusion about other changes, you're just saying this is the only thing to look at in this directive when you've lifted off. That's all. Thomas, do you want to—

CHAIR YELLEN. Other questions? Governor Brainard.

MS. BRAINARD. I also wonder how much benefit we get from doing a two-step as opposed to doing a one-step when we're ready to go. The one-step would be the opportunity to say something about it in the minutes this time so that it will be very clear as to why we're doing

it next time, whereas since we didn't discuss this in the minutes last time, there may be a little question of, is there some signal associated with this.

MR. WILLIAMS. Yes, that's what I'm worried about.

MS. BRAINARD. Do you gain much by doing a two-step? If you don't, maybe it's just clearer to signal in the minutes and do the one-step approach.

MR. LAUBACH. Just to clarify—at this time, of course, the directive would only appear in the minutes. The public doesn't see it before. The directive comes out in the minutes.

MR. WILLIAMS. Well, they'll see it three weeks from now.

CHAIR YELLEN. Yes, but we would have a discussion of why we made these changes.

MS. BRAINARD. I would've thought you would have the discussion in the minutes that we had this conversation, and that you would release the C′ when we actually move.

MR. POTTER. We could do that.

MS. BRAINARD. I just don't know whether you lose anything by doing that.

MR. KOCHERLAKOTA. I'm sympathetic to what President Williams is saying, but I think that changes in the directive are cheap at this stage, from a signaling point of view, because of the consideration Thomas mentioned, that they come out in the minutes. My own guess is they won't be viewed so much as signaling—

MR. POTTER. If the implementation note is used and if you waited to make the changes, the first time you would see those changes is at 2:00 p.m. on the day of liftoff.

MR. KOCHERLAKOTA. If you wait to lift off, then the directive will be brought forward to two o'clock.

MR. POTTER. Well, we haven't had that discussion, but if that was to happen, that would be the case, which is, I think, behind our thinking, but I didn't explain it as clearly. Sorry.

In the future, if you did release the directive at the same time in the implementation note, there are lots of things going on. We're just trying to simplify the noise by putting in changes we could make now.

MS. BRAINARD. But you're still going to see C′.

MR. POTTER. You are going to see C′.

MS. BRAINARD. Again, I don't see the value in the interim directive change. You still have to signal to the markets to expect C′ and the changes that are here. I think the question is, what's the most parsimonious, clearest way of introducing the concept that C′ is coming. And I'm not sure what this other thing does to help with that—I guess that is the question.

CHAIR YELLEN. One way or another, there would be some discussion of this matter in the minutes—the intention to make these changes in language.

MS. BRAINARD. With C′.

MR. POTTER. The simplest is when people do the automated track changes when you lift off. If you'd already done it, there are fewer track changes. That's the simplest. But that you could explain. It depends if you care about the guys who do that—

MR. WILLIAMS. But this is a completely unimportant change here.

CHAIR YELLEN. Yes.

MR. WILLIAMS. The one they're going to read is the—

MR. POTTER. Completely, and we would do some clean-up in the last sentence. So you could pick and choose as well.

MR. FISCHER. All right. So where are we?

VICE CHAIRMAN DUDLEY. We're going to talk about this tomorrow.

MR. WILLIAMS. We'll talk about this tomorrow.

CHAIR YELLEN. We haven't decided. We've had preliminary thinking. First Vice President Prichard.

MR. PRICHARD. Thank you very much, Madam Chair. Just a question on C′ itself. It's on page 12. The draft C′ statement deletes paragraph 5. I understand why you want to delete it with the introductory clause, but why wouldn't the essence of paragraph 5 want to be sustained so that it doesn't appear that we're retreating from the two principles that are embodied in paragraph 5?

MR. LAUBACH. The spirit of that is arguably in the sentence that begins with "Going forward" because—

MR. PRICHARD. Oh, you brought them forward.

MR. LAUBACH. ". . . the Committee will adjust its target range for the federal funds rate in response to economic and financial developments and their implications for the economic outlook, to promote maximum employment and 2 percent inflation."

MR. PRICHARD. Okay. Thank you.

CHAIR YELLEN. I think we've had a productive day. We can now go have dinner and a nice drink, then reconvene tomorrow at 9:00 a.m. for our policy round.

[Meeting recessed]

June 17 Session

CHAIR YELLEN. Good morning, everybody.

PARTICIPANT. Good morning.

CHAIR YELLEN. Unless somebody has a matter of business, I think we are ready to begin our policy round. And, if you would not mind, I would just like to make a couple of brief comments to start us off. In particular, I wanted to comment very briefly on the staff's proposed plan for communicating the details of monetary policy implementation.

My personal view is that the plan that Thomas has set out, and that was discussed in the memo, makes a lot of sense. As Thomas noted, having an implementation note as a separate document keeps the focus of our policy statement on our choice of the federal funds target range and the rationale for that choice rather than getting into the details of implementation. I think this approach will end up simplifying our communications regarding the stance of policy, and I think the separate note lets us accurately report matters pertaining to the different governance of the different tools and for announcing changes to those tools if they're required. Importantly, I think an advantage of having this separate note is that it enables us to publish the domestic policy directive to the Desk at the time our policy statement is released rather than in the minutes, which has long been our practice. And I think this is an important step forward in transparency.

Now, as Thomas noted, we do have an issue to decide today in connection with the directive, and that pertains to whether we should make some of what Thomas called "housekeeping changes" at this meeting that would set us up for making fewer changes to the directive later on, at the time of liftoff.

If we do make these changes today, the minutes would make it clear that such changes don't signal any change in policy. But I also realize that some observers could over-interpret

these changes. So, for my part, I can go either way on this. I don't think this is a critical issue for us. One way or another, I think the minutes will summarize the discussion that we have about these housekeeping issues and about the new implementation note, and I think that's worthwhile, so that if we were to end up making the housekeeping changes and putting out the new note at the time of liftoff, the fact that it would be covered in our meeting minutes means it wouldn't be a complete surprise to market participants.

With those comments as background, I look forward to hearing your views on these issues and, of course, your comments on policy choices we have for today. Let me start with President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. I support option B. We certainly would not want our first tightening of monetary policy from the zero lower bound to coincide with the default of a developed country. Because of the uncertainties abroad, this would not have been the appropriate time for the first tightening, even if the domestic conditions we had set out initially had been met. However, in my view, both conditions have yet to be met. Core PCE over the past year, at 1.2 percent, has been falling, not rising, and the U-3 unemployment rate has leveled off rather than continuing to improve.

In a low-inflation environment at the zero lower bound, it is instructive that the most common mistakes made by major central banks to date have been premature tightenings. Japan had a liftoff of rates in August 2000 and again in July 2006, yet both were subsequently reversed, and even today Japan remains far from its inflation goal. Similarly, the ECB tightened in April 2011 before reversing course only seven months later, and Sweden raised rates in July 2010 only to reverse course. None of the central banks that raised rates and then reversed have hit their

inflation targets recently. To say the least, their reversals of policy and their subsequent inability to hit their inflation targets have not been confidence-building exercises.

The inherent asymmetry in our ability to offset shocks when at the zero lower bound is something to be taken very seriously. We have a limited ability to offset unexpected weakness but a nearly limitless ability to offset unexpected strength. We should learn from the mistakes of other central banks and tighten only when we are clearly on track to achieve our dual mandate.

The markets place the likelihood of raising rates in September as roughly a coin flip. We should do nothing to indicate higher odds. We still need to see further improvement in economic conditions, and I currently expect those conditions to be met sometime after our September meeting.

In terms of the areas that the Chair has asked us to discuss, I agree that a separate note on operational tools absolutely makes sense, and I think we should do it. I would prefer that the changes to the directive be timed at liftoff rather than at the current time. I am concerned that people will maybe over-interpret the announcement going out with the minutes of this meeting.

And, finally, just in terms of the comments regarding data dependence and the tradeoff between data dependence and providing forward guidance, my preference would be that the statement be data dependent and that, to the extent forward guidance is going to be used, it not be used in the statement. It is much more flexible to do it in a speech than it is in a statement. While I take President Kocherlakota's comments that the summertime is not a wonderful time to be giving speeches, I'm sure, if need be, the Chair, the Vice Chairman, and others will have the capability to schedule in August if it seems like the probabilities that people are putting on liftoff are dramatically different than we think is appropriate. I would rather not hardwire things in the statement that could turn out to be negated if data surprised us once again on the weak side. So

my preference would be to truly keep the statement data dependent and not try to have any forward guidance in the statement. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Prichard.

MR. PRICHARD. Thank you, Madam Chair. I also support alternative B as appropriate in light of the mixed developments since our previous meeting. But I also feel the economy is both gaining traction and showing what could be a sustainable strength to give me confidence for liftoff later this year, assuming continued performance this summer. Assuming continued strengthening, I feel that we need to demonstrate our confidence in the economy and not risk a delayed liftoff that might needlessly sharpen the pace of tightening once we get started. Financial markets are gearing up for a gradual liftoff but may not be prepared for a more rapid rise. So we should not test conditions by risking a rapid transition upward.

I also support the proposal for communicating the operational details for managing liftoff. The proposed separate release should minimize the risk that any technical adjustments are incorrectly viewed as revisions to either present or future monetary policy statements, particularly if the adjustments take place between scheduled FOMC meetings.

I would note that, for the future, the language regarding the delegated authority to the Chair should be as precise as needed regarding the boundaries of what adjustments would be considered "modest." I hope we will have a better feel for the kinds of intermeeting adjustments that are regularly needed by the time the Committee chooses to make this delegation, which I fully support.

And, finally, whereas this will likely be my last occasion to join the FOMC table, I want to offer three brief observations. First, I believe the deliberations at this table are perhaps a poster child for what discourse in this fair city should be: informed discussion, honest and

transparent debate, excellent staff support, and a place in which diverse and independent views are not only welcomed but sincerely considered.

Second, I would note that when I drive my car on any roadway in America, I can know precisely the speed of my travel because of the sophistication and the reliability of the instrumentation in my vehicle. I find nothing analogous to be true when thinking about the economy. Reported conditions are constantly revised in a way that should remind us that economic performance is, at best, an estimate—surely more than an educated guess but, nevertheless, not as sure as my speedometer. People say they can't fix history, but economists never seem to tire of trying.

My third observation is that, as challenging as it is to estimate what's already happened, I have found it even more difficult to predict the future. I don't know if anybody else here feels the same. For my part, the zero lower bound is a handcuff from which we need to find a plausible and credible set of reasons to break free. Liftoff has a stigma that must be overcome, much like pulling that first loose tooth from a child.

I know that this Committee will continue to lead with confidence to a new soft landing in a more normalized economy. It has been my honor to have represented the Philadelphia Reserve Bank at these meetings, and I thank you, Madam Chair.

CHAIR YELLEN. Thank you very much. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. I support alternative B as written. Much of the apparent weakness in measured first-quarter GDP growth reflected the effects of transitory factors, including residual seasonality. The recent strength of the data, including the retail sales data and employment data, reaffirm my view that we are on a solid trajectory with good

momentum, and I expect we'll reach full employment later this year across a wide variety of measures of labor market conditions.

Inflation remains too low, however, and while I'm becoming more confident that inflation will resume its approach to our 2 percent target, we've been repeatedly disappointed in the past. As a result, gathering more evidence that inflation is on the right trajectory seems warranted at this stage.

That said, I remain convinced that the time for liftoff is fast approaching and that waiting much longer to raise the federal funds rate risks falling behind the curve. Doing so could ultimately necessitate steeper rate increases after liftoff, which may confuse and disrupt markets here and across the globe. Of course, I understand that our liftoff is a discrete adjustment and one that's difficult to undertake because of the concern that our actions may prove premature. Actually, I never even thought about this as pulling a tooth. So I'm probably even more worried about it now, going back to my childhood. [Laughter] But as President Rosengren appropriately said, we can point to numerous cases in the past where other central banks tightened policy too quickly, leading to undesirable outcomes. That said, it is important to remind ourselves that our economic fundamentals are much sounder and our policy stance much more accommodative than in those instances. Looking ahead to potential future policy statements and the issue of forward guidance, there are two issues of forward guidance on which we want to be clear. President Rosengren, you were talking about the forward guidance in our statements over the next few meetings, and I completely agree with your comments. We should not be reintroducing near-term forward guidance. I like how our statements are formulated now.

I think there is another issue about forward guidance that is also in this discussion, and this refers to alternative C′, thinking about future language. In paragraph 3, it says "The

Committee currently anticipates that the economy will evolve in a manner that warrants a gradual increase in the target range for the federal funds rate" and has the other language about low interest rates. I think this is an interesting topic about whether we want to introduce in the future some forward guidance of that type, the "gradual increase." I think that is something we are going to have to see based on what happens between now and then.

I also think that there is the issue that I just mentioned, that the longer we wait to start liftoff, the less likely it is that it will be appropriate to have a gradual increase in the target range of the funds rate. So I do see the choice of language in the future depending obviously on how long it is until we start liftoff. If we do it sooner, then I think that would support a gradual increase in the target range. If we wait significantly longer, then I think that that would not be quite appropriate.

In terms of the memo on monetary policy implementation and directives, I'm fully supportive of the approach and the language you mentioned, Madam Chair, and that is described in the memo. It is good to distinguish clearly between monetary policy decisions and what I would call the technicalities needed to achieve those decisions. And I think it's also important that, as the memo notes, this distinction would allow for modest adjustments in implementation, if needed, without necessitating additional FOMC statements. This ensures that we avoid sending an incorrect signal to the public that monetary policy has somehow changed when actually we're just making a technical implementation adjustment.

Regarding the directive, I agree with your comments, Madam Chair, that it could go either way, but I do tend to lean toward not wanting to put new directive language in this time just out of nervousness that we're signaling that we're preparing something, that it might be

misinterpreted. It seems to me that having this discussion in the minutes would be fine, but, again, that's just my own personal perspective. Thank you.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. To start, I support the plans for separate communication regarding our policy implementation tools after liftoff. And I am okay with the housekeeping changes, but I can go either way, just as you suggested.

For today's decision, I support alternative B as written. I would note, though, that the recent softer economic data and lack of improvement in core PCE have led me to push back my preferred appropriate monetary policy liftoff date to midyear 2016. My staff's DSGE analysis that I talked about yesterday also pushed me in that direction. As you recall, that analysis showed how changes in the Survey of Professional Forecasters' 10-year CPI inflation outlook and other incoming data are holding back the model's longer-run inflation outlook.

I appreciated the extremely useful and timely Tealbook analysis of the potential downward influences on the long-run equilibrium real interest rate and the policy implications of a lower value for r^*. I think most of us are accustomed to simply having a single r^* assessment in mind and not really considering the uncertainty surrounding r^*, at least as we formulate the models and analytical analyses.

A fundamental underpinning for the Committee's choice of a 2 percent inflation objective back in January 2012 was strong confidence that the long-run equilibrium real rate was 2 percent or higher. Indeed, in our January 2012 SEP submissions, 16 out of 17 of the long-run federal funds rate dots were consistent with r^* being between 2 and 2½ percent.

Today the Tealbook assumes r^* is 1½ percent, in line with its lower assessment for productivity growth and potential output growth. And the Committee's June SEP submissions

show broad agreement on this point, as all but three of the long-run nominal funds rate dots are consistent with an equilibrium real rate between 1¼ and 1¾ percent. Furthermore, there is substantial uncertainty over this assessment. Larry Summers and Ben Bernanke have debated whether a lower equilibrium rate reflects secular stagnation or a persistent global savings glut, but quantifying the magnitudes of these factors remains an important research objective. Personally, I think that ascribing a zero effect to these phenomena seems unlikely. More directly, lower potential output growth also suggests a lower *r**. Again, the magnitude is uncertain and depends on the longer-run path for capital deepening, the effects of demographic trends, and whether TFP growth has persistently reverted to the slow-growth era of 1975 through 1995.

Yesterday President Lacker made an interesting comment when he pointed out that the interest rate policy rules that we consider have intercepts and error terms that are isomorphic. You can't just, by themselves, pick out the contribution because they enter in a linear fashion. Okay. But there is more identifying information that can come from these other analyses, like this list of factors that I just mentioned, and I think that it is important to assess that additional information as opposed to just ignoring it.

We should take into account the fact that the posterior distribution of long-run *r** is widely dispersed and that most of the weight in this distribution is on lower values than we were thinking back in January 2012. Perhaps the posterior mode for *r** is at the Tealbook assessment of 1½ percent. But for me, 1 percent or below also garners significant weight, and I put far less weight on *r** being as high as 2 percent and negligible weights on higher values above 2 percent.

This uncertainty has profound implications for monetary policy. If the long-run equilibrium real rate is substantially lower than 2 percent, then the historically low nominal

funds rate paths that most of us have written down in our SEP submissions are not nearly as accommodative as we might have previously thought. And, Madam Chair, you alluded to the same phenomenon when you talked about if productivity growth ends up being slower, that means r^* will be lower, and, in fact, each and every point of our funds rate settings will be more restrictive.

Of course, if economic fundamentals improve strongly, and inflation begins to rise more quickly, I would see that as evidence that the lowest r^* values are diminishing in likelihood. And, you know, this is another refutable implication of the viewpoint I think President Lacker associated with, which is that high r^* is quite possible. In that case, our funds rate would be more accommodative and we ought to see inflation rising much more rapidly to our inflation objective. That ends up being a testable implication, and we can look for that.

But I suspect that won't be the case. Most likely, the economy will continue to face many challenging headwinds. I will look to the data in order to decide these issues, but I want to be clear that the data have already provided a lot of evidence suggesting troubling and highly persistent phenomena that should weigh importantly in our strategies concerning liftoff and the subsequent normalization of policy rates.

And just to be completely clear, I think that a full-throated endorsement of our symmetric inflation objective strategy could be a very helpful counterbalance to current and future headwinds. I agree completely with the comments that President Kocherlakota made yesterday regarding risks to our inflation objective and how we should address them. After all, even a 2 percent inflation target gives us uncomfortably little margin to engineer low enough real rates. We don't want to make things worse by creating a de facto target below 2 percent. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Holcomb.

MS. HOLCOMB. Thank you, Madam Chair. In reviewing the policy options in preparation for this meeting, one of our economists posited that we may find ourselves in a situation like that faced by the game warden in the movie *Jurassic Park*. You may recall the scene in which the warden calmly and deliberately prepares to shoot an approaching velociraptor, only to discover too late that another raptor has snuck up on his flank. His last words are “clever girl.” [Laughter] High inflation is the velociraptor that captures our attention as we watch for the right moment to deploy our weapons. It is still quite far in the distance. Of greater or equal concern should be the raptor that may be sneaking up on our flank, the raptor that could bring this expansion to a premature or unpleasant end.

The worry is that business investment decisions, consumer durable goods purchases, and household and business borrowing commitments undertaken in an artificially favorable financial environment won’t be easily unwound when financial conditions eventually normalize. It is difficult to achieve smooth convergence in an economy with capital and debt overhangs, and the longer artificially favorable financial conditions persist, the greater these overhangs are likely to become.

The damage to the economy from overshooting full employment is cumulative, and as it accumulates, the threat to macroeconomic stability mounts. In other words, the price to be paid for running the economy hot is not just the risk of a period of above-target inflation. Even if inflation does not pick up, imbalances are created that are unsustainable. Consequently, the risks associated with too much and too little policy accommodation are not asymmetric as the economy approaches full employment. Too much accommodation or accommodation

maintained far too long is as risky as too little accommodation, even after factoring in the zero lower bound for interest rates.

I noted yesterday that the Federal Reserve Bank of Dallas' staff economic forecasts are generally in the central tendency of the projections submitted in this round of the SEP exercise. They see the economy pushing past full employment early next year, and inflation, as measured by the Dallas Fed trimmed mean PCE index, reaching 2 percent by the end of 2016. This is a different outlook than is presented in Tealbook, Book A, and, accordingly, we take a somewhat different view of the policy rule prescriptions in simulations presented in Tealbook B. Also, for reasons just discussed, we do not see the zero bound as a compelling reason for treating policy risk as asymmetric in an economy that is closing in on full employment. Accordingly, our view is that the appropriate path for the funds rate is likely to be steeper than is currently expected by the public or is assumed in the Tealbook baseline forecast. We assess recent developments as providing reassurance that the risk of inflation running persistently below 2 percent has diminished.

So I lean toward alternative C. It best describes our view of the data as the data have evolved since our April meeting, as well as the data's implications for the outlook and appropriate policy. However, I will support B, as it keeps our options open to respond to new data. We have some concern, though, that B has the potential to mislead the public. According to the SEP package, the majority of participants believes that it will be appropriate to raise the federal funds target range in September of 2015 or earlier. This indicates substantially greater probability of liftoff by September than after September. That is not what the private analysts think, according to the charts presented yesterday. Therefore, communications that help bring public perceptions more in line with those of the Committee will be important.

In response to the request yesterday, I have a couple of comments on alternative C′. First, in paragraph 3, I think it is preferable not to include the statement that "the Committee currently anticipates that the economy will evolve in a manner that warrants a gradual increase in the target range for the federal funds rate," even if it is true. It is my understanding that the federal funds rate path prescribed by optimal control techniques and simple Taylor-style policy rules are quite sensitive to financial conditions and the economic outlook, so that the warranted policy rate path could steepen in response to completely plausible changes in circumstances. Saying that the Committee expects a gradual policy rate path without also communicating the substantial sensitivity of that expectation to changes in the outlook could give private decisionmakers a distorted view of how policy may evolve. If the statement remains, a stronger warning about the degree to which normalization's pace will be subject to adjustment as the economic outlook changes should also be included. Overall, we prefer to let private analysts draw their own inferences about the future path of policy from the SEP dot chart.

It also seems confusing in paragraph 4 to indicate that reinvesting principal and rolling over maturing Treasuries is designed to "help maintain accommodative financial conditions" in the same communication that conveys the Committee's decision to reduce accommodation. It would be better to make reference to or include the pertinent language from the Committee's Policy Normalization Principles and Plans, which states that reinvestments will continue until later in the normalization process.

Finally, with respect to the proposals on communicating the details for implementation at liftoff, I think the proposal presented is very sensible, and I support proceeding as described. Thank you.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. In my view, the economy can support a 25 basis point increase in the federal funds rate. Inflation is projected to return gradually to our goal over the medium run, and recent inflation developments bolster confidence in that projection. The economy is at or is very near full employment. I grant there may be some longer-run issues with underemployment, but monetary policy isn't the tool to fix those problems.

Even after the first increase, monetary policy will remain very accommodative. I share the view of John Williams that if we wait too long to commence liftoff, we may find ourselves having to increase rates on a steeper path than we've anticipated and that we've conveyed to the markets. But while I believe the economy could support liftoff at this time, we haven't prepared the markets and the public for a rate increase today, so I'm not advocating it.

That leads me to the policy statement and the choice between alternatives B and C. I understand some of the reluctance to make changes in the FOMC statement because of the risk that it could change the public's expectations about policy, which currently incorporate liftoff later this year, but I believe there is also risk if our statements are too static. As liftoff approaches, I believe our statements should evolve to lay the foundation for the rationale for liftoff. I do think the SEP can reinforce that rationale, but I don't view the SEP as a substitute for the FOMC statement. We should convey information about how economic conditions have evolved relative to the liftoff conditions we've included in the statement since March—namely, further improvement in the labor market and reasonable confidence that inflation will move back to its 2 percent objective over time.

If the goal today is to try to maintain the current modal expectation in the market that the economy will likely be ready for liftoff in September, then my preference would be to use some

of the alternative C language today. For example, in paragraph 1, to characterize the labor market, I would prefer to refer to "some improvement in labor market conditions," as in alternative C, rather than to diminishing "underutilization of labor resources," as in alternative B, because this language more closely relates to the further improvement language in our liftoff criteria. In paragraph 2, I'd prefer to give some indication that the risk of inflation running persistently below 2 percent has diminished because this ties directly to reasonable confidence regarding the inflation outlook, another of the liftoff criteria. In paragraph 3, I prefer the alternative C language that modifies the liftoff criteria, adding the word "some" to characterize the improvement we need to see in the labor market. This acknowledges the improvement in the labor market since the language was adopted in March and that we are closer to meeting the criteria for liftoff. In addition, I continue to think that providing a longer-run perspective on economic developments than is currently done in paragraph 1 would serve the Committee better as we move toward liftoff and beyond.

I do believe we should be data dependent. Data dependence risks being interpreted as being focused on the short run and being less systematic. I think we need to use our tools of communication to try to avoid that interpretation. A longer-run focus, I think, would help in that respect.

My hope is that we can move to alternative C language—if not today, then in July—so we'll have better prepared the public for liftoff in September, should the economy evolve as I anticipate. A delay in making changes to this statement will make it harder to make data-dependent policy choices because we will not have laid the appropriate groundwork with our communication. Lack of that groundwork could cause us to feel compelled to keep delaying liftoff because of the risk of surprising the markets or, should we move, of causing increased

volatility because market expectations aren't aligned with the policy action. Neither is a particularly good place to be. I think we can avoid both situations by appropriately evolving the statement.

I don't have strong preferences about the directive or the housekeeping details, whether they should be included today or we should wait until liftoff.

Regarding the monetary policy implementation memo, I am comfortable with the proposed approach of separating the details of implementation from the FOMC statement. I'm not concerned about the governance aspects surrounding our policy tools. Monetary policy remains the responsibility of the FOMC, and we've discussed at earlier meetings regarding normalization that the Board of Governors will be setting the IOER rate to support the policy intentions of the FOMC. But if separating the FOMC statement from the implementation details would bring less focus to the governance aspects of the tools, as suggested in the memo, that's an added benefit of the proposal.

The only concern I have about the authorizations to the Chair of making modest intermeeting adjustments in the IOER and ON RRP rates is the timing of the resolutions, not the delegation of authority, and so let me just explain what my concern is. Suppose we haven't had to make any intermeeting changes in the rates in the early stages of liftoff. Then if we delegate authority later in the process, will it be read as something has changed, and somehow we've lost control or think we're going to lose control and have to make intermeeting changes? Will it sound like things are getting harder? My one suggestion would be that if we do wait to adopt a resolution as proposed in the staff memo, we mention in the minutes that such delegation of authority to the Chair is expected to come at a later date once liftoff is under way.

The memo also asked for views on when we should indicate that we anticipate a temporary suspension of the aggregate cap on the RRP facility, at the time of liftoff or later. I don't have strong views on that. We can convey this information before or after liftoff. We've included in the minutes of the March FOMC meeting that the Committee saw some advantages to a temporary elevation or suspension of the cap. So I think waiting until liftoff would be fine with me. Thank you, Madam Chair.

CHAIR YELLEN. Thank you very much. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I support option B for today. As I said yesterday and I've said in the past, with regard to our goal variables, we're about as close as we've ever been in the postwar era. So I think it's time that we look for opportunities to move our target policy rate off emergency settings. We have a zero policy rate, and we have a very large balance sheet. Those are the same settings that we had when we were much further from our goal variables.

Certainly, the data that come in over the summer are going to be mixed, and I think we have to have the idea that we'll be opportunistic in our first policy move. Also, once we make the policy move, obviously we're still going to be very accommodative. We're trying to hedge our bets in the direction of the economy getting more toward normal, so we're trying to move policy more toward normal, but we're still going to be very accommodative.

We would like to take opportunities to make these policy moves, and I would very much like to make the first move on the back of good news about the economy. Prescheduling September is going to work against this principle. I mean, maybe the data will come in great right before that meeting and that will be perfect, but life often doesn't work out perfectly. Anything we can do to try to get to a more flexible approach in which every meeting is, ex ante,

identical I think would be very helpful. I don't think the Committee is really ready to think in terms of moving opportunistically, but that's how we're going to have to move over the normalization process. The more we can, in our own minds, get toward that kind of an attitude, and then maybe get to a method that would actually implement that, I think would be helpful.

I have two comments on the SEP. One is about SEP paths being given according to an optimal policy assumption, and the second is about the horizon. First, I think when we talk about the SEP, we need to clarify to people that the projections are put forward under an optimal policy assumption. We might all be using different models. Within those different models, policy might be somewhat different, and so the various forecasts are not all made on the same basis. They are not unconditional forecasts the way private-sector forecasts are, where the private-sector forecaster is also trying to forecast what this Committee will do and will give you an out-and-out forecast that you would then evaluate against mean-squared criterion or something like that. Here we're saying, given the models we have, we're putting something in under an optimal policy within that model. So I'd appreciate it if we'd mention this when we talk about the SEP because I don't think that they are the same thing as the unconditional forecasts given in the private sector.

For me, missing a rate rise means worse outcomes for the economy, according to the model that I'm using. So if you miss the time when the model said you should have lifted off, then you're going to get worse outcomes going forward than you otherwise could have achieved if you had raised rates earlier. But given that you didn't move, there's some optimal policy going on from that point. Over the normalization phase, I think this effect will cause federal funds rate dot paths to shift because we're not all exactly on the same timing schedule. So you've got these dot paths shifting around. That may not be indicating a change in the sentiment

of the Committee as to where we are or what we need to do but is a detail of how the SEP is put together. So I try to emphasize this. I know that it doesn't go very far when I talk to people outside this Committee. I know that we all understand it here, but the SEP is a different object from the private-sector forecasts that are often cited.

The second comment on the SEP is that the horizon shifts through the year. That's something that we've always done, but I think it is kind of odd, and it warps the interpretation of the SEP compared with what it otherwise could be. What people really want to know is, what's your year-ahead outlook and your two-year-ahead outlook? We should always be giving them a year-ahead outlook and a two-year-ahead outlook in a format that they can digest and see what we're saying.

What's happening is, you get a bad first quarter. Well, everyone has to mark down their forecast for the year if that was unexpected, and then we all think that the future looks worse than we previously said, but that isn't really what's going on. We're saying that that was an unexpected shock, and that the next four quarters and the four quarters beyond that might look roughly the same as they did before, and so that we have not perhaps changed our views that much on how the economy is going to evolve going forward. So if we could get to something like that in the SEP, it might be an improvement. I understand that that's a little bit different from how, let's say, the IMF would do it, or how other people would do it, but on the other hand, we're trying to convey what our outlook is, given the data we have today, then going forward from here—four-quarter, eight-quarter horizons.

On the other questions about C′ and about the housekeeping changes, I was fine with what the staff proposed. I don't have any further comments on that. I would be happy to do the

housekeeping changes at this meeting if people feel like that would get that out of the way, so we didn't have to do that at the time of the actual rate rise. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I support the policy decision in alternative B and the statement as written. As I see things today, I am very hopeful that conditions will gel to allow liftoff in September. Looking ahead, I am at a similar place as President Mester. I like the idea of a very soft progression from language like that in alternative B today to alternative C in July as being a sensible approach to providing some slight foreshadowing of liftoff in the July statement, if it seems appropriate. At the July statement, if the data overall continue to reflect modest continuing improvement, then language along the lines of the changes in paragraphs 2 and 3 in today's alternative C might provide a hint of forward guidance.

I agree with the proposal to separate the rationale for the policy decision from the implementation of the policy decision at liftoff. In considering the specifics of communication, my guiding principle is "meaningfulness to markets." The staff has listed several changes to the directive—the so-called housekeeping issues—that are unrelated to liftoff and can be communicated immediately if the Committee so chooses. These details strike me as worthwhile in the interest of clarity and accuracy but not particularly meaningful to market participants. So I favor holding off and communicating these changes when we publish the implementation note at liftoff.

In contrast, it seems to me that the question of when and how to communicate the temporary suspension, at liftoff, of the current overnight reverse repo cap is meaningful to markets. Reflecting the caution and prudence with which we are preparing operationally for

liftoff, I think it would be prudent to signal this decision prior to liftoff. This will allow market participants to plan for the liftoff period and so should help achieve a smooth liftoff. Presuming a September liftoff, the minutes of this meeting or the July meeting seem to me a good tool to communicate this decision. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I am going to make the dangerous step of trying to actually respond on the fly to some of the things I have heard as opposed to sticking to my script. My research director is probably blanching as I say this.

Something that President Mester said really resonated with me. At the risk of putting words in her mouth, I worry that our approach of being data dependent is leading us to not be as sufficiently strategic in our thinking about policymaking. I think one of the benefits of actually being as explicit as alternative A is—for example, about the criteria for liftoff—is that it forces us internally to also be explicit in our thinking about, what are our criteria for liftoff? I worry that data dependence is a code for "we'll know it when we see it." And I'm not sure that is really as helpful as it could be for markets and for the public, to know what actually we are looking for in terms of making decisions for policy. Alternative B, I think, is very challenging for the public to know what actually is going to be informing our decisions about liftoff.

As I listen to people around the table, I try to listen for what the risk-management considerations are leading folks to the positions they're at. One concern I have heard is that if we wait too long, we are going to have to raise rates more rapidly than is currently under consideration in the outlook. Right now, the projected increases that I see in the SEP, for example, are something on the order of 75 to 100 basis points per year.

We should be raising rates at a time when the economy is robust enough to withstand that rate of increase in interest rates. That's a very slow rate of increase in the interest rates, 75 to 100 basis points per year. So it is hard for me to take that risk on board, that we might have to go as fast as 150 basis points per year, or 200, and that is a material risk here.

I thought that First Vice President Holcomb's comments were really great. I think this is a risk that is underlying a lot of discussion about the risk of actually driving employment too high, the risk of driving unemployment too low. And she spoke about it in terms of the cumulative damage to the economy being done by imbalances. Having said that, I liked her framing the risk in that way. I think if that is actually something that is materially on the table, that we are worried about having employment get too high, we need to have some evidence about what exactly the damage is that we are looking at. Is this the 1990s kind of period we are going into, where we are seeing a lot of great technological development going on in Silicon Valley that will serve us well for the next 15 or 20 years? Or is it something more like the 2000s, with debt financing of unsustainable consumption? I think knowing where the metrics are would help me, at least, understand a little bit better about, are we really seeing the signs of the damage? What exactly should we be looking for beyond simply saying, "We don't want to have employment get too high"? I think that's a challenging message for how to make monetary policy.

You know, President Rosengren pointed to the zero lower bound risks, and I worry that we are not taking those on board sufficiently in our thinking about policy. He cited the evidence from other countries, but I don't think we have to look as far afield as the evidence from other countries. I think we should look at what has been going on in our own country in the past nine

months or so, that the arc of what is going on with economic activity in the past two quarters and into the current quarter is weak if you look at the path of real GDP.

If you look at inflation, I think the path of what we're seeing on the demand side, again, looks weak. Part of this is related to increases in the dollar. Part of it is related to, I think, increases in yields. The dollar comment that we've all heard from all of our interlocutors is, "That sounds like something that is associated with the expectation of tighter monetary policy."

Now, the countervailing piece of evidence is that labor markets have been relatively strong—relative to demographics, especially. But as the Vice Chairman has emphasized—and you did, too, Madam Chair—that has resulted in very low productivity. And the real question for this Committee over the next few months and into 2016 is going to be, how is that going to get resolved? Are we creating low-demand conditions through our tight monetary policy, or is it that we've got some mismeasurement of some kind in GDP that will resolve in our favor?

But I like alternative A because it has more accommodation. I also like it because I think it forces the Committee to be a little more strategic in the way it is framing the criteria for liftoff, thinking about that more collectively, as opposed to, "We'll wait and see what happens, and we'll go with it if things feel right."

So let me turn to post-liftoff communication issues. I want to make two points, and the first is related to what I have already said, that I think that there is an opportunity now that we should take advantage to redraft the FOMC statement completely. I think alternative C′ is overly complex, and I think this redrafting is not just a question of rhetorical elegance. It is to try to reduce the chances of miscommunication as the FOMC deals with a series of complicated policy issues. We put a lot of weight on the liftoff decision, but liftoff, as Governor Fischer has reminded us, is really the first of many complicated steps the Committee is going to be facing.

We want our statement to be as tight and as effective as possible to allow us to communicate and communicate well.

I think there are a lot of great ideas out there. Presidents Williams and Mester have made past suggestions about how to restructure the statement. My research director, Sam Schulhofer-Wohl, has a great essay in our annual report with an explicit example of how to rewrite the statement in a more effective way. My main emphasis is, I think there is always this temptation to put this continually on the back burner. We'll wait and wait and wait because we don't want to frighten anybody in the markets by doing this. I don't think we will be as effective as we need to be during this very challenging phase of monetary policy if we don't redraft the statement in a material way, and soon.

Now, in terms of policy implementation, I thought the idea of putting the detailed information in a separate note was a great idea. A couple of comments on it. I think it needs to be clearly subordinate to the Committee's statement of its policy stance. As drafted, it has that feel already, but I would recommend changing the name even further to subordinate it, to something like Details of Monetary Policy Implementation.

I like the way it is currently written. I think it is important for us to strongly resist the temptation to use it as another form of communication about policy. There shouldn't be any extra language, and it should be as close to a template as possible so that all we are doing is simply filling in relevant numbers as they are decided.

A final point is about the removal of the cap on the ON RRP facility. We need to make clear that it is a temporary measure associated with liftoff. I believe that is still the thinking of the Committee. There are good ways to use the minutes of this meeting and others closer to liftoff as being appropriate ways to accomplish that goal.

I will just summarize what I am trying to say about post-liftoff communication. I really think we need to work to simplify the FOMC statement greatly as soon as possible. My staff is ready to help in that effort in any way that they can. And I favor a separate note about the details of monetary policy implementation, as the staff has suggested. That should be as close to a template as we can possibly get, in which only numbers are changed.

In terms of the housekeeping changes now or later, my own perspective is I think we are less likely to run into complications with those housekeeping changes if we have them in the minutes—not front and center in terms of communication. So I would suggest making them now, but I don't feel that strongly about that. Thank you.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. I support alternative C as being consistent with the data-dependent policy and with the statement in the previous FOMC minutes that the Committee's decision to begin normalizing policy would appropriately be determined on a meeting-by-meeting basis.

In terms of the criteria for liftoff, the March meeting minutes noted that further improvement in the labor market, stabilization of energy prices, and a leveling out of the foreign exchange value of the dollar would all be seen as helpful in establishing confidence that inflation would turn up. Since March, we've seen progress around each of those criteria. Employment growth has averaged 207,000 over the past three months, and broader indicators of labor market activity have registered similar improvement. Readings on core PCE inflation have remained largely stable on a year-over-year basis since December. And, since the April meeting, we've seen oil prices drift higher while the dollar has been relatively stable, which together give me confidence that transitory effects will dissipate. In addition, our policy rules continue to point to

higher rates, and the byproduct of our highly accommodative policy can be found in the incentives of searching for higher yield and the willingness to take on additional risk when interest rate expectations are flat. With the combination of these factors, and understanding that monetary policy operates with long lags, I believe that it is time to begin the process for normalizing policy.

In light of yesterday's discussion about the implication of alternative values of the long-run federal funds rate, I would note, as I did at the previous meeting, that measures of r^* often do not move independently of measures of the output gap. I understand the correlation may not be perfect, but I think an important scenario to consider, as others have noted, is what a lower r^*, driven by lower potential output, implies for monetary policy.

Productivity growth has been running far below earlier trends. This suggests a low r^* is likely to be reflective of slowing growth of potential GDP rather than persistent weak demand. If that's true, the implications for the output gap and liftoff do not necessarily suggest a later liftoff, so I look forward to further discussion and analysis of this aspect of our policy decisionmaking.

In terms of today's decision, market expectations for liftoff are clearly focused on September, with a skew toward December and even into 2016. This suggests to me that one soft data point—a soft employment report, similar to what we had in March—could easily push expectations back to December. Yet for all the hand-wringing about the slowdown in Q1, the employment numbers remained solid and growth seems to be on a relatively firm footing. Yet the strong employment report in May did little to move expectations forward. This asymmetry is going to be hard to overcome, and it risks pushing back the date of liftoff as we wait to see a consistent streak of strong data.

In terms of the two items that we've highlighted, I am fine with a separate implementation note. I think that will serve us well in keeping that separate from the statement. And in terms of the housekeeping changes for the directive, I would be comfortable doing those today with the minutes, noting what their relevance is in terms of future decisions. Thank you.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. In April I noted that more than the usual amount of data was scheduled to come in by this meeting, and that, if it came in consistent with our projections, I thought a strong case could be made to raise the funds rate target. To me, it's clear that the data have been pretty consistent with our April expectations. In fact, in the Tealbook projection for the first half, real GDP growth is now one-tenth higher than it was at the previous meeting.

It is also now apparent that we're in the midst of the longest sustained improvement in household spending growth we've seen in this recovery. Labor market conditions have clearly improved as well. We've continued strong growth in employment and job openings, and since the April meeting, we've seen confirmation of the expected rebound in core inflation. So I believe we have good reason to be confident that, barring further shocks, inflation will move back to our 2 percent target.

Taking this all on board, my preference would be to raise rates at this meeting. Raising rates now would be a natural and understandable response to the economic data we have in hand, and a quarter-point increase would still leave us with a highly accommodative policy stance, a point Governor Fischer made eloquently last time. I will not vote against keeping rates unchanged today, however. I understand the concerns of those for whom the incoming data are not yet completely convincing, and I do not think we would be making a terribly costly mistake

by waiting another meeting or two to raise rates. It would raise the risk of getting behind the curve, but at this point, tolerably so, I think.

I do believe that the risk would rise if the data come in in line with our projections over the next several months and we don't raise rates. In addition, I see risk going forward of our data dependence becoming something of a one-way ratchet mechanism, as described by President George, in which the emergence of new reasons for concern, soft data points, lead us to delay expected liftoff, but the dissipation or passing of those soft data points does not lead to a commensurate offsetting movement bringing the expected liftoff backward in time. Our data dependence ought to be symmetric in this respect. More broadly, as we go into this, we should recognize that there are always going to be concerns. Soft data points will always turn up from time to time, and the prospect of certainty just around the corner is something of a mirage.

Regarding the statement, I prefer the language of alternative C to that of alternative B. President Mester was open about this. I think it better reflects reality right now. Any remaining underutilization of labor resources is immaterial, I believe, and I think that the risk of inflation running below 2 percent has diminished significantly.

More broadly, I support her concerns about the statement. In particular, I'd highlight the reliance we've been placing lately on paragraph 1, which is a recitation of what has happened since the previous meeting, and I think that gives short shrift in the statement to the extent to which our decision is going to be driven by a longer-run perspective on what's evolved in the economic data.

In addition, I don't think we should view it as necessary that we send a message like statement C as a clear signal, as a prerequisite for liftoff. So we shouldn't wait. Liftoff should be a live option whether or not we've issued a statement like C. And, commensurately, a

statement like C shouldn't make us feel compelled to lift off at the next meeting. I think that's consistent with the extent to which we've decided to make decisions on a meeting-by-meeting, data-dependent basis.

Regarding alternative C′, I think we should give some very careful thought to the sentence in paragraph 3 that talks about "a gradual increase in the target range." I share some of the concerns that have been expressed about this. This reintroduces forward guidance language, and it's language that's awfully reminiscent of the measured-pace formula that I was a party to from 2004 to 2006. In hindsight, I'm not sure that that was a good idea, and my sense is that there are widely shared misgivings ex post about that. Maybe it didn't absolutely lock us in to moving 25 basis points every single meeting, but it did seem to raise a bar that made it hard to do anything but 25 basis points. And I think the word "gradual" could suffer the same fate. It could become identified with moving at every other meeting. And our scheduled press conference at every other meeting is going to have this gravitational pull for us that could lead people to believe, "Well, 'gradual' means that at every other meeting they raise rates by 25 basis points."

In addition, when we introduce new language, I think we ought to ask ourselves, what would cause us to pull it out? Would it be easy to remove when we thought it was inappropriate, or would we be afraid of being misread by pulling it out? I think we would be afraid that it would be over-interpreted as a very high probability for us moving very rapidly very soon, and I'm not sure that makes sense. So I think this deserves a lot of careful thought.

Another broad comment on language: I don't think we should be focusing on 12-month inflation numbers. For example, if the monthly numbers came in pretty strong for a few months, I don't think it would make sense for us to stubbornly insist on waiting for the 12-month number

to shed the low numbers we saw at the end of last year. I think we should be focusing on the monthly numbers as much as the 12-month number.

About the operational note, I think it is a great idea. For the directive, I agree with Governor Brainard and President Williams that we should wait until liftoff to make changes. And, in particular, I'd say if we're going to do some housekeeping on the directive, the thing that really stands out is this sentence that reads, "The Committee directs the Desk to undertake open market operations as necessary to maintain such conditions." I mean, this is an archaic vestige of a previous regime. We don't anticipate they're going to need to undertake open market operations to maintain reserves markets consistent with the funds rate trading in the range—we don't think that's going to happen. So it's this confusing vestige of a previous regime. I'd urge the staff to take a much more fundamental and far-reaching look at the directive, its structure, and what it says. It has been this highly coded kind of semaphore to markets and to the more sophisticated Fed watchers in the markets for decades. Maybe it's time to start from scratch on this. That concludes my remarks, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. I support option B, which does a well-crafted job of indicating that we have made further progress toward our goals. We have not yet reached them, but we are very close. As I noted yesterday, I am reasonably optimistic about near-term economic activity, particularly in the labor market, and about near- to medium-term inflation. I am, therefore, hopeful that we will soon be able to put in place a decision reflecting language like that we have in option C′.

As Mike Kiley noted in his box in the Tealbook, and as Jim Bullard has mentioned twice, the economy is closer to our goals now than it has been at just about any time over the past

50 years. This helps explain why Taylor rules with no inertia indicate that the federal funds rate is far too low. But at this point, the other rules shown in Tealbook B are also in agreement that it is about time to begin normalization. While I know it is possible to devise new rules—say, with lower equilibrium real rates, which would delay normalization further—that kind of reverse engineering strikes me as risky.

Now, of course, most economic models are not going to make a big deal of a 25 basis point move, so it is hard to argue forcefully about the perfect moment to move rates. But, to my mind, there are two additional reasons for getting things started soon. First, I believe that if the FOMC sends a well-reasoned signal that we think the U.S. economy is now strong enough to begin normalizing, that could be an important boost to confidence for businesses and households. Seven or eight years is a very long time to be proclaiming, by our decisions, that we are in a recession or a crisis of some sort. Such an improvement in confidence would have a positive effect on spending and job creation.

Second—and this is something that I think President Williams mentioned in other language—I think that beginning normalization in the next couple of meetings, when we have met the criteria that we have set out to meet, will enhance the credibility of the Federal Reserve. Conversely, I think that if we continue to delay, market participants and Fed watchers won't know what to make of our communications.

I would like to go on to a couple of topics raised by yesterday's discussion. Let me mention one that I think we need to discuss at greater length shortly. The story about other central banks that raised rates and then had to reduce them is not actually accurate. The Swedes are very angry that we keep quoting that, and I am guilty of the same sin. When the economy was recovering and the inflation rate was high, we raised the interest rate in Israel. When the

European crisis began, we reduced it. They were both appropriate, so I don't understand what the argument is about—and I assure you that there is going to be a day, whenever we raise interest rates, that we will one day reduce them, and people will say, "Ha. You raised them too soon." But there is a serious discussion to take place, and we ought to do it, Madam Chair, at some point.

Thomas also asked us yesterday whether the language in alternative C′, particularly paragraph 3, is acceptable. My answer is "Yes," because there is a lot in there about what we will change. Whether it will be gradual or not depends on how the data come in. That is, it is consistent with data dependence.

In his notes, Thomas referred to this framework of paragraph 3 as providing forward guidance. I don't think it is forward guidance, and I don't think so for a reason that I can make clear in this forum. I once heard a senior Federal Reserve official say, "We have two instruments now that we are at the zero lower bound. One is quantitative easing, and the other is forward guidance." I said, "But forward guidance must be consistent with your predictions for the interest rate and for what you are going to do on quantitative easing." And the answer I got was, "No, it's an extra instrument." It is not an extra instrument.

And I think forward guidance is not providing information about what we think we will do, based on our current knowledge and our current expectations. Rather, it is that there are things we will do in the future, which, because we announce them today, we will do despite the fact that we don't think they are optimal from the viewpoint of the future. That is, there are binding commitments that we have entered into in forward guidance that are inconsistent with data dependence, and that, I think, is the difference. So I don't think of this as forward guidance;

it is not consistent with forward guidance as that term has begun to be used in the economic literature, and as it has been used in the FOMC's past decisions.

One other point on C′. In the past, we have discussed two strategies, "early and gradual" versus "late and steep." I believe we are now too late to be early, but fortunately I think we can now call what we are going to be doing "timely and probably gradual."

With regard to the questions that were asked, a separate implementation note is preferable. And I join those who don't think we should make a change to the directive now and then make additional changes when we commence normalization.

So let me sum up. The criteria for beginning normalization have nearly been met, and we should be willing to move very soon. Of course, we are data dependent. And if the data falter again, or the economy gets hit by some significant new negative shock, we want to see how things unfold. But I would also caution against interpreting every small weakness as a reason to push off normalization. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. I support alternative B with the language as drafted in the Tealbook. I think that is a relatively straightforward decision for today.

Looking forward and thinking about the two criteria that we have injected into our decisionmaking for an interest rate increase, I find myself again—as you can probably tell from my remarks yesterday—focused on the apparent breakdown in some of the traditional relationships, both in thinking about labor markets and between wages and price inflation.

I think that is posing—for me, at least—a challenge in trying to make a decision about when it would be appropriate to lift off for the first time. With respect to further improvement in labor conditions, taken quite literally, one could say that that criterion had been met almost

successively since we first put it in, since there has been some improvement at each step along the way. But, obviously, the connotation at least is that the amount of improvement that people are looking for probably depends on the gap that they think exists and how much improvement remains to be done. And so I think some of you indicate that you think we are very close to or maybe even at the natural rate already, and, therefore, you don't think there is much room for further improvement. I think President Lacker said any further improvement was immaterial. So, obviously, if you take that view, it is easier to make a decision. But if one is somewhat sympathetic, as I am, to some of the arguments that are made in some of the papers that I cited yesterday and have cited in the past—that there may be a nontrivial amount of slack left—then the amount of improvement that I may look to is somewhat greater.

With respect to reasonable confidence about inflation, I find that to be an even more slippery criterion to try to get my arms around in terms of making a decision on liftoff. Here I think most people are probably relying on a fairly widely shared intuition that the progressive removal of slack in the economy will at some point begin to push up inflation. But that intuition—which may have been based on some elegant stuff that you all studied or wrote about when you were in graduate school or in the pre-crisis, pre-recession era—may have broken down to some extent, at least if the more recent literature can be believed. And the Peneva-Rudd paper I cited yesterday was the latest in a string of research papers suggesting that that may be the case.

Now, why is that important to me? Well, it is important because even though I think we all agree that further removal of slack in the economy—as imperfectly reflected in the tightening of labor market conditions—should translate into upward pressure on inflation at some point, the "how much" and "when" actually matter a good deal. And if we no longer have a kind of reasonably well-understood relationship between the progression of wages and the progression

of prices, then it makes it a more difficult judgment. So if, for example, it were a longer period of time that it took for tighter labor markets and rising wages to translate into price inflation, that would mean there would be a longer period during which exogenous shocks of some sort might adversely affect the economy. And so I might be more concerned that moving more quickly would put the economy at some risk and not be necessary, really, to stave off inflation.

Now, that can go in the other direction as well. As I think President Williams pointed out a meeting or two ago, when you break that relationship, and you don't have something to substitute for it, it may be that price inflation could begin to be apparent even in the absence of demonstrable growth in nominal wages. And the reasonable confidence people may have could take root a little bit more quickly, even in the absence of higher nominal wage growth. But I do find it a bit disconcerting to have not even a rough calibration of "when" and "how much" is necessary in order to induce that reasonable confidence. As President Williams said yesterday, it is hard to avoid the recognition that we keep falling short on the inflation target. I guess that has affected the way I am thinking about liftoff. But precisely because there isn't a nice linear relationship to fit any of this into, it doesn't predetermine the position I will have in September, or any later meeting, for that matter.

With regard to the issues that have been raised, as I have said in the past, I hope we rely principally on paragraphs 1 and 2 to communicate future intentions. I agree with those who think that we shouldn't be relying simply on the recitation of the past, which is paragraph 1. Stating where we expect the economy to go, which is what paragraph 2 is about, should provide some measure of signal and communication to markets so that they can then adjust their assessments of how soon we are likely to move.

What has always made me a bit nervous about changes in paragraph 3 is my “kitchen timer” analogy, that making a change in paragraph 3 gets people to think, okay, it’s one meeting or it’s two meetings from now. I will say that, on that scale, the insertion of “some” to characterize the degree of labor market improvement would not be the worst offender. There have been things proposed in the past which I think would have been worse. But I would still tend to shy away from it a little bit. I am sympathetic to what President Kocherlakota said about how it would be better if we had a somewhat more precise set of criteria in paragraph 3, but I fear that trying to make that change now would just result in more confusion rather than more clarity. I am all with those who think we should be putting more emphasis on paragraph 2 and not leaving that boilerplate, but at least have a higher hurdle with respect to paragraph 3.

I join the consensus that a separate note makes sense. And, Madam Chair, I am more than indifferent on all of the timing questions, so—[laughter]—on that one, I go with your judgment. Thank you.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I support alternative B. I could also support some very modest changes to the statement to suggest a little more of a forward lean—for example, the word “some” in paragraph 3—but I can also support the statement as written. Any new changes I would tend to paint with an extremely light-handed brush at this point, maybe somewhat less so in July.

To me, the case for lifting off at this meeting diminished and then finally disappeared. “Exhibit A” for that would be the significant markdown in 2015 growth since the March SEP. And I think the market is right not to expect us to act here. On the other hand, the more recent improvement in data makes September liftoff a plausible thing for me. The Committee will

recall that the actual taper, when it happened in December of 2013, was a non-event because it was in the market—not just in the literal sense of being predicted by the market, but, psychologically, it seemed accepted by market participants—so that no one took any inference about the Committee's objective function.

If you look at the situation today with the first interest rate increase, the real story is the path forward. And the market seems to have fully internalized that and accepted it, and I think we are reaching a point at which a liftoff in the latter part of this year would really raise no threat to the market's understanding of a low path going forward. Indeed, the market's understanding is it will be lower than the Committee says by a substantial margin, albeit a diminishing one. So I guess I think we are reaching a point at which a 25 basis point increase wouldn't be that important and would not have broad implications. So my SEP path is for September liftoff with another increase in December, 25 basis points each, and then averaging 25 basis points every other meeting, although I don't mean to imply that we should get on an escalator with equally spaced steps.

Both market readings and surveys show an expectation that there is about a 40 percent chance of liftoff in September. That feels about right to me. I think the Committee's two conditions for liftoff, as set forth in the statement and amplified and sketched out in more detail by the Chair, are nearly fulfilled. There has been further improvement in the labor market. And to address the point raised by Governor Tarullo, I have been thinking about that and talking about that as meaning a material diminution or diminishment of slack. So, you know, a tenth here and there is really not enough. You want to see slack coming out of the market in a material way, and I think that has been met with more than 200,000 in monthly job growth this year. We

have also had a firm participation rate for more than a year and a half now and a modest upward move in wages.

My confidence that inflation will move back to 2 percent in the medium term has been strengthened by the continuing tightening in the economy. The two factors that we know are distorting inflation readings, the exchange value of the dollar and the price of oil, seem to have stabilized for now. Signs that wages are increasing continue to accumulate gradually but steadily. The risk of a real weakening of inflation expectations has not materialized. Survey measures are stable. Longer-term breakevens have climbed above their lows of earlier this year as spot oil prices have increased.

I would add a couple of thoughts as well on the discussion that we had at the end of yesterday's meeting. Obviously, it is appropriate to try to avoid surprising the market, and I would not like to see the market move in the next six or eight weeks to downgrade significantly the possibility of a September liftoff unless, of course, that is due to incoming data. If the data come in as expected, I would really like to see the Committee be able to keep its options open for September.

But looking back at the experience over the past few years, the taper tantrum was a surprise to me, and I think generally to the Committee, the staff, and the world. It is also surprising that it appears to have left little or no mark on the economy. And, by the way, neither did the fiscal cliff, and neither did the government shutdown, all of which happened in 2013, with 2013 being the only year in which the economy has reached 3 percent growth since the crisis. Now, many of you are probably thinking, "Well, but it should have been a 4 percent year," and I would just say to that, "No. I don't think so. I really don't."

As I mentioned, we had the actual taper at a meeting in which there were low odds of a taper happening, and it did invoke a big reaction, only the sign was wrong—it was a positive reaction. Then, coming into 2014, everyone seemed to agree, and I certainly did, that rates would start to go up in 2014. This was a no-brainer. And then the opposite happened.

So what are the takeaways here? First, it just is not possible to confidently predict the reaction of financial markets. The markets will do what they will. But, second, it is not at all clear that a little volatility or a 25 basis point or 50 basis point rate increase, even across the curve, will slow the United States economy down much. It may be more painful for emerging market economies, but I would echo what President Williams said earlier. There is so much focus around the world on this that one would think they are as ready as they can be.

A great CEO that I worked with for years used to always say, “Control the controllable.” In this case, what the Committee controls is our decision, and, to a much smaller extent, our communication about that decision. And I think we ought to make that decision on the merits and not worry excessively about the market reaction. I wouldn’t go so far as to say ignore the bond market, as some have, but I would not let it drive the Committee’s decisions.

Finally, I support the Committee’s communications plan. I like the idea of a separate note. Frankly, I liked what the staff did on the directive. I think there is very little chance that an amended directive with just technical amendments that is echoed in the minutes dropped three weeks after this press conference and this meeting would be mistaken for some signal about the path of policy. On the other hand, I don’t see much in it either way. So I would be happy to live with what the Chair decides on that. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. I support alternative B. I believe there is value to watchful waiting while additional data help clarify the economy's underlying momentum. This value is heightened by the asymmetry of risk-management considerations. The combination of the statement and the SEP release conveys that approach nicely, I think.

As I discussed yesterday, the pace of economic improvement slowed at the beginning of the year, and it is as yet unclear how strong or persistent the forces holding back stronger growth are likely to be. The labor force participation rate and the share of employees working part time for economic reasons suggest that slack remains, although the strength of job openings, the recent reacceleration in payrolls, and some hopeful signs on wages suggest slack is diminishing at a good pace.

In contrast, although inflation has rebounded from the low levels at the turn of the year, measures of core inflation remain stubbornly below our target, and not noticeably different from the average subpar pace of inflation over the recovery. And the puzzling disconnect between tepid aggregate growth and stronger labor market improvement complicates our task. With remaining slack, and inflation persistently below our target, it is important that reasonably robust increases in aggregate demand be maintained going forward to promote the further improvement in labor market conditions and the movement of inflation back toward 2 percent that are our conditions for liftoff.

The totality of data that we have received so far on economic activity in the first half raises some questions about the sufficiency of growth in demand and whether that growth will be maintained. So I am not yet reasonably confident that we will soon achieve our targets. Moreover, uncertainty over Greek default is becoming more acute. This raises the risk of market disruptions over the coming days and weeks.

That said, it is not difficult to imagine a flow of data over the next few months that would leave me reasonably confident, such that liftoff by September is appropriate. However, if the data take longer to convince, October or December might look more compelling, while recognizing there are some special features in late December that require careful consideration, including light trading and year-end dynamics.

Separately, I am comfortable with the staff recommendation to issue, upon liftoff, a policy implementation note to accompany and complement the FOMC statement, which would separate the statement of monetary policy from the operational details necessary to implement that policy. In addition, on balance, I would prefer not to undertake housekeeping changes to the directive at this time, as I don't see any compelling benefit. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I support alternative B in the statement as written. As I noted yesterday, I still think September liftoff is the most likely, and I think that's appropriate in light of what data we've seen. Obviously, we're still data driven.

In considering a September liftoff versus later, I would like to build on something that Governor Brainard brought up, a consideration that makes September more attractive to me—the fact that markets will be considerably thinner and more likely to be affected by balance sheet constraints in December compared with September. So if it is a close call, I would much prefer to move in September rather than commence liftoff in December. In my mind, a December liftoff would likely be sloppier because trading activity would be depressed. Trading desks would be thinly staffed, and balance sheet constraints would likely exert more of an effect at year-end than at other times. Obviously, it also might be easier for us to assemble for

videoconferences in late September than in late December, but I would say that's a less important consideration.

So what about an October liftoff if we're not quite there in September? Well, I don't think there's anything wrong with October per se, but I think it's really unlikely that we're going to actually decide to lift off in a non-press-conference meeting, even though we've said that all meetings are live.

Why do I reach that conclusion? As I see it, the bar to lifting off at a press conference meeting is lower than at a non-press-conference meeting. To lift off at a non-press-conference meeting, you have to get sufficient news over the interval between the two meetings to get over that higher bar. I just don't think that's very likely. The data are unlikely to come in so one-sided to push the motivation up sufficiently to transition from "no" at a press conference meeting to "yes" at a non-press-conference meeting six or seven weeks later. I think we just need to understand that it's highly unlikely we're going to move in October.

Now, obviously, you could decide to announce a press conference for the October meeting and move in October, but I think this sends an awkward signal as well. Why the urgency? What has changed that made September a no-go but October so necessary that you have to schedule a special press conference? You want a smooth liftoff without a lot of drama. I think it's better if the liftoff doesn't seem to have a sense of urgency driving it.

So the bottom line for me is, yes, we can certainly lift off in a non-press-conference meeting, but will we? I doubt it, and given that, I think the choice may come down to September or December, hence my focus on the relative attractiveness of September versus December.

In terms of C′, I have a very favorable reaction to the way it has been done, separating the monetary policy decision from the tactics of how to actually achieve it. I think it's a stronger

and cleaner communication. Do we want to have forward guidance in terms of the likely path of interest rates post liftoff? This is a much tougher call for me. It does reduce the risk of a taper tantrum somewhat by underlining the fact that we think it will be gradual. But it is a very soft commitment. All it says is, we "currently anticipate that," which can already be inferred from the SEP. And while the rate at which we raise the federal funds rate might be gradual, we might not raise it gradually, depending on how the economy or financial conditions evolve. I worry a little bit that if we put that in the statement, it could be taken as a stronger commitment than it actually is, or we could get to a meeting and say we really want to raise the federal funds rate 50 basis points but we said we were going to raise it gradually, so now we don't want to do 50 basis points. I think that would be unfortunate. So the bottom line for me is that I would slightly prefer not having it in the statement.

Finally, there's a part of the directive that I think is a little awkward in the sense that it basically says we're going to offer overnight RRP "in amounts no greater than the available amount of Treasury securities held outright in the System Open Market Account." Well, I think it would be really good to actually have a footnote or a number to refer to—it's a really big number, so I think it's very important for that to be clear to people.

CHAIR YELLEN. Simon.

MR. POTTER. I think the plan is that we'll have a Desk statement at the same time, and there will be clarity there. And the number that we've discussed, if you went this route, would be $2 trillion.

VICE CHAIRMAN DUDLEY. Yes, I prefer that to be as explicit as possible so the public doesn't read it and then think, "Now, what's that number, exactly?" Because it's effectively uncapped, subject to this very large number.

MR. POTTER. So the difficulty, if you chose to say it was uncapped, is that we want to make it look like it's uncapped even though it's capped at a finite amount.

VICE CHAIRMAN DUDLEY. Right. I want to be as explicit as possible about the number. I also think we could probably write better language here. "In amounts no greater than the available amount"—that's two uses of "amount" in six words, so maybe we need a little more work on the drafting there, but that's a very small point.

As far as cleaning up the directive at this meeting so there's less going on when we actually do liftoff, I slightly favor that, but I would defer to the Chair's judgment.

And, finally, should we communicate in the minutes that there's going to be no cap initially? Absolutely, we should communicate that in the minutes, because you don't want people going into the September meeting not knowing whether there will or will not be a cap. That will actually influence their behavior going into the meeting and how they think they're going to do their business postmeeting, if we actually do lift off, so I think that needs to be widely understood before we actually lift off.

CHAIR YELLEN. Okay. Yes, President Bullard.

MR. BULLARD. Thank you, Madam Chair. I want to object a little bit to Vice Chairman Dudley's characterization of the Committee as not being able to move at various meetings. This Committee has moved and can move at any meeting and should feel free to do so, and to tie us up in knots about one meeting out of the year as our one chance to move, I think, is a ridiculous characterization of U.S. monetary policy. We can move. We have moved in the past, and if the data call for it, then we should do it. I understand what he's saying about considerations about this, but it's too much. It's like we've been laying on the couch too long, and we're not used to being able to get up and run around the block.

VICE CHAIRMAN DUDLEY. I think you've mischaracterized what I said, Jim. Just for the record, I think you very much mischaracterized what I said. All I said was, these are considerations that could affect the timing of the Committee's decisions. Obviously, the Committee can move at any meeting. Whether they actually choose to do so is a different issue.

CHAIR YELLEN. Further comments? [No response] Okay. Let's start with the statement for today. I certainly did hear around the table a few people who lean in the direction of either outright preferring alternative C or who would like to import some of the language from alternative C and bring it into B. But as I listen to most of you weigh in on the statement for today, I heard relatively limited support for making those changes and pretty broad-based support for B with the language that we have here. And so I think what I'd like to do is propose alternative B without changes for today.

With respect to the implementation note and whether it's a good idea to have that, I actually heard unanimous support for a separate implementation note, so that's good. I think we can decide that we should go ahead in that general way.

Now, in terms of changing the directive today, some of you did not say whether you supported it. [Laughter] I tried to count reasonably carefully how people felt, and I did count more people saying "No" than "Yes." A bunch of people said they could go either way. I think my inclination in view of that would be not to make changes today. President Lacker may be taking another look at some of the wording regarding open market operations. One way or another, I think the minutes for today will note that we discussed these matters and alert the public. From the staff point of view, do you consider that acceptable? Because I think the Committee is pretty flexible on this.

MR. LAUBACH. Absolutely. I mean, the minutes can lay the groundwork.

CHAIR YELLEN. Okay. Why don't we leave the directive unchanged for today. And that means that what I'd like to do is have Matt take the roll call for a vote on alternative B as written, and the directive, which is the top version on page 14 of Thomas's handout.

MR. LUECKE. All right.

Chair Yellen	Yes
Vice Chairman Dudley	Yes
Governor Brainard	Yes
President Evans	Yes
Governor Fischer	Yes
President Lacker	Yes
President Lockhart	Yes
Governor Powell	Yes
Governor Tarullo	Yes
President Williams	Yes

CHAIR YELLEN. Okay. That concludes our work for today. The next meeting will be on Tuesday and Wednesday, July 28 and 29.

Boxed lunches are available. I will be holding a press conference at 2:30. I promise you that I will do my best to convey the sense of the Committee, and certainly to leave September on the table as an option, while emphasizing data dependence. For anybody who wants to watch the press conference, there will be a setup in the Special Library. And if there are no other questions or comments, that concludes our meeting.

END OF MEETING