Meeting of the Federal Open Market Committee on January 27–28, 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, January 27, 2015, at 10:00 a.m. and continued on Wednesday, January 28, 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

Richard W. Fisher, Narayana Kocherlakota, and Charles I. Plosser, Presidents of the Federal Reserve Banks of Dallas, Minneapolis, and Philadelphia, respectively

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

David Altig, Thomas A. Connors, Michael P. Leahy, Jonathan P. McCarthy, William R. Nelson, Glenn D. Rudebusch, Daniel G. Sullivan, and William Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

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

Robert deV. Frierson,[1] Secretary of the Board, Office of the Secretary, Board of Governors

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

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

Nellie Liang, Director, Office of Financial Stability Policy and Research, Board of Governors

James A. Clouse, Deputy Director, Division of Monetary Affairs, Board of Governors

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

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

David E. Lebow, Senior Associate Director, Division of Research and Statistics, Board of Governors

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

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

Fabio M. Natalucci[2] and Gretchen C. Weinbach,[3] Associate Directors, Division of Monetary Affairs, Board of Governors

Joseph W. Gruber, Deputy Associate Director, Division of International Finance, Board of Governors; David López-Salido, Deputy Associate Director, Division of Monetary Affairs, Board of Governors

Jennifer Gallagher, Special Assistant to the Board, Office of Board Members, Board of Governors

Edward Nelson, Assistant Director, Division of Monetary Affairs, Board of Governors; Shane M. Sherlund, Assistant Director, Division of Research and Statistics, Board of Governors

[2] Attended the portion of the meeting following the joint session of the Federal Open Market Committee and the Board of Governors.
[3] Attended through the conclusion of the joint session of the Federal Open Market Committee and the Board of Governors.

Burcu Duygan-Bump and Robert J. Tetlow,[2] Advisers, Division of Monetary Affairs, Board of Governors; Eric C. Engstrom, Adviser, Division of Research and Statistics, Board of Governors

Penelope A. Beattie,[1] Assistant to the Secretary, Office of the Secretary, Board of Governors

Dana L. Burnett and Christopher J. Gust, Section Chiefs, Division of Monetary Affairs, Board of Governors

Katie Ross,[1] Manager, Office of the Secretary, Board of Governors

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

Carlos O. Arteta, Senior Economist, Division of International Finance, Board of Governors; Kimberly Bayard, Senior Economist, Division of Research and Statistics, Board of Governors; Elmar Mertens, Senior Economist, Division of Monetary Affairs, Board of Governors

Bernd Schlusche and Emre Yoldas, Economists, Division of Monetary Affairs, Board of Governors

Peter M. Garavuso, Information Management Analyst, Division of Monetary Affairs, Board of Governors

Blake Prichard, First Vice President, Federal Reserve Bank of Philadelphia

Jeff Fuhrer and Alberto G. Musalem, Executive Vice Presidents, Federal Reserve Banks of Boston and New York, respectively

Troy Davig, Michael Dotsey, Joshua L. Frost,[4] Evan F. Koenig, Samuel Schulhofer-Wohl, and Christopher J. Waller, Senior Vice Presidents, Federal Reserve Banks of Kansas City, Philadelphia, New York, Dallas, Minneapolis, and St. Louis, respectively

Todd E. Clark and Douglas Tillett, Vice Presidents, Federal Reserve Banks of Cleveland and Chicago, respectively

Robert L. Hetzel, Senior Economist, Federal Reserve Bank of Richmond

[1] Attended the joint session of the Federal Open Market Committee and the Board of Governors.
[2] Attended the portion of the meeting following the joint session of the Federal Open Market Committee and the Board of Governors.
[4] Attended through the discussion on liftoff tools and possible liftoff options.

Transcript of the Federal Open Market Committee Meeting on January 27–28, 2015

January 27 Session

CHAIR YELLEN. Good morning, everyone. As you may have noted, we have a very full agenda for this meeting. In addition to quite a bit of normal beginning-of-the-year organizational business, I'm hoping for a thorough discussion of several important topics relating to normalization that should serve to prepare us for decisions we may face in the months ahead. But before we turn to that agenda, I'd like to welcome Presidents Evans, Lacker, Lockhart, and Williams back to the Committee and note that this is the last FOMC meeting for both Presidents Fisher and Plosser.

Tomorrow, as you know, we will have a farewell luncheon in honor of President Plosser, and, in the spring, we'll have a farewell meal for President Fisher. We'll have a chance to thank each of them for their service then. But I'd like to take this opportunity to briefly thank them here as well. President Fisher started attending FOMC meetings in 2005 and has since participated in 78 regular meetings. He brought to this table unique perspectives based on decades of experience as a market participant and as a senior government official. He regularly reported at this table economic insights reflecting information gleaned from his deep set of contacts across the country and the globe, and few of us will ever forget his imaginative metaphors. [Laughter]

President Plosser began attending FOMC meetings in 2006 and has since participated in 69 regular meetings. He brought with him rich academic experience in macroeconomic research, including a long list of publications covering a wide range of topics. With this deep experience paired with a sharp intellect, he regularly challenged this group to think rigorously and communicate clearly.

Both President Fisher and President Plosser have helped steer this Committee and the American economy through some of the most challenging and tumultuous times in several generations. Richard and Charlie, let me say that we thank you for your service and want you to know that you will be missed.

MR. PLOSSER. Thank you.

MR. FISHER. Thank you.

[Applause]

CHAIR YELLEN. Now let's turn to our first agenda item, which is the election of Committee officers. Following long-established precedent, I'm going to ask Governor Fischer to handle the nominations of Chair and Vice Chair.

MR. FISCHER. Thank you. I'll be calling for two sets of nominations and votes. First, I'd like to ask for a nomination for Committee Chair.

MR. TARULLO. I nominate Janet Yellen.

MR. FISCHER. Is there a second?

MR. POWELL. I second that nomination.

MR. FISCHER. Any other nominations or discussion? We should try it out. [Laughter] Without objection. Now I'd like to ask for a nomination for the position of Committee Vice Chair.

MR. TARULLO. I nominate Bill Dudley.

MR. FISCHER. Is there a second?

MR. POWELL. I second that nomination.

MR. FISCHER. Any other nominations or discussion? [No response] Without objection. Madam Chair.

CHAIR YELLEN. Thank you, Governor Fischer. Now let's turn to the election of staff officers. Matt, I'd like to ask you to read the list.

MR. LUECKE. For Secretary and Economist, Thomas Laubach; Deputy Secretary, Matthew Luecke; Assistant Secretaries, David Skidmore, effective February 2, 2015, and Michelle Smith; General Counsel, Scott Alvarez; Deputy General Counsel, Thomas Baxter; Assistant General Counsel, Richard Ashton; Economist, Steve Kamin; Economist, David Wilcox; Associate Economists from the Board, Thomas Connors, Eric Engen, Michael Leahy, William Nelson, and William Wascher; and Associate Economists from the Banks, Jonathan McCarthy, Daniel Sullivan, John Weinberg, David Altig, and Glen Rudebusch.

CHAIR YELLEN. Any comments? [No response] Okay. Thank you. Without objection.

Next, we need to select a Reserve Bank to execute transactions for the System Open Market Account, and I understand that New York is again willing to serve. Are there any other nominations or comments? [No response] Okay. Without objection.

Now I'd like to call on Vice Chairman Dudley to nominate individuals to serve as manager and deputy manager of the System Open Market Account.

VICE CHAIRMAN DUDLEY. I nominate Simon Potter as manager, and Lorie Logan as deputy manager, of the System Open Market Account.

CHAIR YELLEN. Without objection. Okay. Next, we're up to item 4, "Proposed Revisions to the Authorization for Domestic Open Market Operations," and I'd like to call on Simon to introduce this item.

> MR. POTTER.[1] Thank you, Madam Chair. As part of the annual review of the Committee's authorizations for domestic open market operations and foreign currency transactions, and as discussed in the memo titled "Request for Votes on

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

Authorization for Desk Operations" that you received prior to the meeting, the Desk recommends approving the authorization with a few changes.

In addition to these proposed changes, I'd like to highlight one additional item for the Committee's consideration: In January 2009, the Committee suspended the Guidelines for the Conduct of System Open Market Operations in Federal-Agency Issues in light of the Federal Reserve's programs to purchase agency debt and agency MBS. The SOMA contains a significant amount of agency debt and agency MBS, and it continues to conduct transactions in agency MBS as part of the reinvestment policy adopted by the Committee. Consequently, I recommend a continued suspension of these guidelines. No Committee vote is needed to continue the suspension.

With respect to the domestic authorization, we recommend two sets of changes. In the first set of changes, FRBNY and Board staff collaborated on proposed updates to the text and structure of the document, with the aim of simplifying the language so that it can be more easily understood by the public. None of these changes affect the authority delegated or the policies outlined in the domestic authorization.

In the second, more substantive set of changes, we recommend a set of revisions that, if approved, will affect some of the authority outlined in the domestic authorization. Before discussing the changes that were highlighted in my memo, distributed last week, I'd like to go over a change in the authorization that I failed to highlight, related to the removal of explicit references to types of counterparties. I apologize for the omission of this change in the memo and thank the staff of the Federal Reserve Bank of Minneapolis for alerting me to the lack of explanation of the change.

In the existing domestic authorization, outright transactions are authorized with "securities dealers," while the term "dealer" is used to describe authorized counterparty types for the securities lending program and customer transactions conducted via the FRBNY account. It is not clear what the distinction should be between these counterparty types and whether it is important in determining who should be authorized to transact with the Desk. In particular, the primary dealer policy of the New York Fed explicitly allows for both SEC-registered broker-dealers and federally regulated banks to be counterparties. Meanwhile, the authorization for temporary open market operations makes no mention of counterparties at all. The existing language is inconsistent and makes distinctions between counterparty types that may no longer be relevant. To address this, we removed references to counterparties altogether.

Although this change could theoretically broaden the Desk's ability to choose a wider range of counterparties, in practice the definition of a "dealer" is so broad that the existing language is not a constraint. Further, the proposed change would not affect our existing practice, and, even under the proposed streamlined language, the Desk would not add or remove counterparty types or alter the current framework for managing counterparties without seeking FOMC approval. This change was not

highlighted in the memo because it was seen as a change intended to deal with inconsistent language. However, the recent discussions of counterparties in Desk operations imply that this should have been highlighted as a substantive change. My apologies, again, for not including it in the memo.

If you prefer, we can retain the existing references to counterparties. Please see the exhibit in your handout titled "Material for Briefing on Proposed Revisions to the Authorization for Domestic Open Market Operations," which compares the existing language on the left panel and the proposed language on the right panel. The proposed language contains three insertions in bracketed blue text that can be made to retain the existing authority on counterparties; please see paragraphs 1, 3, and 4.

Returning to the four changes described in the memo, the first three of these changes are related to the desire to clarify existing practice. The fourth change is intended to update the language to account for the current operating model in which there is a large total amount of commercial bank reserves.

The first change introduces the term "Selected Bank." This conforms to a change proposed for all FOMC organizational documents and it amounts to prudent planning to simplify the transfer of authority from the FRBNY to another Federal Reserve Bank selected by the Committee in the event of a significant contingency. The second change removes paragraph 3, which authorizes the Selected Bank to transact in agency MBS through agents such as asset managers. As the Desk now conducts all trading in agency MBS internally, it no longer requires this authority.

The third proposed change defines the types of collateral accepted in the Desk's securities lending operation. The existing language does not make any such specification. The new language specifies that, for a loan of U.S. Treasury securities, counterparties can pledge only U.S. Treasury securities or cash; for a loan of U.S. agency securities, counterparties can pledge U.S. agency securities, U.S. Treasury securities, or cash. This clarifies that the collateral pledged must be of equal or superior quality to the collateral borrowed. Note that while the Selected Bank would now have the authority to conduct securities lending against cash collateral on a regular basis, it would not exercise this authority beyond current practice without the prior approval of the FOMC. Currently, the Desk's securities lending program accepts only U.S. Treasury securities as collateral, although cash is accepted on an intraday basis as part of the settlement process. Cash is accepted overnight only in instances in which a counterparty fails to deliver a security.

The fourth change to the domestic authorization updates the Chair's authority in "exceptional circumstances." The existing authorization allows the Chair of the Committee to "adjust somewhat in exceptional circumstances the degree of pressure on reserve positions and hence the intended federal funds rate." When the language in this existing paragraph was introduced 15 years ago, the memo proposing the language expressed a desire for the Chair to have the authority to alter the stance of policy in exceptional circumstances. However, the precise language incorporated into the domestic authorization in 2000 reflected the approach to policy implementation at

the time. Because adjustments to the monetary policy stance may now be implemented in a number of ways, we propose that the language be updated to take this into account. In particular, we propose that the directive provide that the Chair can "adjust somewhat in exceptional circumstances the stance of monetary policy." The proposed language would still require that the Chair make decisions in the context of the stance of policy at the most recent meeting and consult with the Committee in advance whenever feasible. Note that the side-by-side comparison we sent in the memo used "if feasible" instead of "whenever feasible." This is corrected in the handout in front of you. Under modern communications technology, we'd expect that such consultation would nearly always be feasible.

Before the Chairman requests a vote on the domestic authorization, we would be happy to answer any questions on the proposed changes.

CHAIR YELLEN. Are there questions or comments? President Lacker.

MR. LACKER. Yes. I'd like to comment on the counterparty matter that Simon raised at the beginning of his remarks, as part of our conversation yesterday about this. Clearly, the situation we had in the previous authorization wasn't ideal. The term "dealer" is there for historical reasons. It's not precisely defined. It has a common-sense English language meaning, however, that I think is plausibly restrictive in the sense that there are some counterparties you could imagine that wouldn't qualify as dealers in the plain-English version of the meaning of the word. So it seemed, at first blush, to be removing an important constraint on the Desk. I totally trust the Desk not to expand the typical counterparties of open market operations and of repo and securities lending operations without consulting the Committee. I totally get that. But my concern is that making this change with such short notice doesn't seem advisable. So I'd advocate that we do include the bracketed items. The Committee needs a chance to understand what the implications are. There's a study under way of the entire counterparty framework, and rationalizing how the authorization and other documentary devices of the Committee deal with counterparties would be a good thing. But we should probably await that before we make any substantive change.

This is a substantive change that will appear to the public. While it's not likely to be plastered over the front pages of many newspapers, there is a set of market participants who will take notice, wonder what this implies, and perhaps spend time speculating about what this implies about the Committee's intentions for the capability of expanding counterparties of the Desk's operations in the future. So until we actually get through more work to understand this—and in view of the very short amount of time the Committee has had to digest these documents that were posted Friday evening—I'd urge that we retain the status quo by including the bracketed phrasing in the proposed directive. And I should mention that I fully support all of the other changes in the directive.

MR. POTTER. To clarify one thing with regard to temporary open market operations, there's no reference to counterparties in the current authorization, and that would remain if we transported that language over.

MR. LACKER. Exactly. I misspoke.

CHAIR YELLEN. Let me ask if there are other comments on the matter that President Lacker has raised here. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I won't go back over the same ground that President Lacker covered. I'll just say that I echo what he had to say. Whenever we change language of this kind, we should have an opportunity to have careful deliberation over it, and so I would prefer to keep the status quo for that reason. Similarly, I don't know if I would counsel this at this meeting, but I think that, with the technological changes that have occurred in the past 15 years, it's reasonable for the Committee to rethink whether there are any situations in which it would not be feasible for the Committee members to be called on to decide on a monetary policy issue. Is there really any reason left to give those extraordinary powers to the

Chair? I'm not suggesting that at this meeting, but I would advise the Committee to have that issue on the table in a sufficiently timely fashion for next year.

CHAIR YELLEN. I think the thought was a true emergency—an attack on the United States or something like that.

MR. KOCHERLAKOTA. It would be useful to have a discussion of what the scenarios are that we're thinking about.

CHAIR YELLEN. Any other comments on the authorization? [No response] Well, we've had a proposal, and I take it that it's acceptable to the Desk to include the language that's in blue and currently bracketed. Two members of the Committee have spoken in favor of that. Let me ask everybody else, how many people—I'd like a show of hands—would like to include the blue bracketed language?

VICE CHAIRMAN DUDLEY. Just one interjection. We have a choice on page 4, right?

MR. POTTER. Yes. You would choose "dealers" if you wanted to keep the existing language. You would choose "market counterparties" if you wanted to modernize the authorization fully.

VICE CHAIRMAN DUDLEY. What is in your recommendation?

MR. POTTER. If you choose "market counterparties," you don't accept any of the other insertions. If you accept the first two insertions, you would choose "dealers."

VICE CHAIRMAN DUDLEY. I see. I think we're saying "dealers," then, in that case.

MR. POTTER. Yes.

MR. LACKER. I agree. "Dealers" is the status quo.

VICE CHAIRMAN DUDLEY. I just wanted to clarify that.

MR. KOCHERLAKOTA. Thanks.

CHAIR YELLEN. Okay. How many people would like to include the blue bracketed language? [Show of hands] Okay. And is anyone opposed to keeping it for the time being? [No response] Okay. I'm assuming, then, that we will keep the blue language. Are there any objections to approval of this? [No response] Okay. Then let's consider this approved.

We're ready to move on to item 5, which is a set of three related authorizations pertaining to foreign currency operations. Again, I'd like to ask Simon to introduce this item.

> MR. POTTER. Thank you, Madam Chair. We also recommend that the Committee approve the foreign authorization with two amendments. The first change, as with the domestic authorization, is to adopt the "Selected Bank" language. The second change reflects the ongoing challenges we face in managing the euro foreign exchange reserves portfolio in the current interest rate environment. As yields on European sovereign debt and money market instruments have fallen in recent months, we've increased somewhat the duration of the euro portfolio, and the Desk has, at times, faced difficulty finding short-term, positive-yielding investments. Consequently, we propose increasing the maximum duration of the foreign currency portfolio from 18 months to 24 months, as discussed at the December FOMC meeting. Increasing this limit will give us more flexibility to manage the portfolio.
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> Note that approval of these documents includes approval of the System's warehousing agreement with the Treasury. As has been the case since February 5, 1997, the limit on warehousing is set at $5 billion. There are currently no outstanding balances.

CHAIR YELLEN. Are there questions or comments? President Lacker.

MR. LACKER. We're considering now the Authorization for Foreign Currency Operations and the Foreign Currency Directive. Madam Chair, I will respectfully dissent once again from both of these, as I have every three years in the past and as my predecessor had going back to the 1990s. Very briefly, the purpose of these facilities is to facilitate foreign exchange interventions undertaken at the behest of the U.S. Treasury. Such intervention is ineffective if it does not signal monetary policy shifts. If it does signal a shift in monetary policy, then it essentially compromises our independence. Foreign exchange intervention is virtually nonexistent now. I think we should take steps to wind down the infrastructure associated with it.

In the meantime, though, I will respectfully dissent from the foreign currency authorization directives.

CHAIR YELLEN. Okay. Are there other comments or questions? [No response] Okay. Hearing none, what I'd like to do is, we need votes on these, and I would like to take them separately to record separate votes. These are votes of Committee members. First, let's start with the Authorization for Foreign Currency Operations. All in favor? [Chorus of ayes] Any opposed?

MR. LACKER. Yes.

CHAIR YELLEN. Second, the Foreign Currency Directive. All in favor? [Chorus of ayes] Any opposed?

MR. LACKER. Opposed.

CHAIR YELLEN. Finally, Procedural Instructions with Respect to Foreign Currency Operations. All in favor? [Chorus of ayes] Any opposed? [No response] All right.

MR. LACKER. You got me on board on that one, given the other choice.

CHAIR YELLEN. Are you sure you read that carefully enough? [Laughter] Okay. Now, our next item pertains to a range of Committee documents. A staff memo distributed Friday proposed several changes to the program for information security that are aimed at largely exempting Bank economic information from FOMC classification and increasing the number of SDS users. The memo also proposed some fairly technical changes that substitute the words "Selected Bank" for "Federal Reserve Bank of New York" and serve to standardize the language used to refer to the Committee. Does anyone have a comment or question? These are intended to be uncontroversial.

MR. FISCHER. At least two people here haven't read the memo and have a sense they didn't receive it, but maybe they're wrong. There's been a blizzard of material coming to us, and maybe we overlooked it. But I don't know what those changes are. I got two pages with regard to the first item here—the proposed revisions to the FOMC Rules of Organization. That one I got.

CHAIR YELLEN. Well, there's a gigantic memo here that was posted on Friday and includes all of these changes. Are you suggesting we not vote on this?

MR. FISCHER. Well, I don't know what to do. I've never seen it. And, as you flip through it, it's got a lot of blue in it.

CHAIR YELLEN. Well, as I explained, it's meant to be a set of uncontroversial changes. The only substantive thing is increasing the number of SDS users and clarifying that material produced by Reserve Banks is not FOMC-classified material.

MR. POTTER. When you look through it, most of the blue is the authorization changes. We've already gone through those. There tend to be smaller changes in the rest of the organizational documents.

MR. FISCHER. Well, I was particularly interested in the FOMC Policy on External Communications of Committee Participants, and I am not completely familiar with the rules.

MR. LUECKE. The only change to that document is the standardizing on the word "Committee" in place of "FOMC" or "Federal Open Market Committee" and the addition of a footnote that describes what "FOMC participants" means.

MR. FISCHER. I'm willing for the vote to go ahead, but I want to say that one tries, but when the computer doesn't open documents at home and something is sent late on Friday, and things like that, it's very hard to keep up.

CHAIR YELLEN. Would you like to wait until tomorrow to have a chance to look this over tonight, and we'll vote on it tomorrow morning?

MR. FISCHER. I'm willing to go ahead, but I will reserve the right to discuss these issues further with you.

CHAIR YELLEN. Okay. Governor Tarullo, did you want to weigh in on this?

MR. TARULLO. As the changes have just been described, they seem fine, but I wanted to second Stan's observation on the blizzard of memos coming in on SDS late Friday night. I don't think it's reasonable, frankly, to send so many things at more or less the last minute when people are trying to prepare their remarks for the meeting. So I would hope there would be some way that things could come in with enough time for those of us on the Board, at least, to be able to absorb everything.

But that reservation doesn't go to the merits of this particular issue—which I'm fine with.

CHAIR YELLEN. President Fisher.

MR. FISHER. As a molting hawk, may I add, from a Bank president's standpoint, that we are overwhelmed over the weekends with materials that were received as late as late Friday night. So, again, the staff does an incredible job, they give us so much to consider, and I admire them enormously, but it would be really helpful if we had maybe one or two more days to look at so many of these. These are all important matters, and so I will take a president's stance and second what has been said by the two Governors. This is a polite suggestion.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Madam Chair, I want to suggest one thing about these votes. As I understand it, we're reauthorizing what has been standing practice for the Committee, because we're reorganizing at this meeting.

CHAIR YELLEN. Correct. That's right. These are not new documents.

MR. BULLARD. So we're reestablishing what already was in effect in December, with minor changes. On the communications memo, for instance, we had a separate discussion as a Committee, and a whole elaborate process, that put that into place, if I recall correctly.

CHAIR YELLEN. That's correct.

MR. BULLARD. We can certainly review that at any point during the life of this particular incarnation of the Committee, and we can change that at any time. But, as I understand these votes, these are mostly to ratify what we've been doing in the past.

CHAIR YELLEN. That's correct. These are documents that, even in the case of the external communications policy, have been in place now for a large number of years, and we're reauthorizing them, which we always do at our January meeting, with minor changes. But I take the point about the timing and the blizzard of materials. The staff is pretty overwhelmed in having to produce this material. I think it's worthwhile for them to hear that we feel—and I feel the same way—that it comes to us as a blizzard. But I also hope you'll recognize the strains that are on the staff in trying to produce this gigantic amount of material for our consideration.

President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. Maybe I'm missing the description of what was in these changes. I thought that the changes to the Program for Security of FOMC Information, while I welcome them, are perhaps a little more substantive than was outlined, in the sense that I believe it's going to allow participants to be able to talk about their forecasts more openly than in the past—or maybe I misunderstood the sense of that language change.

MR. ENGLISH. I think our intention there was to be clear that, for example, a Reserve Bank president can go out and talk about his or her outlook for the economy, and that Reserve Banks can, as they already have been, post their Reserve Bank's projections for the economy. It would still not be appropriate, under the security rules that we've written down, for you to give a speech and say, "Here is what I submitted to the SEP." But we have been comfortable for some time with Reserve Bank presidents going out and giving outlook speeches in which they talk about their sense of the outlook, why it is what it is, and what they think is going to happen. We have also been comfortable with Reserve Banks posting information about their forecasts—the staff forecast or even, implicitly at least, their president's forecast—on their websites, and so this was acknowledging that.

I want to be clear that some of the Banks may want to have some of this information subject to Bank security rules. These are the FOMC's security rules, and the FOMC's security rules have basically been rewritten to acknowledge the situation that I think we're in.

MR. KOCHERLAKOTA. Thanks, Bill.

CHAIR YELLEN. Are there any further questions?

MR. PLOSSER. Just a clarification. Would this mean that an individual president, for example, couldn't go out and say which dot was his or hers? Is that what this says?

MR. ENGLISH. I think that's correct, because it still says that what you submit to the SEP is FOMC information.

MR. PLOSSER. It's a fairly substantive change, then, in how we're going to approach this.

MR. ENGLISH. It actually isn't. That's been true—that was true with the old rules. We're just maintaining that. But we're saying that you could go out and talk more broadly about

your sense of the outlook, what the economy looks like, and what your policy expectations or desires would be, but you should not say, "And here are the specific numbers that I submitted to the SEP." That's where we drew the line. Admittedly, it's slightly arbitrary, but it seemed to us that once you submit that to the SEP, then it really is FOMC information—it's being distributed at meetings, and so on. Whereas, if it's just your forecast, then you can go out and talk about it.

CHAIR YELLEN. President Lacker.

MR. LACKER. So we can say that our forecast for four-quarter GDP is *X* percent, but we can't say that we submitted that as part of our SEP. We can say that our answer to the question of what the funds rate would be at the end of 2015 is *Y* percent, but we can't say that we submitted that to the SEP.

MR. ENGLISH. If you wanted to be that specific, I guess so.

MR. LACKER. It's a bit Orwellian. [Laughter]

MR. ENGLISH. We're trying to draw a line here, and, at the edge, it's bound to be a little bit fuzzy.

MR. LACKER. I'm not driven by that ambiguity to question the policy regarding what we say in public. I'm driven to think about why so much of the SEP is confidential. And maybe that's what deserves some reconsideration.

MR. ENGLISH. The Committee has talked about that at some length in the past, and the communications subcommittee may well take that up again. But, so far at least, the Committee has not wanted to release the matrix, with or without names.

MS. MESTER. Okay. Can I follow up on what President Lacker was saying? Because I'm a little confused about this, too. So you could put out your GDP projection, and you could

put out your inflation projection, but you couldn't say, "And the policy rate path that I'm thinking is appropriate to get those—"

MR. LACKER. No, you can put out that, too. You could publish your whole submission. You can't say it's your submission.

MR. KOCHERLAKOTA. Yes, exactly.

VICE CHAIRMAN DUDLEY. They have to make the inference that it's your submission. You can't say it's your submission. That's the subtle difference.

MS. MESTER. Okay. I guess I was reading that as, you couldn't take the document that you submit, because it's an FOMC document, and publish that. But you could talk about everything that's in there.

MR. LACKER. You just can't say it's your submission, but you can say all of the information in it because it came from your head.

MS. MESTER. Okay. Got it. Thank you.

MR. FISCHER. May I ask a question, Madam Chair? I recall at least two people giving us their numbers in these meetings. Were they in the minutes?

MR. ENGLISH. No. They will appear publicly in the transcript when it is released after five years.

MR. KOCHERLAKOTA. Which is five years early. [Laughter]

CHAIR YELLEN. Okay. Further comments or questions? [No response] Okay. So I would suggest we take a single vote on this whole collection of changes. Are there any objections to approving these documents? [No response] Okay. Then without objection.

Now we're going to move on to item 7, which is to approve our Statement on Longer-Run Goals and Monetary Policy Strategy. As you all know, under the leadership of the

subcommittee on communications, we've made an effort in recent months to investigate possible enhancements to the consensus statement. Although we ultimately decided not to make any substantive changes at this particular time, I believe that this exercise was constructive, and I continue to view the consensus statement as a living document that will evolve over time. Some of the options we discussed—for example, making explicit the symmetry of our inflation objective—may well make their way into the statement in the future when economic conditions are closer to normal and there's less risk of confusing the public with a change. We also agreed to continue our discussions about the role of financial stability in monetary policy. I certainly hope we will continue to think hard about the statement and work together under the leadership of Governor Fischer and the subcommittee to enhance it over time.

Personally, I think the consensus statement has been an indispensable tool in articulating both our monetary policy goals and our strategy for attaining them. I realize that aspects of the statement allow for a range of interpretations. That's both a strength and a weakness. But let's not forget that it took this Committee well over a decade to formulate a document that was capable of achieving very broad support, and its value derives importantly from the fact that it does command an overwhelming degree of support in the Committee. The only change to the statement before you from the version endorsed last year is the update of the central tendency of the longer-run unemployment rate from the SEP. So before we take a vote, I'd like to ask if anyone would like to comment on the consensus statement. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I'll echo the sentiments you expressed in your remarks. I support the consensus statement, but I also support continuing discussion and dialogue within the Committee about ways in which we could further strengthen and enhance it under the leadership of the subcommittee on communications.

The core of the consensus statement is that it's been able to provide a numerical target for inflation of 2 percent. As you've described before, Madam Chair, the communication of the specific target by the FOMC was a culmination—you just referred to a decade. I seem to remember references to nearly two decades, actually, of hard work and debate by yourself and others around this table. As the consensus statement suggests, this target serves to anchor the public's expectations of nominal variables and thereby makes monetary policy more effective. As you will hear over the next couple of days, though, unfortunately, I remain deeply concerned about signs of downside risks to the credibility of our inflation target. These credibility risks pose a considerable threat to all that we have achieved together in the consensus statement, and we need to do all that we can to ensure that those risks don't actually transpire. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. The consensus statement of the Committee's longer-run strategy for monetary policy is an important guide for our policy deliberations and decisions. In public, I discuss our policy goals for maximum employment and price stability every time I speak, and I strongly support the approach described in this document. I firmly believe that my policy recommendations to date have been in line with this consensus statement, and I'm confident every other affirming participant believes the same.

In light of the low-inflation environment we face today, our discussions last fall, and the policy choices ahead, I feel the need to clarify two of my expectations that I have from reading this statement. This is just how I interpret the statement. First, I believe that our 2 percent objective means that we should actively eschew stalling out before we reach our 2 percent

objective. The statement cites a single value for the inflation objective, not an acceptable range. But if we should debate that, then we should debate that.

Second, I believe that our objective is a symmetric one. Periodically, I have heard people make comments along the lines that they're not worried about low inflation today because it is very unlikely it will go below zero. Let me just state the symmetric dual for this observation and ask if there's any doubt that everyone would be bothered by it. Let me put this in language that the minutes might reflect: "Participant *X* stated that they were not worried about inflation being well above our objective, because it was very unlikely to go above 4 percent." My view of our consensus statement is that both extreme conditions require a policy response to get inflation back to our 2 percent objective.

I view our consensus statement as consistent with these modest views I've expressed today, and I will vote to reaffirm the statement before us. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I, too, would like to express support for the consensus statement. In my view, the consensus statement has provided real value to the Committee by laying out for the general public the Committee's broad approach to carrying out its responsibilities under the law, particularly—if I can echo President Kocherlakota—in the 2 percent inflation objective.

I see it as constitutional in nature, and it therefore represents many compromises among the authors, some of which are obvious to the reading public from the language and some of which are less so. It's not reasonable to expect it to resolve all differences. It is reasonable, in my view, to expect that, when arriving at a common statement by a large group of people dealing with conflicts and controversial issues, there will be unresolved issues and compromises. All of

that could easily be said of the U.S. Constitution, which has worked well over these years. Madam Chair, not every aspect of the statement is precisely what I would have written down, but I'm glad to support it as representative of the Committee's carefully considered thinking about the areas in which there is broad agreement. Thank you.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. As everyone knows, I've abstained in the past during the vote on this statement. I have to say that this year, I thought about voting "no," because there's been a virtually explicit rejection this year of specifying that our inflation objective is symmetrical around the 2 percent target. As people may recall, originally, my concern was the failure to specify a symmetric loss function regarding the two goals in the dual mandate. I still think that that demands attention. But I've found that the issue of symmetry of the inflation objective has obviously been particularly important over the past few years. Yet, notwithstanding the fact that people purported to agree with that in discussion, there was an unwillingness to agree to an amendment of the statement, which I think would have been meaningful and would have provided not only some real guidance to the public, but also a foundation for the kind of analysis and discussion that we have in this Committee. So I guess I'm more convinced than ever that this statement reflects an agreement on language, without any genuine consensus on the aims of monetary policy, something that is of particular significance now, in the immediate past, and perhaps in the immediate future. Here I build on some of what Charlie said, even though I come out differently.

Now, I'm not going to vote "no," and—I'll be very explicit—this is largely in deference to the Chair. I don't want to make her life more difficult with a "no" vote, but I really came very

close this time around. To be honest, I'm going to have to vote against this in the future if there are not additional changes.

Just one thing, Jay, on the point about the Constitution. The Constitution was agreed-upon language, which then has a different authority doing the interpretation—thereby not allowing everyone who agreed on the original to be his or her own interpreter. I think that's an important point of distinction, which is why one has to look to something more like an international agreement to see whether there is a genuine consensus underlying the agreed-upon language, even though, inevitably, ambiguities will result. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. I agree with much of what Governor Powell said and what Chair Yellen said. I think that the consensus statement is a compromise in many respects, but it's served us very well. I am one of the people who thinks that there are potentials for improvement, especially concerning the symmetry and with regard to thinking further about financial stability. We had a good initial discussion of these issues. We didn't make any substantive changes yet, but I do look forward to further discussions this year on both of these issues.

I'm obviously not going to get into what to think about the Constitution with experts at the table, but, being a native Californian, we have a looser attitude toward changing the Constitution in California [laughter]. So I do have more of a Jeffersonian view of it. Even though it has this quasi-constitutional character, we should do our very best, every year, to think about how we can enhance and improve this. I do agree with the others that the symmetry issue is one on which we should really try to improve our language. But it's served us very well, and I fully support the consensus statement.

CHAIR YELLEN. President Mester.

MS. MESTER. I guess I would characterize myself as a strong supporter of the statement. It's an important piece of communication about our framework for policymaking, and it supports our desire for transparency.

I've been a staff member involved with this statement since its inception, and now I'm a member of the subcommittee. So I know firsthand all of the deliberation, consultation, and compromise that went into crafting the statement. Of course, I'm not a fan of measuring input; we've got to measure output. I'll be the first to admit that there are still a lot of ambiguities in the statement, and we each could find parts to amend to suit our own particular approach to policymaking. But I still think that if we view it as a consensus statement and a consensus set of principles, I would call it a success. Indeed, one could say that the document itself takes a balanced approach. It balances the need to encompass the diversity of views among participants with the need to convey important information about the Committee's policy goals and framework.

The statement has served us well during the extraordinary policymaking times that we've been in since it was adopted in 2012, and I expect it to continue to serve us well when we return to the more normal economic and policy environment. I echo President Williams's sentiments that we're going to continue to work to make it the best statement we can, but I do think that we should call this a success. Thank you, Madam Chair.

CHAIR YELLEN. Thanks. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. I support the document, and I do think it's a very important document in giving greater clarity to the public about how this Committee is interpreting the mandate that it has been given from the Congress and how that interpretation is evolving in response to changes in the nature of the challenges we're facing. It obviously does

represent a compromise. We had some very good conversations prompted by the need to agree on this statement. And those discussions are as important as the statement itself, for the purposes of the Committee being able to deepen its views and its agreement about how we're interpreting our mandate.

I'd say that the discussions regarding the symmetry of the two aspects of the dual mandate and regarding the inflation target were pretty rich. The one area in which I would hope to see a much richer discussion in the lead-up to next year's statement would be the role of financial stability considerations in monetary policy. That's an area that became very important in the crisis, but I don't think we have grappled with it as much as we really need to at the Committee.

CHAIR YELLEN. Thank you. Are there other comments?

MR. FISCHER. Yes. Well, this has been an interesting and helpful discussion as well as an encouraging one, because three other members of the subcommittee have spoken, and I can agree with every word of every one of them—that is to say, Jay Powell, John Williams, and Loretta Mester.

I should just add that, when our subcommittee started working, one of those three people said, "You should know that there's a body buried underneath every word in this document." [Laughter] I understand that, but I still think we may make progress. We're not going to start immediately, but, probably somewhere around midyear, we're going to be working on a fairly ambitious program of potential changes. If we get any of them, we'll be making progress. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Well, thank you, everyone, for your comments. As in the past, the minutes will include a summary of the views that have just been expressed around the table.

Now, formally, approving the statement is a vote of the Committee. But, before we do that, because of the nature of this document, I would like to ask for a show of hands of all participants regarding their support for the statement, and that will constitute input for the writers of the minutes. So let me ask everyone, how many are in favor of the document? [Show of hands] And how many are opposed? [No response] And abstentions? [Show of hands].

Okay. Finally, although you have all just raised your hands, I'd like to take a separate formal vote of Committee members in order to approve the document, including the minor update. All in favor? [Show of hands] Any opposed? [No response] Abstention? [Show of hands] Okay. Thank you very much.

We're ready to move on to our next item. We're about to have a change of personnel at the table, with Thomas Laubach replacing Bill English. But, Bill, before you leave, I'd like to thank you for your exemplary service to the Committee during these past four years as secretary and economist and as director of the Division of Monetary Affairs.

Bill first began attending FOMC meetings in 1995 and has since attended 93 meetings, 34 of which were as secretary. His service in this role benefited not only from his broad institutional knowledge and extensive background in monetary policy and financial-sector research, but also from personal characteristics that have proven invaluable: a keen intellect, a drive for excellence, an unmatched work ethic, the patience of Job, and an abiding kindness in the face of enormous challenges. Bill, we thank you for your service these past years and look forward to working with you in your new role as senior special adviser to the Board.

MR. ENGLISH. Thank you very much. [Applause]

CHAIR YELLEN. Now I'd like to welcome Thomas Laubach to the table in his new roles as director of the Division of Monetary Affairs and as secretary and economist of this Committee. While Thomas is only a few weeks into his monetary affairs role and just a few minutes into his role as secretary, he is obviously not new, in any sense, to monetary policy or to the work of this Committee. Thomas began his work with the Federal Reserve System in 1997 at the Federal Reserve Bank of Kansas City and, in the years since, has contributed to a wide range of high-level policy memorandums. He's provided analytical support to the FOMC's subcommittee on communications and served as a trusted adviser to me and to this Committee. Thomas, welcome. We all look forward to working with you in this new role.

MR. LAUBACH. Thank you very much, Madam Chair. I'm very honored, and I look forward to serving the Committee.

CHAIR YELLEN. Our next two items are going to be considered in a joint meeting of the Committee with the Board of Governors, and, accordingly, I will need a motion to close the Board meeting.

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. Without objection. I'd like to now call on Simon to deliver the first part of the Desk briefing, which focuses on market developments.

> MR. POTTER.[2] Thank you, Madam Chair. As you noted, Lorie and I will be splitting the Desk briefing into two parts. I will first discuss financial market developments. Lorie will then review domestic operations, before discussing results of our year-end overnight and term reverse repo operations and a staff proposal for further testing.
>
> Longer-run nominal rates in developed economies continued to decline over the intermeeting period, as shown in the top-left panel of your first exhibit. Market participants have attributed the declines to a variety of factors, including increased

[2] The materials used by Mr. Potter and Ms. Logan are appended to this transcript (appendix 2).

downside risks to the outlooks for economic growth and inflation stemming from overseas developments. Growing expectations of an expansion of ECB asset purchases, and then the announcement of the new program, also contributed to the declines while also supporting risk assets, especially in the euro area. Market participants are increasingly focused on spillover effects from low rates abroad as a key factor pushing down interest rates in the United States. Market commentary also continues to cite the possibility of "secular stagnation" across developed economies as underpinning the sustained declines over the past year.

Declining levels of inflation compensation account for an important portion of the moves in longer-dated nominal rates. As shown in the top-right panel, market-based measures of five-year, five-year-forward inflation compensation have fallen across major developed economies over the past year, with the most pronounced moves in the euro area and the United States. Over the intermeeting period, U.S. forward inflation compensation measures declined further, while euro-area inflation compensation increased, on net, partly because of growing expectations of ECB policy action. Despite the very low levels of domestic inflation compensation, survey measures of longer-term inflation expectations, including those from the Desk's surveys of primary dealer and buy-side participants, remain relatively stable and close to the Committee's longer-run inflation goal. Contributing to the falls in forward inflation compensation in the United States and abroad have been low and declining realized inflation, continued steep declines in commodity prices, and questions regarding the ability and commitment on the part of central banks to move inflation back to target.

As shown in the middle-left panel, commodity prices have fallen substantially since last summer, and these declines continued during the intermeeting period. Front-month crude oil futures prices fell another 18 percent over the period and have declined over 55 percent since last July. For a better understanding of the declines since July, the most recent Desk surveys asked respondents to rate the importance of supply, demand, and technical factors in explaining the move. Respondents were nearly unanimous in expressing their belief that supply-related factors have been the most important driver of the decline in oil prices. Consistent with these responses, copper and other industrial metals prices, which many use as proxies for global economic growth, were relatively little changed during the early stages of the oil price declines. However, more recently, these industrial metals have also declined sharply, also shown in the middle-left panel, to the lowest levels in over five years. Market participants have suggested that this likely reflects increased concerns regarding the demand outlook stemming from Europe and China.

To counter building disinflationary pressures stemming from increased downside risks to the global growth outlook and commodity price declines, numerous developed economy and some emerging market central banks eased policy or signaled an easing bias over the intermeeting period, as shown in the middle-right panel. To counter the effects of ECB measures on their exchange rates, both the Swiss and Danish central banks cut interest rates, moving policy rates into deeply negative territory. The SNB also abandoned its floor on the exchange rate between

the Swiss franc and the euro. The Swiss, Danish, Swedish, and European central banks now all have negative deposit rates, and there are expectations that the SNB deposit rate could be cut a further 25 basis points to negative 1 percent. The experience of these central banks with negative interest rates and the limited market-functioning effects to date may reduce concerns about lowering deposit rates below zero for some other central banks. Beyond continental Europe, the Bank of Canada unexpectedly cut its policy rate in response to recent oil price declines, and the Bank of England minutes signaled a slight shift in the distribution of MPC views as two longstanding dissenting members stopped voting for higher rates. Some emerging market central banks also cut rates earlier than expected, while expectations of EM policy rates more broadly continue to be revised downward.

Of these policy actions, the ECB announcement was the most eagerly anticipated. As the bottom-left panel details, the ECB announced that it would expand its existing asset purchase programs and will purchase €60 billion of public- and private-sector assets per month. The expanded purchases will start in March, and the ECB stated that it intends to continue purchases until at least September 2016 and, in any case, until it sees a sustained adjustment in the path of inflation that is consistent with achieving its inflation objective. The purchases would total €1.1 trillion if continued through September 2016, which, all else being equal, would bring the ECB's balance sheet above early 2012 levels. The purchases will be allocated according to the ECB capital key, and the ECB will purchase securities with maturities of 2 to 30 years.

The ECB announcement was interpreted by market participants as more accommodative than expected due to the larger-than-anticipated size and open-ended structure of the purchases. As shown in the bottom-right panel, following the announcement, euro-area sovereign yields declined, particularly at longer maturities, as some were surprised by the inclusion of very long-dated bonds in the purchase program. Longer-dated peripheral spreads narrowed and euro-area equities rose broadly, led by financial institutions and peripheral equity indexes. The euro also continued its recent sharp depreciation, weakening by more than 3 percent against the U.S. dollar to its lowest level in a decade, and options prices moved to suggest increased demand for protection against further euro depreciation. These moves generally extended previous price movements as expectations for ECB sovereign debt asset purchases gradually built over the course of this past fall and winter in the wake of President Draghi's remarks at Jackson Hole.

As a result of substantial cumulative policy actions abroad and the subdued outlook in many countries, rates in many sovereign debt markets are at historically low levels. As shown in the top-left panel of your next exhibit, German and Japanese yields out to the 5-year tenor are either negative or zero. Swiss interest rates are negative out past 10 years. Further, the German yield curve looks remarkably similar to that of Japan, an economy that has battled deflation for the better part of two decades. These negative rates have posed challenges to many global investors, particularly official managers of foreign exchange reserves, and have required many to increase the duration of their investments in order to achieve positive returns. We have, of course, faced similar challenges in the SOMA foreign portfolio, prompting

the increase in the authorized duration limit. We will continue to update the Committee on our management of the portfolio in this negative-rate environment.

Over recent months, outsized declines in foreign interest rates have contributed to a widening in two-year sovereign interest rate differentials between the United States and other major developed economies. This shift in rate differentials has continued to support a broad appreciation of the dollar, as shown in the top-right panel. Over the intermeeting period, the DXY dollar index increased more than 7 percent. Although not included in the DXY index, Chinese authorities have recently allowed their currency to depreciate, which is adding to further broad dollar strength.

The shift in short-tenor interest rate differentials reflects the fact that most market participants continue to expect the FOMC to increase the target federal funds rate in the middle of this year while other major central banks are undertaking substantial actions to promote a highly accommodative policy stance. Indeed, in the most recent Desk surveys, respondents continue to place the highest probability on liftoff occurring in June, as shown in the middle-left panel, though there has been a modest increase in the perceived odds of a later liftoff since the December survey. Survey respondents attributed the slight shift to slowing core inflation, tepid wage growth, and increasing downside growth risks overseas.

Some market participants have suggested that recent declines in inflation and inflation compensation should prompt the Committee to hold off on beginning to normalize the stance of monetary policy until direct signs of upward inflation pressures emerge. The Chair's press conference following the December FOMC meeting appears to have effectively pushed back against the view that low near-term inflation will delay liftoff, and Desk survey respondents increasingly expect that liftoff will occur against a backdrop of low realized inflation. The median response for the most likely level of 12-month headline PCE inflation at liftoff declined 80 basis points from the December surveys, to a level of 80 basis points, as shown in the leftmost column of the middle-right panel. The next column of the table shows that, in contrast to this decline, the central expectation for PCE inflation one to two years *after* liftoff has remained close to 2 percent. However, as shown in the final two columns, respondents, particularly those on the buy side, increased the probability they attach to inflation over that one-to-two-year horizon following liftoff remaining below 1.75 percent.

Looking beyond liftoff, expectations with regard to the federal funds rate path through 2017 declined modestly in the most recent surveys. These declines may reflect an increase in perceived risks of a premature tightening in the federal funds rate, an event that could subsequently lead the Committee to slow the pace of rate increases, pause the tightening cycle, or potentially cut rates and return to the zero lower bound. However, Desk survey responses suggest that the probability of returning to the zero bound within two years of liftoff is little changed since December at around 20 percent, and most respondents do not view premature tightening as the main factor in their assessment of the likelihood of returning to the zero bound. Instead, they view future adverse shocks as the most important factor.

While beliefs about the timing of liftoff and the federal funds rate path are relatively little changed as measured by the Desk surveys, market pricing continues to give a different read on market expectations and shows substantial changes in the risk-neutral expected path of policy, as shown in the bottom-left panel. Over the intermeeting period, the market initially priced in an additional 25 basis point increase in the target rate by the end of 2017, with the implied end-of-2017 rate reaching its recent peak following better-than-expected third-quarter U.S. GDP data on December 23. Then, despite better-than-expected employment data, the market reversed course and is now pricing in one less 25 basis point rate increase by the end of 2017 relative to the path immediately before the December meeting.

Survey-implied term premiums embedded in 2016 and 2017 interest rate futures contracts—measured as the difference between the market-implied funds rate and the mean expectation from the Desk surveys—became more negative over the intermeeting period, as shown in the bottom-right panel. As discussed at the December meeting, such negative term premiums may reflect concerns about negative shocks to the global economic outlook in an environment of low nominal rates. An alternative and more benign interpretation is that the recent steep drop in term premiums largely results from spillover effects related to lower interest rates abroad and QE-related portfolio-rebalancing flows, which may have also supported the intermeeting increase in global equities and other risk assets. Thomas Laubach will discuss some of the policy implications of these alternative views in his briefing tomorrow.

Before handing over to Lorie, we'd be happy to answer any questions on financial market developments.

CHAIR YELLEN. Any questions for Simon? President Fisher.

MR. FISHER. On your panel 3, "Commodities Performance," that's strikingly different from what we saw beginning in, if my memory serves me, September 2008, when industrial metals and everything else followed suit. But it appears to the naked eye here that, if you're looking at the broader metals index, there is a downward-sloping trend. I'm just curious—from the standpoint of your discussions with market participants, is this something of concern? Is it being exacerbated by the increasing ability, in terms of the tradability, of financial interests surrounding industrial metals?

I'm just curious about what your interpretation is from a Desk standpoint. If we were to see the same kind of behavior we saw in 2008, I'd really be worried, but we're not seeing that at

present. “Dr. Copper” has come down, to be sure. My question is, from the standpoint of the financial markets, how much is this being exacerbated in terms of the volatility? I will try to point out that in my general presentation. It certainly is the case in the oil market. There’s enormously more volatility than there used to be due to the nature of the instruments.

MR. POTTER. I think some of the day-to-day fluctuations—we’ve seen this in copper recently—can be related to people trading in new ways. There are reports of Chinese hedge funds producing some of these changes. I’d say that regarding this overall pattern of a decline, it’s hard to separate out demand-type factors from some of the build that people have done to have an increased supply there. If I’d shown iron ore, we understand the investment there is really what’s produced the reduction in the price of iron ore. Market participants, though, as the price of ore kept on going down, started to doubt a little bit whether it was completely a supply factor, because they look at prices. They tended to be less reassured as they saw, since the meeting, these red and light-blue lines coming down, because that looks a little bit more like 2008, which is why we put it that way in the briefing.

MR. FISHER. Thank you, Simon.

CHAIR YELLEN. Are there other questions or comments? President Evans.

MR. EVANS. On the ECB action, which seemed pretty impressive to me, you mentioned that 2- to 30-year securities are eligible. Have they discussed the plan on how much duration to take out of the market?

MR. POTTER. They will buy across the curve, so that’s similar to what the Bank of Japan and the Bank of England do. They look at what’s out there and try to buy in proportion across the maturity structure. When we’ve run some of our large-scale asset purchase programs, we’ve bought not across the curve but with a duration target in mind. What was surprising to

market participants is that they were prepared to buy out to 30 years. One of the reasons they had to do that is that the quantity they're buying is quite substantial. There are restrictions on the issuer and per-issue amount. This allows them, in the calculations they've done, to get to the rather large number that is between €800 billion and €900 billion for the sovereign debt purchases.

MR. EVANS. Is it likely that they might vary that duration target, depending on how they feel about how things are progressing?

MR. POTTER. They are going, potentially, to encounter a lot of market-functioning issues. They are buying at a reasonably fast rate compared with net and gross issuance. The turnover in many of these bond markets is quite low. They won't start until March, so the staff there is working quite hard on trying to figure out how to do this. They're also going to decentralize, and most of these purchases will be executed by the national central banks. So they're going to have to coordinate across the 19 of those. Some of those national central banks will face the issuer limit because they're in programs, and the balance sheet already contains a lot of their sovereign debt.

MR. EVANS. Thank you.

CHAIR YELLEN. Are there other comments or questions for Simon? [No response] Should we turn to Lorie, who's going to take us through the next part of this presentation and a discussion of testing?

MS. LOGAN. Thank you, Madam Chair. I'll begin on exhibit 3 with a review of Desk operations and end with a proposal for additional testing of the Committee's policy normalization tools.

The Desk's MBS reinvestment operations continue to proceed smoothly. Notably, the size of those purchases is projected to increase meaningfully, as shown in the top-left panel. We now project that MBS reinvestments in 2015 will total almost $400 billion, approximately 30 percent higher than projected ahead of the December FOMC meeting. The projected increase is primarily due to the substantial

decline in longer-term Treasury yields, a decline that has put downward pressure on mortgage rates and boosted expected refinancing activity.

To enhance operational readiness should the Committee decide in the future to sell any of the SOMA MBS holdings, the Desk executed five small-value MBS sales operations totaling about $440 million over the intermeeting period. The sales were executed successfully and helped highlight a few technical and procedural improvements to our operating framework, which we'll begin implementing in the near term.

As we discussed at the October meeting, the Desk continues work on enhancing the calculation of the effective federal funds rate and publishing a new overnight bank funding rate, as detailed in the top-right panel. We intend to announce the planned changes in a Desk statement on February 2 and will circulate a draft of the announcement for comment ahead of the release.

The statement will describe the change in the data source for the effective rate, from brokered to Federal Reserve 2420 data, as a technical enhancement to the calculation process made in the context of recent international efforts to improve reference rates.

The statement will characterize the new overnight bank funding rate, which will include both Eurodollar and federal funds transactions of U.S.-based banking offices, as a broader measure of banks' marginal borrowing costs that will be published for purposes of transparency.

We're planning to implement these changes within a year, but, in the statement, we'll leave some flexibility in the timing in case there are substantive comments to the *Federal Register* notice describing the data revisions.

Over the intermeeting period, the Desk completed the test of the term RRP operations that covered year-end. The $600 billion combined capacity of the term and overnight RRPs appears to have been effective at supporting money market rates by providing greater certainty to investors about the availability of investments spanning year-end.

As shown in the middle-left panel, the first two operations were oversubscribed, with the rates determined by the auction process, while the final two operations were undersubscribed and awarded at the maximum bid rate of 10 basis points. Government money market funds were the main participants in the early term RRP operations, reportedly because they have fewer investment alternatives than prime funds and wanted to secure investments over year-end early.

As shown in the middle-right panel, there was a substantial amount of substitution between term RRP—shown in the blue bars—and overnight RRP—shown in the red bars—during the first two term operations. As a result, overnight RRP take-up declined, reaching just $35 billion after the second term RRP operation.

As shown in the dark-blue bars in the bottom-left panel, overnight RRP take-up over year-end increased to $171 billion but was well below the authorized cap, and thus all funds were awarded at the maximum rate of 5 basis points. Total participation in the term and overnight operations was around $400 billion, similar to the amount of bids received at the overnight operation on the September quarter-end but far less than the $600 billion in available capacity authorized by the Committee. Consistent with recent quarter-end dates, prime money funds accounted for most of the overnight RRP take-up on the year-end date.

All of the term RRPs matured on January 5, which had led some market participants to express concern about operational risk associated with having a large portion of their portfolio mature on a single day. However, the unwind of the term RRPs was orderly. Overnight RRP take-up did increase notably on January 5, absorbing some of the maturing term investments, a development you can also see in that bottom-left panel.

As with previous quarter-ends, the increase in RRP take-up reflected the decline in private-sector money market activity primarily associated with foreign banking organizations' desire to shrink their balance sheets on financial statement dates. As shown in the bottom-right panel, the decline in money market volumes over year-end was broadly in line with previous year- and quarter-ends.

Conversations with market participants suggest that the combination of term and overnight RRP operations was effective in supporting money market rates leading into and at year-end. As shown in the top-left panel of your final exhibit, although some money market rates declined on year-end, they generally stayed at or above the overnight RRP rate both prior to and on year-end. Recall that, in contrast, some money market rates fell below the overnight RRP rate leading into and over the September quarter-end.

As also shown in the top-left panel, with the exception of a brief decline on year-end, the effective federal funds rate has remained between 12 and 13 basis points in recent weeks, even as the overnight RRP rate—the red line in the chart—was lowered back to 5 basis points in mid-December. Market participants have been somewhat surprised by this, as most anticipated that the effective rate would return to the level prevailing prior to the increases in the overnight RRP rate.

The top-right panel provides more detail regarding the recent elevated levels of the federal funds rate by examining the distribution of rates on federal funds trades. In the weeks prior to the changes in the overnight RRP rate, the majority of federal funds trading occurred around 7 to 8 basis points, as shown by the dark-blue line. Following the increase in the overnight RRP rate to 10 basis points, the distribution shifted higher—shown by the light-blue line. Since the overnight RRP rate returned to its pretest level of 5 basis points, the distribution has remained near the levels observed when the overnight RRP rate was 10 basis points. The distribution of Eurodollar trading, which includes a much wider set of cash lenders than in federal funds, followed a similar pattern, as shown in the middle-left panel.

Federal funds and Eurodollars have remained higher even as secured rates have declined. The middle-right panel shows the same distributions as in the prior two panels, but for triparty repo rates. These rates also shifted higher with the increase in the overnight RRP rate but have generally moved back since the overnight RRP rate was decreased back to 5 basis points.

It's not entirely clear why unsecured rates did not decline after the overnight RRP rate test ended. Some market participants have told us that cash lenders learned during the ON RRP test that many foreign banking organizations engaged in IOER arbitrage were willing to pay higher rates for funding, even though this meant accepting a smaller profit, and that this information has had a lasting effect on competitive dynamics in unsecured markets. Notably, the uptick in recent months in unsecured rates does not seem to reflect a rise in perceived credit risk, as the movement in rates appears broad based across firms.

Finally, I'll turn to staff recommendations for further testing of TDFs and RRPs. These recommendations were described in two memos you received prior to this meeting.

Beginning with TDFs, as outlined in the bottom-left panel, the staff proposes conducting a series of three test operations, beginning in February and maturing by mid-March. The operations would incorporate two changes relative to the testing thus far. First, they would introduce same-day settlement, which may encourage participation and allow the effects of the tool to be realized more quickly. Second, the proposed operations would have overlapping maturities so that the quantity of outstanding TDFs would gradually increase. The staff recommends limiting the individual award per operation to $20 billion and offering a spread of 3 basis points over the IOER rate.

With respect to further testing of term RRPs, the Committee may wish to conduct operations at the March quarter-end in order to test refinements to the term RRP operational framework. If the Committee thought it appropriate to do so, the Desk proposes testing that incorporates four operational refinements, which are based on lessons learned from the tests over year-end and outlined in your bottom-right panel.

First, we recommend that the term RRP offered amount be reduced to $200 billion to improve our understanding of the effect of decreasing the available capacity. This is also consistent with the Committee's interest in limiting its footprint in markets.

Second, we recommend that the term RRPs mature across multiple days in early April to avoid operational risks associated with all of the operations maturing on the same day.

Third, we propose modest changes to the frequency and tenor of term RRP operations that would result in fewer operations and shorter maturities.

Finally, rather than stating a specific maximum bid rate in our communications, the bid rate would be expressed as a spread above the overnight RRP rate on the day of the operation. This would be consistent with the possibility of a change in the target for the federal funds rate following the announcement of the term RRP test offerings but before the actual operations.

If the Committee would like to proceed with the proposed term RRP test, the Desk could release a statement following this meeting, with a more detailed operational schedule announced through a second Desk statement in early March. A draft resolution authorizing this test is provided in a separate handout titled "Term Reverse Repurchase Operations Resolution."[3]

Finally, the staff outlined a few additional ways of testing RRPs in the memo circulated to the Committee in advance of the meeting. These potential additional tests are also described in the bottom-right panel. If your discussion at this meeting regarding options during normalization suggests a need for additional testing, the staff could come back with detailed proposals along these lines.

For example, depending on the preferred approach for the initial stage of normalization, the Committee may be interested in testing term RRP operations that don't span quarter-ends. The Committee could direct the Desk on a one-time basis to offer a few consecutive term RRPs, with weekly maturities and in modest sizes, to learn more about the extent to which term RRPs could support overnight RRPs in controlling short-term market rates away from quarter-end.

The Committee might also be interested in further testing the effect that changes in the overnight RRP rate have on short-term market rates, volumes, and overnight RRP take-up, which could provide additional insight into the desired setting of the IOER–overnight RRP rate spread during normalization. Thank you, and that concludes our prepared remarks.

CHAIR YELLEN. Thank you. Are there questions? President Lacker.

MR. LACKER. Yes. I'm going to make a procedural suggestion, Madam Chair. This has to do with RRP testing. According to the January Survey of Primary Dealers, they already believe we will offer a term facility regularly at quarter-end. This is buried in the back of the primary dealer survey. This has to do with this tension we've faced throughout the time we've been testing. We've wanted to learn more. It's a genuinely positive benefit of testing. But, at the same time, we've been anxious about the extent to which testing encourages broad

[3] The materials used by Ms. Logan are appended to this transcript (appendix 3).

expectation of a relatively permanent or overly large facility that's going to persist for some time. And it looks as though, again, our testing over the year-end of a term RRP facility has led expectations to run a bit ahead of where the Committee is on the likelihood of using it. We haven't even actually decided this yet. I note that our next agenda item, agenda item 9, is where we're going to discuss our liftoff options. The staff memo presented us with an option 1 and an option 2, and option 1 does without term RRPs. It's an option I favor, and I think we can do fine without that, with a larger cap and a wide spread to 25 basis points, as I'll argue later.

But our decision about whether we test again a term facility at quarter-end might be usefully informed about whether we think we're likely to use it on an ongoing basis when we raise rates. Now, I understand that there's the standard boilerplate whenever we announce these things, and that we can test until the cows come home and it doesn't mean anything about how we're going to do things when we actually liftoff. But, in point of fact, we see that what we do leads markets to expect us to use the things we test and roll out. So, if the majority of the Committee coalesces around option 1 and views us as likely to be able to lift off quite smoothly without the use of term RRPs, it might be useful to forgo testing term RRPs. I'd like to suggest, Madam Chair, that we defer consideration of this resolution on testing term RRPs until we've had this discussion and go-round on liftoff tools and we have a better sense of where the Committee wants to head.

MR. POTTER. Can I just give you some background?

MR. LACKER. Ask the Chair. It's up to the Chair.

CHAIR YELLEN. Please, Simon.

MR. POTTER. One of the things that we're trying to deal with is to avoid indicating anything in our testing about whether a meeting is "live" or not. Consequently, one of the things

we're trying to do in option 1 is to offer the possibility of using the term over a quarter-end. We thought that this particular resolution was the minimal testing that we could come out of this meeting with. I agree with you that it would be useful to find out whether that's correct in the go-round coming up. But it's not as if the testing that we did was changing people's expectations regarding our footprint or whether the overnight RRP will be permanent. The buy-side respondents actually reduced the amount of overnight RRP that they thought we would be using, and we have not heard anyone suggest that this will be permanent.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. I'm pretty sympathetic to what you're saying, President Lacker, in the sense that, if the Committee decides determinatively that it's not going to use something, then it doesn't make sense to keep testing it, because that leads to the wrong inference by the markets. But, at the same time, it's not unreasonable for the markets to see how well the tests do and, from how well the tests do, make inferences about how likely the Committee is to actually adopt that facility. It seems to me that one reason why the markets might think term RRPs were more likely was that the tests seemed to show that they were helpful in putting a floor under money market rates. I don't believe it's reasonable to think that we could force the markets not to draw those kinds of inferences from whether the tests go well or the tests go not so well. They're going to respond to how they see their experience with the test.

MR. LACKER. Madam Chair, I'm happy to debate testing, but I think we should just wait a few minutes and do it after we discuss the liftoff tools. The time to have this discussion is after we have a sense of where we're headed more broadly.

CHAIR YELLEN. Personally, I think it's fine if we defer the vote on the testing of the term RRPs until we're done with the discussion of liftoff tools. Do I see any objections to that? Okay. President Rosengren.

MR. ROSENGREN. Governor Tarullo looks as though he's about to do a two-hander.

MR. TARULLO. Yes. I wanted to ask whether we can still ask questions now about the testing to inform the later discussion.

CHAIR YELLEN. Of course. Yes, please.

MR. TARULLO. I just wanted to make sure.

CHAIR YELLEN. Yes—absolutely. Do you have a question?

MR. TARULLO. I do, but Eric's first.

CHAIR YELLEN. Of course.

MR. ROSENGREN. My question follows on with that line of questioning of President Lacker's. Based on our experience over year-end, if you were to tally the financial cost of using term reverse repos instead of overnight, do we have a rough approximation of how much we spent by choosing to do it with term rather than overnight? Just approximately. The second part to that is that there may be an inference that there's a difference from a financial stability standpoint between term and overnight. So, based on your experience with year-end, could you give me a sense of how you see the financial stability differences between using overnight reverses and using term reverses?

MR. POTTER. I think it's easier if I answer the first question now. The second might be more appropriate in the discussion of liftoff tools.

MR. ROSENGREN. Okay. That's fine.

MR. POTTER. On the first one, the counterfactual exercise you'd have to do is the following: Suppose we'd increased over the year-end the cap on the overnight RRP to $600 billion. That would be the same amount of collateral available. Then the $225 billion that was in term, instead of going out at probably an average rate of 9 basis points, assuming we didn't hit the cap, would have gone out at 5 basis points. So that's 4 basis points times $225 billion. I don't know if Josh can work that out. I don't think it's that much of a difference in terms of the income of the Federal Reserve.

In terms of how it worked in markets, there's some evidence that it has some social value due to the confidence it gives people that it will allow for smoother market functioning and less disruption. But, overall, if the two tools achieve the same rate control, that's probably what we should look at primarily. And if they do, given that and market functioning, the one that's slightly cheaper to use is probably preferred.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. Simon, on that point, how much learning do you think there was by markets as they saw how the different term operations are perceived? Because one advantage of the term facility, in principle, is that you have these operations, and the market can see how the pricing occurs and what the demand is, whereas if you just have the overnight operation, at the end of the year, you know nothing until the operation actually materializes. I'd be curious about whether you think there was learning and whether that was helpful.

MS. LOGAN. We heard from market participants that some learning took place, and they realized—as the operation, particularly the third one, wasn't oversubscribed—that the year-end pressures were going to be fairly smooth. But if you pressed market participants to indicate whether they were fully confident that all of the demand would have been met on the year-end

date with a larger overnight RRP cap, I'm not sure they would have preferred the term over the overnight. So when there's uncertainty about whether the cap is high enough to accommodate that demand on overnight, that's what you would be weighing against increased knowledge by having the term earlier.

MR. POTTER. But I think the money funds do prefer higher rates.

MR. ROSENGREN. Just one follow-up on that, if I may. If we had no cap on year-end for overnight, would that have served the same purpose?

MS. LOGAN. Yes.

MR. FISHER. Madam Chair.

CHAIR YELLEN. President Fisher.

MR. FISHER. Just to clarify, are they fairly close substitutes or not? That's my question.

MR. POTTER. Fantastic question. [Laughter]

MR. FISHER. And the answer is?

MR. LACKER. Yes—I think that was a "yes."

MS. LOGAN. I think we're going to talk to a greater extent about the degree of substitution. From an actual operations perspective in this particular briefing, there is more complexity in operating the term as opposed to just having an overnight that can be used. How you want to weigh those against certain scenarios in which the financial stability implications may be different is, I believe, a topic Jim is going to go into.

VICE CHAIRMAN DUDLEY. But you were asking from the standpoint of the investor, weren't you, Richard?

MS. LOGAN. From the investor's standpoint, they like the flexibility of the overnight products because then their cash flows can be variable, and they have the opportunity to put it in daily and make daily adjustments. When we were designing this, the overnight RRP was as late in the day as possible so that they can even use every hour within the day to make a decision about whether they're going to invest with the Federal Reserve.

MR. POTTER. I think quarter-end is a little bit different in that they can predict that the balance sheet will be going down. That's available to them. So the substitution between overnight and term, then, is one set of cases. What might be interesting is to learn, away from the quarter-end, is whether the substitution looks any different.

MR. LACKER. Madam Chair?

CHAIR YELLEN. Go ahead.

MR. LACKER. I want to follow up on President Rosengren's question, the crux of which was that, with a sufficiently large cap, they have virtually identical effects and an identical effect on the counterparties, and that they view them as perfect substitutes. I take it that the effect on market rates would be about the same as well.

MS. LOGAN. I don't think they're viewed as perfect substitutes. As I said, market particpants like just having the overnight products.

MR. LACKER. Yes. Sure, they'd love a term instrument from us. But, aside from that, the effect on market rates is likely to be the same either way—the term versus a large cap?

MS. LOGAN. You have the potential, if you offered too much term, to, in fact, increase term rates unexpectedly. Therefore, the market rate implications between the two scenarios may not be exactly the same. For the overnight rate on year-end, I think they would end up being the same.

MR. LACKER. If I could follow up, there was an alarming 6 basis point drop in the funds rate. I'm being sarcastic—I'm sorry. There was a huge drop in the funds rate on year-end. You don't view that as compromising our monetary policy objectives, do you? We'll pretty much get where we're going to go anyway, right?

MS. LOGAN. I thought the objective was for that rate to be at or above the overnight RRP, and that we were running a floor. I thought that was the objective of the testing.

MR. LACKER. No, our objectives are in the consensus statement we adopted earlier today.

MR. POTTER. I think that, in the Policy Normalization Principles and Plans, which you voted into effect in September, you did express the wish that this tool be used to support the federal funds rate trading in that range.

MR. LACKER. But I'm thinking that, before the crisis, we had quarter-end and year-end rate explosions and implosions all the time. And I don't recall that ever being brought to the Committee as a matter of concern or something that required a new facility.

MS. LOGAN. What we were trying to test, if you look at panel 19, was whether there was a difference in the dark-blue line in the days leading into quarter-end. In the old days, as you suggest, we might have had volatility on quarter-end, but you may be uncomfortable—and I think that's very interesting—about the extent to which that had influence on other days beyond that one day. In this case, we didn't see that dynamic at the year-end. Now, it could have just been because we surprised market participants in September. So, again, we don't know that for sure. But we didn't see that leakage going into quarter-end, and I agree that on one day, if it's just one day, that's probably not so much of a concern.

MR. LACKER. Yes. A broader point is that—I don't want to belabor this, but it's obvious—in the old regime, it was predictable. The rates would crash or spike or whatever, and what was relevant to the things in the consensus statement, things like two-year rates and one-year rates, would smooth through that. So year-end never really had any economic consequence that I remember.

MS. LOGAN. I agree about that day, and we saw that other jurisdictions—the United Kingdom and the euro area—had volatility on their year-end date. I think what you may be concerned about are those days leading into the quarter-end—that it is more than just one day.

MR. LACKER. Right. And you've provided the information that an overnight with a sufficiently large cap would be adequate to provide ample comfort to market participants to smooth market function enough.

MR. POTTER. As long as it's available for some time before the year-end as well.

VICE CHAIRMAN DUDLEY. Of course, the related issue, President Lacker, is that if we actually do lift off in June or September and quarter-end is coming up right behind that liftoff, having rates move up—and do so pretty consistently—is probably more important than at other times. I certainly accept your point that at past year-ends we didn't care. But at this point, our credibility in terms of actually making the liftoff clearly work is a little higher than normal. So we would probably care more about quarter-end pressure and year-end pressure now than we would in past episodes.

CHAIR YELLEN. Agreed.

VICE CHAIRMAN DUDLEY. I take your point, but I think there's something a little special about these circumstances.

MS. LOGAN. Particularly for the days before the quarter-end, because between, for example, the June meeting and the quarter-end, if it leaked into the days before, you wouldn't be able to tell the difference between the liftoff pull and the actual quarter-end effect. So I think that window is particularly of interest.

MR. LACKER. Can I follow up on this? Yes, it's true—quarter-end is about one week after the June meeting, and there might be some articles in the paper the next day if we have a little crash in rates. But quarter-end effects are pretty well known in financial markets. Some reporter is bound to come across somebody saying "usual quarter-end pressure." A month later, is it going to be a problem if rates behave the normal way after that? I don't see it as a really serious reputational risk for us.

VICE CHAIRMAN DUDLEY. I guess it's probably not a very serious reputational risk, but if you have a good tool to prevent that reputational risk from manifesting itself, why wouldn't you want to use it?

MR. POTTER. President Lacker, as Lorie said, no one has done this before. Suppose we are lifting rates. There's going to be noise around it, and it's going to be very confusing for people if we don't actually lift rates.

CHAIR YELLEN. Exactly.

MR. POTTER. We could try to say it's quarter-end.

MR. LACKER. Wait. So you're talking about one day a week after we raise rates.

MR. POTTER. No. It's the pressure of quarter-end leading into that day. That can put downward pressure on rates. That's what we saw in September. There's some controversy as to the source of that.

MR. LACKER. Was it 3 basis points?

MR. POTTER. But remember the zero. There's a zero line in here. Zero is getting a lot farther away when we raise rates, and zero is a big push-off as well. We really don't want—I don't want and Lorie doesn't want, in light of the directive you've given us—to have a lot of complications in those first two weeks in terms of raising rates.

CHAIR YELLEN. Agreed. If, later on, we're into normalization, does it matter if there's a little bit of pressure on year-end? Probably not. But after six years of being at zero and saying we want to raise rates, it seems to me we ought to be successful in doing it and do what it takes to make that happen.

MR. LACKER. Do you think the year-end pressure could be as much as 25 basis points? Could this pressure into quarter-end push it down 25 basis points so that the day after we raise rates, it doesn't go up?

MR. POTTER. We have seen large moves. For Eurodollars at the end of the third quarter, the effective rate printed negative. We've seen big moves in the United Kingdom, and we don't really know what it means to be far away from zero. It's something that might come up in Jim's discussion. Recall that, for a lot of lenders, they can just leave it in cash. They might get charged, but it's not a big opportunity cost. When we're raising rates, the opportunity cost of not being invested goes up.

CHAIR YELLEN. Governor Brainard.

MS. BRAINARD. I would say, President Lacker, that you're making important analogies to previous periods that were completely different from the circumstances that we're going to be facing. We are in uncharted territories, and market participants are going to be watching this with a different set of eyes because of the massive amount of excess reserves in the system and because we're lifting off from the zero lower bound, where we've been for many

years now. I just don't think we have historical examples of that in the United States. Right now, we are getting support from the zero lower bound, but you'll be moving that lower bound up. The behavior we saw at quarter-end in September should lead us to be very concerned that, right after an announcement by this Committee that we're lifting off, we could actually see rates drifting down for several days in a row. To me, that would be a very strong concern, particularly as we have the tools that we're quite confident could prevent it. The following question would arise: Why wouldn't you use those tools?

CHAIR YELLEN. Governor Powell.

MR. POWELL. I would strongly agree with Governor Brainard. We're going to be in a world of superabundant reserves for many years. It's very important that we establish good control over rates at the beginning. If, later on, things get a little sloppy, that's one thing, but that would really not be the way to start this process, in my view. Thank you.

CHAIR YELLEN. Governor Tarullo, did you have a quick question?

MR. TARULLO. My question was actually Eric's second question, which Simon suggested was best deferred to the discussion of liftoff options, a topic I think President Lacker has already taken us into. [Laughter]

MR. LACKER. I was dragged into it.

MR. TARULLO. But I have a feeling that Jim will address that question in the presentation, so I will defer.

CHAIR YELLEN. Are there any other questions? President Plosser.

MR. PLOSSER. I have two really quick observations. One is that we're worried about lifting off in June or September, very close to quarter-end. We can solve that problem by lifting off in April or July. [Laughter] Get rid of it. Don't lift off near the year-end. I'm being a bit

facetious here, but my point is, if the only reason to change the way we approach the structure of the program has to do with quarter-end behavior, it seems the wrong way to design the program. For example, if we choose to lift off in June and we choose to do things in a particular way to avoid the quarter-end problem that we're talking about, what will then be the expectations in the market about subsequent quarter-ends? Once we start doing that, I'm worried we'll find ourselves repeating this, and we actually will have adopted a practice that we didn't have before, which is smoothing quarter-end. So I think it's tricky on both sides. Once you venture into that fray and start that practice, we may find it that much harder then to pull back on this program that we've said we want to pull back on.

CHAIR YELLEN. President Fisher.

MR. FISHER. This is a one-off, Madam Chair, but I want to come back to the previous meeting we had and the excellent memo that Simon wrote—on your own or with the Desk—and that I praised. I simply want to ask the question: Have we had any change in our expectation as to the ultimate size of the balance sheet and then the speed with which we expect to reduce it?

MR. POTTER. The balance sheet is $4.27 trillion at par. While we are investing, it'll stay around that level. On the path of mortgage-backed securities, as Lorie showed you, it looks as though prepays will be quite high for the next few months. So that's going to generate some lower coupons in there, which means that, if the rates eventually firm as we lift off, you might see a very small effect on how quickly the MBS run off. But that was part of the analysis in that memo: A lot of getting the balance sheet back to a more normal size depends on the MBS runoff, and there are two factors there. What does the stock of MBS that we're holding at the moment we stop reinvestment look like? And what are rates after that? So we're going to get slightly more lower-coupon MBS from this prepayment increase.

MR. FISHER. I do want to urge the Committee again, Madam Chair, to please read that memo, because I thought it was one of the best ones, as I mentioned then, that I've read in 10 years at this Committee. Thank you.

CHAIR YELLEN. Okay. Then we do need a vote to ratify domestic open market operations.

MR. FISCHER. So moved.

CHAIR YELLEN. Thanks. Without objection. And we've agreed that we will postpone a vote on testing until after our next discussion.

Okay. We're next going to turn to liftoff tools and options, and, before turning it over to Jim for the staff presentation, I want to make a couple of comments myself. First, I'll say again that, personally, I consider it absolutely critical that, when we announce liftoff, the federal funds rate move into our increased target range in a smooth, efficient, and prompt manner. Personally, I think we need a very high degree of confidence that our normalization tools, in whatever configuration we settle on, will provide sufficient control over interest rates right out of the gate. To me, this is the highest priority.

Second, our policy tools vary in terms of their benefits, costs, and risks. So we clearly need to strike the right balance in their use. While we may differ to some degree in weighing these various factors, I believe we'll be best served by an operational plan that's relatively simple to implement and communicate. For liftoff to go smoothly, it seems essential that market participants will need to have a reasonable idea of what types of investment opportunities will be available to them. Of course, the plan needs to be feasible for the Desk to execute with manageable operational risk.

Third, as noted in the staff memo, the particular choices we make about our tools at the time of liftoff need not constrain us subsequently. I am quite amenable to temporary alterations in the parameters of our tools, such as the cap on the overnight RRP facility, with the expectation that we will dial back the potential size of the facilities over time as we learn more about what's needed to put a firm floor under rates once we move away from the zero lower bound. For example, we could substitute term RRPs outside quarter-ends for reliance on the overnight RRP facility.

But with those preliminary comments of my own, I look forward to hearing your views, and I'm next going to turn the floor over to Jim for a presentation.

MR. CLOUSE.[4] Thank you very much, Madam Chair. I'll be referring to the handout labeled "Material for Discussion of Liftoff Tools and Possible Liftoff Options."

As noted in exhibit 1, in its Policy Normalization Principles and Plans, the Committee provided a broad outline of its high-level approach to policy normalization. However, the Committee has not yet described exactly how it plans to use its various tools to implement these general principles and plans. To facilitate your discussion of these issues, the staff prepared a memo that highlights some key issues that policymakers may wish to consider in this regard. An underlying theme of the memo is that policymakers may face some tradeoffs in developing an operational strategy for liftoff that seeks to maximize the odds that liftoff will proceed smoothly from the start while, at the same time, minimizing the risks that could be associated with heavy reliance on particular tools.

To explore those issues further, the memo outlined two illustrative options that differ primarily in their relative reliance on overnight and term RRP operations. As noted in the first box in exhibit 2, the recent testing of term RRPs around the year-end provided the backdrop for structuring the options in this way. The year-end tests suggested that there was an important degree of substitutability between overnight RRP and term RRP, at least at the year-end. If that substitution relationship holds at other times as well, it may be possible to use term RRP operations to help manage the level of the take-up in overnight RRP operations. In addition, term RRP operations would be fixed in size, they would be offered only on specific dates, and the rate would always be determined at auction. As a result, the financial stability risks associated with term RRP operations may be viewed as lower than those associated with daily overnight reverse repo operations. On the other hand, term RRP

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

operations are more operationally complex than overnight RRP operations, and heavy reliance on term RRP could result in distortions in term financing markets. In addition, term RRP operations with maturities that extend over FOMC meeting dates could present some potential challenges in avoiding perceptions of signaling policy actions in advance.

With these observations in mind, as shown in the middle box, under the first of the two illustrative options, the FOMC would rely principally on overnight reverse RP operations at the time of liftoff to establish a floor for overnight rates. For this tool to provide effective support for short-term interest rates, market participants would require sufficient assurance that the aggregate cap on overnight reverse repos would bind only rarely. To provide this assurance while accounting for the possibility of significant shifts in investor preferences, the FOMC, in this option, would indicate its intention to temporarily increase the cap on overnight reverse repo operations to a level of, say, $600 billion. (Again, the particular numbers here are purely hypothetical at this stage.) In addition, the FOMC would note that it intends to conduct term RRP operations after liftoff, if necessary, to help control the federal funds rate and to help avoid scenarios in which the cap on overnight reverse repo operations binds regularly.

Policymakers might be attracted to option 1 if they judged that the financial stability and footprint risks associated with a sizable temporary increase in the overnight RRP cap are modest and were concerned that the costs of conducting sizable term reverse repo operations could be significant, or that the communications associated with undertaking term operations before liftoff could prove complicated. Policymakers might also be attracted to option 1 if they were confident that they could avoid a situation in which a sizable temporary increase in the overnight RRP cap became very long lived. For example, policymakers might judge that the Federal Reserve could communicate in advance its intention to reduce the overnight reverse repo cap if overnight reverse repo take-up did not increase much after liftoff and the additional capacity proved unnecessary. In addition, if overnight reverse repo take-up were quite elevated following liftoff, policymakers could indicate an intention to build up a sizable term reverse repo book or take other steps to return the size of overnight reverse repo operations and the overnight reverse repo cap to lower levels.

Under option 2, shown in the far-right box, the FOMC would rely more heavily on the use of term reverse repos as a supplementary tool and would indicate its intention to boost the cap temporarily on overnight reverse repo operations by a more modest amount from, say, $300 billion to $400 billion. In addition, it would note that it intends to conduct term reverse repo operations in advance of liftoff, to help ensure that the overnight reverse repo cap does not bind at liftoff and thereafter.

Option 2 might be attractive to policymakers who were concerned that a sizable increase in the overnight RRP cap, even if only temporary, could present financial stability and “footprint risks” and might also send a signal that the overnight reverse repo facility will remain quite large for an extended period. For policymakers who are confident that term reverse repo can be used to manage the size of the overnight

reverse repo program, the advance use of term reverse repo operations envisioned in option 2 might be viewed as an effective way to mitigate such risks.

It bears emphasizing that, while term reverse repo operations play an important role in both options 1 and 2, this potential role hinges importantly on an assumption that term reverse repo can substitute for overnight reverse repo to a significant degree. As Lorie noted earlier, it may be useful to conduct additional tests of term reverse repo away from quarter-ends to get a better handle on whether this assumption is correct.

As noted in exhibit 3, apart from options 1 and 2, the memo notes some additional steps that policymakers could consider that might help to enhance control over short-term rates at the time of liftoff. These involve marginal adjustments in the spread between the IOER rate and the overnight RRP rate, changes in the level of the IOER and overnight RRP rates relative to the target range for the federal funds rate, and the possible use of term deposits. All of these steps arguably could help put upward pressure on short-term rates, but they have not figured prominently in the Committee's discussions to date.

Whatever operational strategy the Committee chooses to adopt, the memo notes that policymakers may wish to communicate at least some aspects of that strategy in advance to provide greater clarity to market participants and to enhance confidence that the Federal Reserve is well prepared to conduct a smooth liftoff. For example, it might be useful to provide additional information about the likely calibrations of policy tools and the likely ways they would be used in combination. This information, for example, could be provided in the minutes of future meetings, the Chair's postmeeting press conference remarks, speeches, and testimonies.

Shifting gears a bit, exhibit 4 summarizes some key takeaways from a memo that focused on aspects of the payment of interest on excess reserves that could raise some issues at the time of liftoff. Under our current approach, interest payments on excess reserves are based on the 14-day average concept of excess reserve balances. In particular, there is a single interest rate—currently calculated as the arithmetic average interest rate on excess reserves over the maintenance period—that is assumed to apply over the entire reserve maintenance period in computing the payment of interest on excess reserve balances. As noted in the memo, this can create some complications during those reserve maintenance periods in which policymakers may change the interest rate on excess reserves in the middle of the period.

The memo offers a couple of possibilities for addressing this issue. In one option, the Federal Reserve could change the length of the reserve maintenance period from 14 days to 7 days. As long as the FOMC continued to announce its policy decisions on Wednesdays, changes in the IOER rate could then be aligned with the beginning of a new reserve maintenance period. This option is attractive in many respects, but it would also require thousands of depository institutions to change their internal systems to incorporate a 7-day maintenance period. Another option noted was to base the effective interest rate on excess reserves for the entire maintenance period on the

interest on excess reserves rate at the end of the reserve maintenance period. This would help ensure that an increase in the IOER rate in the middle of a maintenance period fully supports the FOMC's decision to raise the target range for the federal funds rate. However, it could also put upward pressure on the federal funds rate prior to the FOMC announcement if it was at least partly anticipated by market participants. A third option, not discussed in the memo, is to base interest payments more heavily on balances held each day and the interest rate on excess reserves in effect each day. This approach appears promising, and we are investigating the feasibility of that approach further.

The final exhibit repeats the questions for discussion during the go-round that were provided to you earlier. In addition, we've added a question at the end that seeks your views on the usefulness of additional testing of term reverse repo away from quarter-ends along the lines Lorie described earlier as a way to get a better handle on the degree of substitution between overnight and term reverse repo. Thanks, and we'll be happy to take your questions.

CHAIR YELLEN. Governor Tarullo.

MR. TARULLO. Now I will ask the question, and President Rosengren may want to piggyback on this as well. Jim, getting back to that question that President Rosengren posed earlier, based on what we've seen so far and the analysis you've been able to do, is there a nontrivial financial-stability benefit of using term RRP as opposed to ON RRP? I'll provide a little bit of context for that question. I guess I had implicitly assumed, without thinking too much about it, that there was some benefit, if only because there would be a limitation on the ability to rush for the exits from other investments if it was term, as opposed to overnight. But, further thinking about this matter led me to think that if the terms are short enough to be consistent with SEC rules, then maybe there's not much benefit after all. One way or another, as long as we're providing a lot of absorption capacity, concerns about whether we are creating a new model for money market funds or making it easier for them to do this are what they are. But maybe it doesn't make that much difference whether we use more overnight or term.

I guess the reason I think this is an important question is, if the answer is, "Yes, there's not that much difference," then we can talk about how to minimize financial-stability concerns

with respect to a doubling of ON RRP. But at least that's the only thing to be discussed, as opposed to whether we get a lot of benefit through a mix of the two. I'm sorry, Eric. Does that fairly capture your point?

MR. ROSENGREN. Yes. Why don't I do a follow-on after they address your question?

MR. TARULLO. Okay.

MR. CLOUSE. I'll offer my view, and Lorie and Simon may have others. I should preface my remarks by saying there's a little bit of murkiness regarding these issues of financial stability, so I should admit that up-front. As you well know, the financial-stability arguments regarding the overnight reverse repo suggested that there's an option value associated with it. In the case when financial markets are upset, investors can run to it because it's a standing facility—or, more precisely, a standing facility with a cap that binds only in rare circumstances. For term reverse repo, you might argue that it presents somewhat less of a financial-stability risk, because people can't go to it as readily. It would be offered only on particular dates, not every day. Moreover, we'd be fixing the size that we would be auctioning. In addition, there is an immediate price response. If a crisis happened to occur on the day on which we were auctioning term reverse repo, that would drive down the rate that we would get on the term reverse repo. So I certainly wouldn't argue that it's devoid of the financial-stability risks of the type we discussed with regard to overnight reverse repo, but I think you could argue that it's probably somewhat less.

There may also be another aspect to it. This has a little bit of the flavor of the types of arguments that Governor Stein made about a crowding-out effect. Insofar as you were auctioning term reverse repo on a regular basis and putting some upward pressure on term rates, you might induce some investors, like money funds, not to invest in things that they would flee

from in a crisis. That, at the margin, might also reduce financial-stability risks. It's very hard to quantify this.

MR. POTTER. I think that's a pretty good summary. The other, simple part is that the amount of headroom that might be available in the overnight RRP, which is what people have been concerned about, would probably run a little bit lower if we had the term out there because you still have the overnight RRP at the same time. And the concern most people expressed around this table is just a big rush, around noon sometime, into the overnight RRP. The idea would be to run with slightly lower headroom, on average, if we have the term than with just the ON RRP by itself.

MR. TARULLO. Although this is a slightly different perspective, thinking in terms of stress building as opposed to happening in an instantaneous fashion. If we're doing the term RRP, then, as in 2011, when the money market funds began to pull back, they get a couple of weeks to do it? That's what I was wondering.

MS. LOGAN. To me, the two situations depend entirely on how stable the overnight RRP take-up is. As an example, if it was completely stable and the headroom didn't change, then moving some of it to term doesn't really add any benefit. If the overnight RRP take-up is very variable and moves around a lot, then moving some of it to term can improve financial stability because that headroom can fluctuate quite a bit. So I think it depends on your assumption about the stability of the daily take-up.

MR. TARULLO. But one thing that seems clear from looking at the tables you attached to this January 22 memo is that it is virtually all about money market funds, right?

MS. LOGAN. Well, there's variability, particularly from the GSEs, which move around a lot because of their payment dates. But the money funds are fairly stable, except on quarter-end, when you see the prime funds come in and really move around.

MR. TARULLO. Right. But I'm looking at the darkest-colored portion of the bars, which were the "other." Those are pretty small.

MS. LOGAN. But it could change tremendously when we lift off zero, and the dynamics could be very different. We don't know how those dynamics will evolve.

MR. TARULLO. I'm not sure where that leaves me, but thank you.

CHAIR YELLEN. President Rosengren.

MR. ROSENGREN. To follow up, on your illustrative option 1 on page 2, the second bullet is assuming that the term reverse repo is the preferred way to snug up the rates. The other option would be that the interest on excess reserves could be raised at that point. The memo was looking at the spread prior to liftoff, but I'm thinking more in terms of the situation after liftoff. Rather than using the term, why couldn't we use IOER if we were finding that it was softer than we expected and make an adjustment at that point? The memos seem to have a preference for term over adjustments with the IOER. I just wanted to see if that was accurate or not, because I thought our initial high-level position was that we were going to rely primarily on IOER, and this seems to change that a little bit.

MR. CLOUSE. No. I'm sorry if we gave you that impression. We certainly didn't mean to suggest that. We framed these two options because the results are with respect to behavior around the year-end and because of the new potential for possibly some substitution between overnight and reverse repo. But you're absolutely right that you would have a number of possible options that you could take after liftoff to snug up rates: One might be raising the

IOER, another might be raising the overnight RRP rate, and still another might be raising them both.

One potential issue you might face that you all have discussed previously relates to the fact that right now, investors seem to anticipate that the IOER would be at the top of the federal funds rate range, and that the overnight RRP rate would be at the bottom of the range. Most participants seem to have agreed with this, and it's in the minutes. So if you'd be moving IOER after liftoff, you would be bumping it up relative to the federal funds target range. Some people might argue that there could then be some confusion around having multiple rates. You have a federal funds rate target range and an administered IOER rate that was at 55 basis points instead of 50 basis points, and so there could be a multiplicity of rates there that you might worry about. But it's certainly a possibility to do that.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. I think there's another issue, too. It's one thing having a system in place that you introduce ex ante, and it works. It's another thing having a system that you put in place, and then, ex post, you make adjustments to it.

MR. POTTER. I think President Rosengren was suggesting that we would stay there.

MR. ROSENGREN. Well—except our rules were focused on the federal funds rate, which wouldn't have been my preference, actually. But, given that focus, it seems as though it would be the IOER. Alternatively, you could have had a strategy in which you set the IOER and didn't make adjustments with the IOER, but that was not the consensus around the table. I'm a little puzzled by the discussion. We've said the primary objective is to hit a federal funds rate target in the range, and IOER is our primary tool. So I would have thought, with those two rules,

that I would have actually been moving the IOER for a technical adjustment after the fact, if it turned out that we were using reverses more than we expected.

MR. POTTER. Can I add two things? Because Jim is always saying this to me—that this is what we should be doing. Two of the issues are, if it's ex ante, that's fine. How would you feel if you just moved up the federal funds rate, and you moved up the federal funds rate so that there's still quite a big wedge, but you got it just inside the target range? So you've got this big gap there between the interest rate on excess reserves, which is generating income for the banks, and federal funds. That's one aspect. The other one is, we're not sure how effective it will be on other money market rates. The normalization principles do start out with that concern with moving up other money market rates. So there you get a little bit of insurance, on account of the RRPs, that you're moving up both unsecured and secured rates. This is a conversation we've had many times at this table—about how comfortable you are regarding large spreads between those unsecured and secured rates.

MR. ROSENGREN. But we chose to use the federal funds rate, instead of short-term rates generally, when we did this. So we did have that debate. Again, I would have preferred the general level of short-term rates, but that position lost around the table, and we chose the federal funds rate. The consequence of that action would seem to be that we take no more action even if nothing moves other than the federal funds rate—that was the agreement we made around this table. Now, we could revisit that. But as long as we have the same operating rules that we set out initially, it seems as though our target has been that we just have to get the federal funds rate in that range. If nothing else moves relative to it, that is fine—we've done what we said we were going to do. Alternatively, we could go back and say we want to move short-term rates and not

have the federal funds rate be the principal goal. But that isn't where we were when we actually agreed to the principles that we've set out to date.

CHAIR YELLEN. That's true. Governor Fischer.

MR. FISCHER. Thanks, Madam Chair. Jim, I'm trying to figure out something on the possibility of paying interest on a daily basis on whatever is held in the term facility. Add to that a statement Simon made somewhere, which is that the holders are very anxious to be able to break out of the term facility if they could get that. Now you've got a facility in which you've got people receiving the daily rate that we want to hold things more stable, that's paying, and that's got some of the funds. So if there are movements in the daily rate, you may find them breaking unless you have a large penalty associated with going between the two facilities.

MR. CLOUSE. Right. I think you're speaking of the Term Deposit Facility, with a potential for having a floating rate. This is actually an issue associated with our plain-vanilla excess reserve calculations, and we apologize for tormenting you with this very technical issue. We pay interest every maintenance period based on the excess reserves as we calculate them over the reserve maintenance period. We have a single rate that we apply against those excess reserves, and that has these funny issues arise when there is an anticipated change in the IOER in the middle of the maintenance period. We're stuck with that because, historically, interest on reserves had always been tied to reserve concepts—required reserves and excess reserves. So, to pull this off—to switch to a system in which we're paying more on daily balances—we actually have to kick off a rather extensive programming effort in the very near future to make this happen. That's one of the reasons why I just obliquely referred to a feasibility study.

The proposal that we're putting forward is only really going to work, probably, for two or three years. It works best when the interest rate on required and excess reserves are the same. If

the Committee were to get to a point at which you wanted to, again, make a distinction between the interest rate on required and the interest rate on excess, then there are a number of other tortuous complications that we would have to deal with. But I think it may be a useful thing to do for two or three years until we get to a bit better place. So we're looking at that hard.

MR. POTTER. Was the question whether, if you're in a TDF and the interest on excess reserve rates goes up, you would want to break it and get into a deposit with the Fed? Was that your question? I think it's going to float over the IOER rate, so there wouldn't be an incentive, right?

MR. CLOUSE. Well, there might be an incentive—that the breakage fee, of course, on the term deposit is quite rich.

MR. FISCHER. The point I wanted to make is that, if you give them the right to—let's say at no charge—get out of the term repo, then it's just a repo with an option. The bottom line was, there are thousands of programs in which you get paid daily interest, and what you describe is a major programming effort. I'm surprised that that's a major programming effort.

MR. CLOUSE. There are many surprising things about our reserve calculations. [Laughter] The issue is that we collect huge amounts of data from thousands of depository institutions. There are hundreds of thousands of lines of code in this program, and it's never as easy as you think it should be. But, having said all of that, we think we can accomplish it.

MR. FISCHER. The other thing is, you can't get rid of the anticipatory effects. In any case, if people start expecting rates to go up, you're going to get those things happening in whatever system you've got.

MR. CLOUSE. That's right, but I think this would help because, on each day under this scheme, a bank, if it wants to hold an extra dollar of reserves, wouldn't be considering the rate

that would be in effect at the end of the period or the average rate over the period. It would be considering the IOER rate that had been set for that day, and that seems like the right concept that you want to have when you're controlling the federal funds rate on a daily basis. So that's the direction in which the staff is leaning right now, but we have some work to do before we can pull that off.

CHAIR YELLEN. Governor Brainard.

MS. BRAINARD. I had a quick question of clarification on this. I think you mentioned in passing that, in 2008, you solved the reverse problem by just doing the minimum over the time period. Why did you choose to go to the end of the period as one of your options here, rather than just doing the maximum?

MR. CLOUSE. Well, in effect, it's the same thing. I thought the end of the maintenance period, actually, was a clever idea. Then you don't have to specify it as the maximum or the minimum—it's just the one at the end. But the idea there is that, during normalization, most of the rate changes would be increases, so the pressure you would see would be primarily in the first week of the maintenance period for any of these cases in which the FOMC meeting was in the middle of the period. But then, after the FOMC meeting happened, we'd have the full power of the IOER rate-change supporting the level of the federal funds rate. That was one of the things we discussed in the memo, and it is sort of the symmetric treatment of the way we handled things in 2008. But I think this third option actually may be a bit better.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. Jim, is the staff's preference now the third option?

MR. CLOUSE. That's where we're leaning at the moment. We have to do some more analysis.

VICE CHAIRMAN DUDLEY. When I read the memo, it sounded as though you were favoring the interest rate paid at the end of the reserve maintenance period. That has the problem that it's going to cause pressure on expectations that could create a lot of noise, especially as you're going into liftoff, and it seems as though that's not such an attractive option. But you haven't posed in the questions what kind of feedback you want from us on this?

MR. CLOUSE. At this stage, we would intend to do some more spade work ourselves and then report back to you, either in the form of a memo or perhaps at a future meeting. We knew there was going to be a heavy lift to do the reprogramming. We had thought about this for a while, but we've done some more pushing, and we think we could actually get it done by June if everything goes right.

VICE CHAIRMAN DUDLEY. Okay. My own personal preference is, I don't like the end of the reserve maintenance period, because I think it's going to just create noise. We're doing all of these things to try to prevent noise. So it seems to me as though this is another area in which you want to try to reduce the level of noise.

CHAIR YELLEN. This requires a big effort.

VICE CHAIRMAN DUDLEY. I know. So I encourage you. [Laughter]

CHAIR YELLEN. President Lacker.

MR. LACKER. Yes, I commend you for exploring this third option. When I read the memo, that was the logical way to do it, and I was wondering why it was absent. So I'm glad you guys have dug in and have found that a little more feasible.

I would just point out that, in the period from 2004 to 2006, when we were raising rates—and I know this was a different world—we had a series of meetings at which it was almost certain, just a lock in markets, that we were going to raise rates a quarter point at the next

meeting. Then we got upward pressure on the funds rate within the maintenance period a week ahead. Again, it wasn't viewed as highly problematic for our conduct of monetary policy.

MR. CLOUSE. That's in the spirit of our recommendations for the maximum or the end-of-period options.

MR. LACKER. Right. You'd get the same pressure ahead of time, but now it's just part of market expectations because of the ability to arbitrage within the maintenance period.

MR. CLOUSE. One of the things that started to give us pause, though, was the possibility that the Committee might choose to raise rates a bit more than 25 basis points—50 basis points or 75 basis points. Then, when you roll into that maintenance period, you could really see quite substantive pressures on the funds rate in advance of that meeting.

MR. LACKER. But you'd be seeing pressure all along the curve at any rate.

MR. POTTER. One difference is, we had a point target, and there was some variation in that point target. Right now, it looks as though we're going to have a range. That's what the normalization principles say.

MR. LACKER. Yes, I know. But this is about IOER, right?

MR. POTTER. I'm talking about the federal funds rate. The pressure could be reflected in the federal funds market.

MR. LACKER. Right.

MR. POTTER. If the federal funds rate goes above 25 basis points, the directive says that the Desk has to take actions once that point is reached to try to push the federal funds rate back.

MR. LACKER. Yes, but the same thing was true back then.

MR. POTTER. I agree, but that was a point target. Even though we're pretty good at hitting it each day, we're allowed some variation. The spectacle of going outside the target range is a little bit different.

MR. LACKER. You don't think we'd think the same way about it?

MR. POTTER. I don't know how you'd feel if it was trading at 35 basis points. Would you be okay if was trading at 35?

MR. LACKER. Well, yes—if it's for the same reasons and of the same magnitude as we got in 2005. It makes perfect sense.

MR. POTTER. And the Committee has told us that you're going to raise rates—that's why we're not doing it?

MR. LACKER. If it's the first half of the maintenance period, before an FOMC meeting at which we're widely expected to increase the IOER by 25 basis points, and the funds rate trades 5 or 10 basis points above range, personally, for me, I'll pledge to forgive you. [Laughter]

MR. POTTER. All right.

MR. LACKER. Just as I did in 2005.

VICE CHAIRMAN DUDLEY. President Lacker, it puts the Desk in a difficult position, because they don't yet know the outcome of the meeting. The funds rate is trading firm relative to the target, and the Desk is supposed to keep it in the range. They don't know what the meeting decision is going to be. Just because it's priced in to some degree doesn't mean that the Committee is actually going to do it.

MR. LACKER. We faced the same problem in 2005—it was fine.

MR. POTTER. We did. But we're saying it could be larger this time.

MR. FISHER. So then you define your tolerance levels. I'll come back to this, Madam Chair, in my comments.

CHAIR YELLEN. Okay. Any further comments? President Kocherlakota.

MR. KOCHERLAKOTA. Thanks, Madam Chair. This is an idea I have not thought through carefully, and I offer it with that caveat. As I listened to some of the comments that President Plosser made and as I heard you express your own desire, Madam Chair, to have, quite naturally, a great deal of confidence about interest rate control, especially at the time of liftoff, I bring up the following possibility: The timing of the decision by the Committee may not necessarily be the same as the timing of the first move in interest rates. For example, in June, there's a decision by the Committee that they want to raise interest rates. But, at the time that's announced, the statement reads "as of July 2"—I'm making this up—after quarter-end, basically. "As of July 2" is when the move in the federal funds rate will take place. This would pass you through the quarter-end. You could time it to deal with all of the maintenance-period stuff that Jim has talked through. So you could pick your day. As opposed to timing an interest rate increase on the Wednesday after the meeting, you instead announce in your statement, "Here's the day it's going to be coming," and you've chosen it so that you get around all of these problems.

VICE CHAIRMAN DUDLEY. The problem, I think, with doing that is, it raises all of these questions about, "Why are you doing it that way? Is there some problem that you have that you can't do it the normal way?" I agree you could do it that way, but it would raise a lot of questions.

CHAIR YELLEN. Absolutely.

MR. KOCHERLAKOTA. The answer to those questions is that we don't want to conflate the issues of quarter-end pressures with our interest rate increase. Anyway, if that's the only issue, I think that can be talked through. I was more concerned about technical issues that the staff would be much more in a position to address.

MR. POTTER. But there are many central banks that operate that way. The Swiss announced the change in their policy rates about six weeks in advance of actually executing them.

MR. KOCHERLAKOTA. Well, not all of their policy changes. [Laughter]

MR. POTTER. I was going to use that as an example of how sometimes that's not the best environment to be in. The Swiss had a very large effect on global financial markets. The Federal Reserve can have an effect on global financial markets much larger than that. Trying to explain this to international investors in a simple-to-communicate version of why we're doing that would be difficult, because it would suggest we might be a little bit scared that we can't actually raise rates before the quarter-end.

MR. KOCHERLAKOTA. No—that's fine.

CHAIR YELLEN. Other questions? [No response] Okay. My suggestion is that we take a lunch break.

MR. FISHER. Yes.

MR. WILLIAMS. A breakfast break for me.

MS. BRAINARD. We can all second that.

CHAIR YELLEN. And then we will start the go-round on liftoff tools.

[Lunch recess]

CHAIR YELLEN. We have a lot to do this afternoon. Right now we're going to have a full go-round on liftoff tools and possible liftoff options. And to start us off, President Evans.

MR. EVANS. Thank you, Madam Chair. I prefer option 1 in the memo on illustrative approaches. I agree with you, Madam Chair, that when the time comes to raise rates, it's important that we maintain as much monetary control as possible with regard to market rates. The test conducted so far suggests that the ON RRP facility is effective in providing a floor for market rates. The temporary increase in the aggregate cap would strengthen that floor and give market participants some headroom. I also support continued testing, as the Desk has proposed. I guess we still have that on the agenda to deal with. I'm not as concerned about the financial stability implications of such an action as I was in our earlier discussions.

I had some more comments, but in the interest of time, I'm going to try to keep this short. If needed, we can bring the term operations into play after liftoff, but the relative operational and interest cost complexity of the term tools make them better suited for the second line of defense. We should continue to test the term tools as part of an effective risk-management program, but at this time I don't see the need to deploy them before liftoff. That said, I'm open to option 2 if the consensus prefers that route. The alternatives that make small adjustments to the administered rates can also be used if needed, but the proposed changes by themselves might not be sufficient to pull market rates up. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. I think we should be confident that increasing the IOER is going to result in a sufficiently smooth rise in short-term market rates when we raise the target range for the funds rate. That's my reading of the wide evidence we've gotten from the Desk operations and everything we've done so far. I think we should stick with

our plan to use the overnight RRP program as insurance only against the possibility that there's more slack, perhaps, in the relationship between IOER and market rates than we've seen at any time over the past six years.

Using it as a backstop means a relatively wide spread to IOER, so I support the staff's proposed spread of 25 basis points. It's wider than anything we've tested so far and, apart from quarter-ends, take-up has not exceeded $300 billion. With a 25 basis point spread, I'd expect significantly smaller take-up. But in any event, I'd be comfortable with a large cap at a 25 basis point spread. So, $600 billion is the size suggested in option 1. I wouldn't be against $800 billion or $1 trillion, just to be sure. With such a large cap and a 25 basis point spread, I think we could be very confident that rates will be in that corridor. I think we should just make the cap temporarily as large as it needs to be for us to be comfortable that we're going to be in that corridor. I think that's the way to solve our problems.

We're going to have volatility. We could well have volatility on quarter-ends. We always have had volatility on quarter-ends, and there probably always will. The Desk has historically taken measures over quarter-end, back when we were in the old regime, to try to anticipate the shift in demand for reserves and to counteract that, but everyone recognized that that was a much more uncertain endeavor than off quarter-ends. So markets realized that volatility—sort of the forecast error of the funds rate—was going to be exceptionally large over quarter-ends and recognized that it didn't pose a fundamental problem for monetary policy effectiveness. And I think that's going to be the case now, even though quarter-end comes a week after one potential prominent liftoff date.

On the strictly macroeconomic side of thinking about liftoff, I agree with others who made the argument that the path for the policy rate we take over time is going to be more

important than a particular date at which start raising rates. For interest rate volatility, I think the behavior that interest rates display over the course of the month after liftoff is going to be much more consequential than what happens on the last day of June, if that's when we choose to lift off. So I don't think one day's movement a couple of days after our liftoff should concern you.

I think simplicity is a virtue, and, as I said, it is clear we can implement monetary policy without a term RRP program. I think a term program might be tricky to introduce before a liftoff meeting without tipping our hand or signaling. I think that's a delicate problem, but I suppose we could probably figure out a way to do that. I don't think the alternative of making the program available now on a continuous basis is attractive because it would further encourage markets to believe that our whole RRP machinery, overnight and term, is more of a permanent feature of the financial landscape than I think we're intending. And as I said earlier, we face this tension between expectations getting out of control and wanting to learn some things, and I think we've learned what we need to learn.

It's pretty clear that the pressure on rates going into quarter-end is related to the probability that the overnight facility caps out at quarter-end and rates get driven down. With a large enough cap, that concern should be minimal, and we're not likely to get any of the downward pressure leading into quarter-end that motivated the term RRP; the staff recognized this before we did the tests over the year-end. So in the arguments made—why not use the tool just in case, kind of a belt-and-suspenders approach—I think we see and have seen that our rolling out of facilities like this on a sustained basis builds a constituency. Building a constituency for a program makes it difficult or costly for us to contemplate pulling back, and I think we've seen that in the primary dealer survey data that I talked about.

So I would favor option 1, and I'd be opposed to any further testing of term RRPs now. I think we know enough about how they work. I think rolling them out, if it seems warranted, in the weeks after we raise rates is the way to keep that extra capability in reserve. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. Raising rates as announced at the time of liftoff is essential for maintaining our credibility. In particular, quickly moving the federal funds rate into the range we announce should be our primary operational goal at liftoff. To enforce the range we set, we need to guarantee a floor. If we are using the reverse repo facility to set the floor price, we need to be flexible on the quantity of reverse repos. Hence, setting the floor may require the forceful use of our tools at the time of liftoff. It is likely that the more vigorous use of the reverse repo facility will be temporary, so we should be able to quickly reduce it as we better understand the factors that influence the spread between the IOER and the reverse repo rates.

To avoid disruption to financial markets, we should announce our intention to use the reverse repo facility as a temporary measure to ensure a smooth liftoff. Assuming that we announce a target range of 25 to 50 basis points at liftoff, I would set the IOER at a level where we can expect to achieve at least the 25 basis point floor with our usual reverse repo cap. However, I would announce no reverse repo cap at first in order to allow the overnight reverse repo to enforce the floor, should our estimates prove wrong. We have a lot to learn about managing the federal funds rate using a method that we have not used before. We could then make a technical correction of the IOER, if needed, to maintain the federal funds rate within the 25 to 50 basis point range without needing to rely so heavily on overnight reverse repos.

Removing the reverse repo cap during the time of liftoff would convincingly convey our commitment to raise rates, possibly requiring less use of reverse repos.

Two financial-stability concerns about the reverse repo facility have been raised. The first is that use of the facility could alter the structure of the money markets. Announcing the temporary nature of the program should lower this risk. By keeping the window short when we lift off and making appropriate adjustments without delay, it should be clear through our actions that our thinking on permanence has not changed. The other financial stability concern is the possible flight to the facility during times of severe stress. However, if there is a significant negative shock that results in a substantial flight of funds to the reverse repo program, the appropriate response would be to postpone liftoff until the effects of the negative shock were better understood.

Allowing for a significant temporary increase in the overnight reverse repo facility would be advisable. I would go one step further and announce no path at the time of liftoff. In terms of part *b* of that question, if the Committee is willing to have no reverse repo cap at liftoff, term reverse repos would not be necessary. The lower the cap, the more we need to use term repos.

I would note that I do not see a financial-stability preference for term reverse repos over overnight reverse repos. Term reverse repos would also likely be transacted primarily with money market funds. They do expand our footprint, and they lock us into longer periods than may be advisable. They will also be more expensive than overnight reverse repos. The memos seem to imply that caps supplemented with term reverse repos will result in a lower risk of financial stability than a program with only overnight reverse repos. I'd like to understand this argument better. Finally, the strategy of using term reverse repos prior to liftoff as a way of

smoothing the withdrawal of reserves seems like an unusual strategy, because the higher rate announced on term reverse repos would, in effect, be the action of lifting off.

In terms of part *c* of the question, if the Committee is willing to proceed without a cap at the outset, then there is not much advantage to making other adjustments. In contrast, if we are going to cap the reverse repo at liftoff, we will need to make flexible use of term reverse repos. However, because I do not find the financial-stability concerns significantly reduced by lengthening the maturity of reverse repos, and because they are more costly, using term reverse repos to enable arbitrarily limiting the cap on overnight reverse repos seems suboptimal. I do not see much benefit in narrowing the IOER–reverse repo spread or using term deposits, at least until we have obtained a better sense of the effectiveness of our initial move to liftoff.

One final point. There has not been much discussion of how international flows would affect our liftoff. With bank reserves in many countries receiving a negative interest rate, announcing an increase in our overnight risk-free rates may make reverse repos very attractive to foreign capital. Better understanding that dynamic would be useful. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I am prepared to support the use, at liftoff, of an expanded reverse repo program to add some insurance. I expect later today to vote to authorize quarter-end reverse repo testing, indicating—and I'm generally supportive of continuing to investigate the potential of this tool for use during and after liftoff, and that would include staff development of proposals for design and implementation of continuing term repo operations.

When we first discussed the overnight reverse repo proposal at the July meeting, I had more confidence than some others in the power of the interest on excess reserves as a tool of

monetary control, much like President Lacker's sentiments. The consensus of the Committee has gravitated to the view that a smooth liftoff is paramount, and I accept that and I consider that to be the starting point for discussion of the questions presented for this round. All things considered, for planning purposes, I think smooth-liftoff considerations trump more speculative concerns about financial stability at the point of implementation of the liftoff decision and the near-term aftermath. As a practical matter, financial stability concerns are not likely to be center stage at the time we would choose to lift off. Today I am reacting to the questions posed to this go-round in general terms without stating definite preferences regarding configuration details. I want to hear the discussion, but there is a context in my mind for detailed decisions that needs to be fleshed out.

Specifically, I would appreciate hearing more about an exit plan for the reverse repo tool. This would address both the need for reverse repo programs as normalization proceeds and the potential methods of phasing out the programs. At the back of my mind is the concern that once liftoff has been accomplished with a facility larger, say, than the current $300 billion, it will be difficult to argue that continuing with a large program is not required for exactly the reasons we are considering a larger program now, and that is uncertainty about monetary control with a smaller program.

On the question of other possible adjustments, again, I'd like to hear more discussion, and I could get more comfortable, but at this point I'm disinclined to favor using spread tightening and relative range adjustments unless clearly needed to correct a situation of demonstrated inadequate control. I also think this type of tactical option has to be looked at in light of exit ease or difficulty.

So if I had my druthers, I would use the March meeting to refine and come to closure on the detailed implementation plan and the guidelines for the use of tools informed by more thinking on how reverse repo programs would ultimately be phased out. Thank you, Madam Chair.

CHAIR YELLEN. Thank you very much. President Mester.

MS. MESTER. Thank you, Madam Chair. I think it's very important that at liftoff we demonstrate that we have the necessary tools to move short-term interest rates up and into our target range. Unlike some of the speakers so far, I have a slight preference for using the term RRPs in conjunction with the overnight RRPs rather than raising the size of the overnight facility too high. At the margin, I prefer a smaller facility to help limit risk to financial stability, and I guess I see the term RRPs as having slightly less risk in that respect. The memo lays out some caveats about term RRPs, but I think additional tests at the end of March should help alleviate concerns that they are more complicated to implement. I would have some misgivings about extending testing too far into the quarter, though, because I think there is going to be an interaction between our testing schedule and inferences about liftoff. But other than that, I think testing will help.

Despite my slight preference for option 2, if the Committee, on the advice of the Desk, thought it better to rely more heavily on overnight RRPs, option 1 in the memo, I would support it. In this case, it would be important to be clear that the increase in size was not expected to be permanent and that its purpose was to help ensure a smooth liftoff. Our communications should remain consistent with our normalization principles, which say we intend to phase out the facility, so that market participants don't establish longer-term business strategies that rely on the facility.

The testing to date has provided some good information suggesting that a $600 billion combined capacity of term and overnight RRPs may give us enough control of interest rates. But I think we need to remember that what works in a testing environment may not work as well in production. We need to be prepared to make necessary adjustments along the way and be open to using different combinations of our tools. We might decide we prefer heavier use of term RRPs rather than an even larger overnight facility. We are going to gain information as we begin liftoff. I wouldn't rule out dynamic caps on overnight RRPs, narrowing the spread between the IOER and the overnight RRP rate, or using term deposits, although I don't see a need to start there.

No matter what approach we take, the communication explaining what we're doing and why we're doing it is going to be, perhaps, nearly as important as the actual approach. We should give the markets and the public an outline of the approach we're using, but be clear that some things are unknowable in advance and that aspects may very well need to be adjusted as we go. We said this in our normalization principles, and it is probably worth reiterating at liftoff. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Plosser.

MR. PLOSSER. Thank you, Madam Chair. A smooth liftoff is desirable for establishing confidence in the ability of the FOMC to normalize the conduct of monetary policy. I think we all agree with that. By smooth, I mean a liftoff in which the funds rate trades somewhere between IOER and the ON RRP rate on a fairly consistent basis. That does not mean every moment of every day. Whether those trades are near the midpoint or not of the range is also not important, as far as I'm concerned, and we should not suggest that that's part of our objective. In this regard, I would be comfortable starting off with a somewhat generous cap and a spread of

25 basis points between the IOER rate and the ON RRP. However, I also would be comfortable with a smaller cap and a larger spread or range. This is a tradeoff along these dimensions of program design that really exists, but it depends on the Committee's tolerance for volatility of the effective funds rate. I probably have a greater tolerance for that volatility than some in this regard, but I think it's a discussion worth continuing to have.

Regarding cap size, research done by my staff indicates that the $400 billion cap would probably be sufficient. As rates rise, the federal funds market should be able to absorb a substantial portion of any increase in the supply of funds. I would also note that in our experiments to date, even at the quarter-ends, the $400 billion cap has been pretty close to being sufficient, and those are pretty good experiments. But I also wouldn't mind a $600 billion cap. However, accompanying the announcement of whatever the size of our cap is, I believe it is crucial for us to reemphasize that the ON RRP facility is intended to be temporary and that we will reduce its size if circumstances allow. Indeed, perhaps by starting with the somewhat larger cap, say the $600 billion, like in option 1, we could get through quarter-end in June, and maybe for a few weeks, and then actually announce that it's going to be smaller because it doesn't need to be. And so that first directional change in the size of the cap might be useful and important to get us started and to signal to the market that we really do intend to shrink this facility.

I also agree with the Chair that we should keep things as simple as possible. In particular, operating with two instruments, the IOER and the ON RRP, should be sufficient for normalization. I'm leery of the complexity of other policy tools, particularly the term RRPs. Term RRPs have more moving parts; we are less certain of their effectiveness and the substitutability they have with the overnight RRPs. I do not favor us getting into the business of complicated financial engineering. Too many policy tools that operate along too many different

margins are liable to confuse us as well as the markets, with relatively little benefit. Dealing with more margins also opens the door for a wide range of unintended consequences when it comes to the longer-term ramifications for market structure, something this Committee has expressed concern about.

While I could imagine a term RRP facility that would primarily serve to help smooth window-dressing-induced funds volatility at the end of quarters, I'm dubious of this benefit and would be inclined to oppose it. In other words, doing something separate at the end of quarters seems to me to draw attention to it rather than just making the cap on overnight RRPs large enough to accommodate at least in the first instance. This type of year-end or quarter-end volatility is self-induced by reporting practices and the efforts of firms to report balance sheets that may not truly be representative of their average positions. I see no reason for us to care or to be complicit in subsidizing this behavior. Let the firms pay the price for this practice if they are inclined to do so. It is unlikely to have any material effect on macroeconomic performance or our goals and objectives. It is just too transitory. It would serve us well at the outset to be explicit about this perspective up front to avoid having market participants expect us to intervene on these occasions. And once we set up separate term RRPs just for the quarter-end—once we do that once—the expectation is going to be set and it's going to be hard to unwind from that. More generally, I'm simply not concerned about infrequent or occasional volatility that leads the funds rate to trade above or below our target range.

We were asked about what things could help during this normalization. I would remind us that we are facing these operational issues surrounding liftoff because we have a very large balance sheet. In view of the uncertainty we face going forward during normalization, I think it would be helpful if we would begin reducing the size of the balance sheet and, thus, the quantity

of excess reserves that we have to deal with in these circumstances. We could easily begin by immediately ceasing to reinvest maturing principal payments. And as we saw in the Desk report, the prospects for ever-larger purchases of MBS just to solve our reinvestment problem is going to get bigger rather than smaller over time. So I see now might be a good time to stop that, so that we don't have to intervene even more. I see very little cost or risk in taking such a step. The sooner we start, the sooner we'll arrive at a situation in which we can start reducing the size of the ON RRP facility and return to business as usual. Only then will we achieve full normalization. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I have three remarks and a general conclusion. The general conclusion is that I support the use of a temporarily larger cap on the overnight reverse repo program at the time of liftoff, along the lines of option 1. I also support the use of term repos in sizes viewed as helpful during this period. My three remarks concern the following areas. One, the likely timing and source of possible market volatility impinging on federal funds rate control. Two, the risk of financial instability associated with a larger overnight reverse repo program than presently contemplated. And, three, the size of the Federal Reserve footprint in financial markets.

Considering the first area, the likely timing and source of possible market volatility, the memoranda for this meeting touching on this subject seemed to suggest that the date of liftoff is special with respect to the possible implications for market volatility, and, therefore, for control of the federal funds rate. It is possible, however, that market volatility may not be especially high at liftoff versus other times. This may be especially true if we telegraph our date of liftoff fairly accurately, as we seem destined to do. The memo on initialization of normalization cycles

in foreign countries suggested that the liftoff itself was often not a moment of confusion and volatility in financial markets, but that when such moments occurred they were often at some other critical juncture in the normalization process.

Indeed, financial market volatility is more likely to be caused by a violent reconciliation of a mismatch between financial market expectations of monetary policy and Committee intentions. We have a grand example of such a reconciliation in the so-called taper tantrum during the summer of 2013. That episode did not involve raising rates, nor did it even involve any actual change in the pace of excess purchases. We do have considerable mismatch today, arguably, based on differences in the Committee intentions as suggested by the SEP versus market expectations as suggested by futures markets trading, as outlined in the staff memo relating to this subject. When and how this mismatch will be resolved remains an open question at this point, but potentially any reconciliation could involve substantial market volatility and could occur at a point in the normalization cycle other than the liftoff date itself.

These considerations suggest that use of a higher cap or other method to mitigate any risk should not be confined only to the time period around liftoff. For this reason, I would advocate expanding the notion of "temporary" to include most of the normalization period and not just the time around liftoff.

The second area I wish to address is the nexus between the size of the overnight reverse repo program and the risks of financial instability. In discussions with my staff, I have concluded that I simply do not think we have a credible and compelling story concerning the nature of this risk sufficient to suggest that a $600 billion program is more risky than a $300 billion program in a meaningful way. For this reason, I lean toward a larger program and the tangible benefits that that may bring with respect to our normalization policy.

The third area I wanted to comment on concerns the Federal Reserve's footprint in financial markets, which some wish to keep to a minimum. Normally, I would find this a reasonable goal, but in the current situation I think we are already such a large player in financial markets that we may be better advised to manage our risk carefully rather than to try to keep our interventions to a minimum. For this reason, I again come down on the side of using available tools to our advantage in securing a successful liftoff. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. As I weigh these issues, I view a lack of control over short-term rates at liftoff as an unlikely but a very costly event and one to be avoided. So I, too, favor option 1, as outlined by the staff. The testing experience of the overnight RRP and our communication of policy normalization principles and plans give me confidence that the overnight RRP, on a temporary basis, can be an effective way to support rates at liftoff, if necessary, but also to temper the financial stability issues associated with its use. If needed, I would also support the use of term RRPs after liftoff to ensure the funds rate trades in our targeted range.

In terms of the other possible adjustments that were outlined in the memo, I support maintaining a wide spread between IOER and the ON RRP rate, along with a sufficiently large cap that rarely binds, as well as using term deposits. I'd prefer keeping the option of adjusting the IOER and the ON RRP band or narrowing the spread between these two rates. This approach is to be used only after liftoff and only in the event that the federal funds rate fails to trade within our targeted range. Thank you.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. To best achieve our mandated goals, it is crucial that we're able to maintain effective monetary control at the time of liftoff and throughout the normalization process. Equally important, we must leave no doubt in the public's mind that we have effective control over interest rates during this period when all eyes will be on the Federal Reserve. I've been taking notes to see if I've got the whole list right, but basically my remaining comments echo very much those of Presidents Evans, Lacker, Rosengren, and Bullard, which is for sure the first time I've ever said that. [Laughter] And President George, too, actually.

Our communications regarding policy normalization or testing of different facilities have helped prepare market participants. We've consistently assured the public that we have the tools to raise rates when needed. We've explained the broad outlines of how we will use these tools. In looking ahead, we really need to minimize the risk of any missteps coming out of the gate that could raise concerns about the effectiveness of our tools to keep the funds rate in its target range. Indeed, demonstrating monetary control when we start normalization will increase market confidence in our ability to steer the economy, reduce market volatility, and facilitate the pursuit of our objectives. And I view the approach described in option 1 as most likely to achieve this outcome.

I want to remind everyone that we made clear in our policy principles and plans back in September that we will primarily use the IOER rate to move the federal funds rate into the relative target range, and the overnight reverse repo facility supplements it as needed to increase monetary control. Importantly, we also indicated that the reverse repo facility will be phased out when it's no longer needed to help control the federal funds rate. So we've already told everybody that this will be temporary and will only be used as needed. I therefore view option 1

as entirely consistent with the strategy that we've laid out. It keeps the approach as clear and simple as possible.

And one issue, of course, is the size of the cap on the repo facility, and I, like many of the others, have difficulty in saying, you know, it's $400, $600, $800, $1 trillion. What are the costs in terms of financial stability and the benefits there? I think it's really impossible to judge ex ante the optimal size of the facility and the tradeoffs between financial stability, footprint issues, and effectiveness. Now, I do think that the analysis that's been done so far suggests that what is really important is that we have sufficient headroom for this to be effective, and in my own view it would be prudent to set a cap that's significantly high. I thought the $600 billion would be viewed by this group as already pretty high, but clearly people have suggested even higher might be optimal.

And I'm going to make kind of a nuanced point. I don't see this as raising the cap—and this actually gets back to President Lacker's point earlier. When we did the testing of $300 billion, that was clearly stated not to be our policy decision of how big the overnight reverse repo facility was going to be. This is not raising it from $300 billion to $600 billion. This is just setting what it will be initially, whatever that number is. So I would prefer not to communicate this as saying that we're raising this in some way. We're setting the cap at the level that is the most appropriate to achieve monetary control, and, of course, as time goes on and we learn more, we can reduce the cap as appropriate. And, again, I don't see the risk to financial stability or regarding footprint issues to be that significant. This is a temporary program. We've indicated that, and we will reduce it and phase it out as appropriate.

I'm confident that, under option 1, we have the necessary tools to maintain monetary control during the normalization period. I really think that this is an appropriate option when

viewed in terms of our basic strategy. It's simple, and I think it follows the plans and principles we laid out.

On the other issues, in terms of spreads, I agree, like others, that with a wide spread initially, as we discussed, I would only see adjusting the spread of the IOER and the overnight reverse repo rates as something you would only do if it was necessary, if the other tools that we were using weren't working. I see the TDF as always a backup facility—again, there to support if needed.

In terms of testing the term reverse repo facility, I am in favor of continuing the test for March. I think that there is an open question about the value of further testing of a daily or a regular term reverse repo facility as, again, another backstop. So we're now talking about belts and suspenders, more belts, more suspenders. I do think if you were to test it too extensively, it would lead people to think this is something we were going to use, and something to think about, although I don't see any problems with the testing around the quarter-end because I think that, to me, would be limited. I do think I'm not opposed to the further testing of the term reverse repo, but again, I think it just creates some additional communication challenges for us. I think IOER is our first line of defense. Overnight reverse repo with a sizable cap is the support, and then we have these other tools behind. It is already pretty complicated. We don't want to make it too complicated. Thank you.

CHAIR YELLEN. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I'm happy to go along with the consensus of the room on the questions being posed by the staff. It sounded to me like the consensus is building in support of option 1, with possibly even a higher cap, if needed. I'm comfortable going along with that.

I wanted to highlight some of the comments that I heard around the table as being ones that I felt particularly resonated with me. I thought President Rosengren's question about international cash flows is one that I had not thought about and would be useful for the Committee to explore further. I thought President Mester's comment about emphasizing the temporary nature of what we're doing is really critical. President Williams is right to highlight that we've already made reference to the fact that we intend this facility to be temporary. On the other hand, that September 2014 communication replaced a June 2011 communication. So I think it would be useful for us to cement what we said in September in an ongoing fashion, especially if we go larger, because there might be a temptation to think that's going to mean we're going to go longer as well. I think we just have to be clear in our communications, on an ongoing basis, that we intend this to be a temporary facility.

A tension I heard along those lines is President Bullard's comment about timing: is liftoff really going to be special in some of the considerations we heard? Are we not always going to be concerned about, well, we've got to get the interest rate in the range? And that led me to be very sympathetic to President Lockhart's question or suggestion that we explore and communicate clearly what we have in mind about an exit plan from this facility. I think that would help bring clarity to our commitment to having this be a temporary facility.

Overall, as I said, I'm willing to be supportive of whatever consensus emerges from our discussion. I guess the one point I'll close with, Madam Chair, is that in my own thinking, this conversation is premature. The time is simply not right for liftoff. As I'll explain in later go-rounds, the evolution of the data in the past six months means we should be discussing how to solidify the credibility of our inflation target. We've heard a lot of conversations about credibility already today. I'll be talking about credibility as well, about the credibility of that

2 percent goal, and that means providing more accommodation, not less. So our topic, I think, should be turning more to how we can use tools to ease financial market conditions and bolster the credibility of that inflation target and less about how we plan to tighten in the near term. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Fisher.

MR. FISHER. Well, assuming that we will tighten at one point and we will have liftoff at some point, Madam Chair, I want to make a few comments here. Obviously, we all want to maximize the odds that liftoff will be smooth. Governor Brainard underscored the precious nature of the current circumstance. Simon pointed out we haven't done this before. I think the markets understand, to a degree, that we're feeling our way. For me, provided that yields on securities that have maturities of a few weeks and longer respond appropriately, some initial temporary departure of overnight rates from the intended target range at liftoff would be inconsequential. I think President Lacker has made that point. I agree. I don't think they have a material effect on the real economy. It's important, of course, that we do, however, have fallback plans. One thing I didn't see in the papers—I may not have read them thoroughly—were I the New York Desk and explaining this to the Committee, I'd want to see some alternative scenario planning, some decision tree analysis, and some definition of our tolerance limits. That would make sense to me.

So it's a respectful suggestion. I think that's the way I would approach it. We have, as many have pointed out, promised that the ON RRP would be temporary and used only as necessary to maintain control of monetary policy during normalization. That promise was made for good reasons. We shouldn't take lightly actions that might lead the public and financial institutions to doubt our intention to honor it. I believe under the previous Chairman I actually

quoted my mother—who I think stole it from Kierkegaard or maybe Santayana, and certainly not from the Kardashians—on the following: "Skepticism is the chastity of the intellect, and it needs to be carefully guarded before it's surrendered." [Laughter] Thank you, Madam Chair. I won't tell you what she said after that, but—okay, after that she said, "And then have a lot of fun," but that's a separate thing.

I do think there is some skepticism in the marketplace about the temporary nature of this facility, and here's why I mention this. We can throw out numbers like $1 trillion or $600 billion. However, I think we have to be very careful about whatever number we choose and not be indiscriminate with a large number because it might undermine the confidence that this is a temporary facility and, again, indicate that we're not so chaste in the use of this facility. I would be very, very careful about throwing out numbers. My second point is—I think President Lockhart makes an excellent suggestion—I don't know how we do it, but we should at least have in our own mind what the exit strategy should be for using the program.

In summary, I would prefer to start with an ON RRP program, maybe $600 billion but no larger. I'd supplement with term RRPs at quarter-ends, perhaps term deposits, and only move to a more aggressive use of RRPs if it's critical to maintain the floor. And I'd be very careful in using it in any way that would undermine the confidence of the markets that this is a temporary facility.

With regard to term RRPs, I understand from our discussion today that there are pros and cons, but they could be close substitutes, and we have established a precedent of engaging in term RRP operations at times when there is predictable temporary increase in demand for safe short-term assets. If liftoff occurs near the quarter-end, as seems likely, it would be perfectly natural for us to auction term RRPs coincident with liftoff and spanning the quarter-end. If the

maturity dates on term RRPs are staggered, we'll have a chance to see how overnight rates respond as the term RRPs roll off, and we can decide, depending on that response, whether the current cap on ON RRP operations are too small, additional RRPs need to be auctioned, or term deposits should be offered at a premium over the IOER rate.

One of the things that caught my eye in the memo was a suggestion of a 5 basis point increase in the ON RRP rate relative to the lower end of the target range for the federal funds rate. I was discussing this with Governor Brainard. I understand that might be a short-term tactic, but I feel pretty strongly that we should maintain the 25 basis point spread between ON RRP and the IOER rates—and we should be careful that, as we go through time, I would suggest we perhaps use that spread as a way to limit demand for RRP. So I can see widening it. I don't like the idea of temporarily shortening it, because I think it may undermine our commitment to widening it over time. I may be wrong.

And then last, with regard to term RRPs, again, I mentioned that I think it would be a useful tool at quarter-end. There was a number of $200 billion somewhere. Why not do $300 billion? In other words, why not keep an extra $100 billion on hand in case we need to have it?

And then finally, I would be in favor in terms of the question that was in red in the presentation of testing RRP apart from quarter-end dates. Why not? I think we should. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman Dudley.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. For me, just like everybody else, having a smooth liftoff is my top priority. That's more important than the size of the facility or the potential financial stability concerns. First of all, over a very short period of time, when our credibility with respect to liftoff will either be won or lost, the financial-stability risks

are pretty small. Also, I think we can address the issue of footprint by making it clear that this overnight RRP facility will be used only to the extent needed to maintain monetary policy control, and when it's not needed, it will be phased out. It's temporary, not permanent.

With respect to the options in the memo, I think it's essential that we have sufficient headroom, and I think there's a lot of ways to generate sufficient headroom. You can have a very large overnight RRP facility or you can have a somewhat smaller overnight RRP facility supplemented by term RRP. As long as there's sufficient headroom and this expectation is realized, then I think the facilities are likely to be effective in putting a floor under short-term rates. We have been talking about a lot of details over the past couple of hours, but I think we should get some confidence from the tests that we've done. I mean, the tests do seem to suggest that these facilities actually do work in terms of putting a floor under short-term rates.

In terms of the split between overnight RRP and term RRP, I think the simplest solution is just to go with option 1 and have a high cap initially on the overnight RRP facility or no cap at all. The advantage of having a high cap, a cap that they are not going to reach, is to signal that this is not unlimited, and it allows you then to move the cap down as you see that you have a lot of extra headroom. You can then move that cap down in order to reinforce the message that this thing is going to go away over time.

If you decided that you wanted to have term RRPs, I think the way I would do it is I would have term RRPs that just address quarter-end, and I would have a testing program for term RRPs in place for the June quarter and the September quarter. So if you lifted off in June or you lifted off in September, you wouldn't even really have to announce the term RRPs. They are to be tested. The tested RRPs would just turn into the actual term RRPs. In looking at the increase in demand over quarter-end, what you see is about a $200 billion increase in demand over

quarter-end. So that would suggest that if you had a term RRP program of $200 billion, you could have that tested in June, September, et cetera. You could just roll right into it if you actually happened to lift off in the quarter, and if you didn't lift off in the quarter, you're just doing another test. That, to me, has the advantage of it all being announced ex ante. There's no surprises to the market in terms of what you're going to do. If you roll it out after the fact, you're just inserting more noise into the market that you're going to have to communicate about.

In terms of other steps to ensure a smooth liftoff, I think that we all agree that good communication is important. I think what I would hope that we could do is reach a consensus in March about how this is all going to work and then have the Chair communicate that to the markets or communicate that in speeches or the minutes. I think there is broad enough consensus here that I think we could get to something in March where we could sort of tell the markets what we're doing prior to liftoff.

Regarding term RRP testing away from quarter-end, I'm fine with it if we're actually going to do it. But if the sense of the Committee is that we're not going to do term RRP away from quarter-end, then I sort of ask myself the question, why are we testing it? I think we just have to ask ourselves. I don't think we should test things that we're not going to do because I think that just confuses markets and starts to influence their expectations. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I think it's totally agreed that we have to do this successfully to retain our credibility as people who can control the interest rate, which we'd better be able to do. And almost everything I have to say has been said already, so I'll say it quickly.

Overnight RRP at somewhere around $600 billion seems right. I like Vice Chairman Dudley's statement that we should have a term RRP in place when we plan on doing this.

The tradeoff between having the term RRPs and not is that you can make the overnight RRP facility smaller as a signal of not wanting to have a big footprint. I had thought, listening to discussion in three or four previous Federal Open Market Committee meetings, that it was a big factor in everyone's mind, but it seems to have shrunk a little bit now, and the $600 billion is probably more convenient in the hope that you might not need the term RRP. The reason I say that is because I don't know whether this is just reacting to words, but I'm not sure we should be encouraging firms to window-dress by making it cheaper for them to window-dress, and that's what the term RRP does.

I'm interested in when we are going to become independent of the ON RRP, and I think we're very optimistic if we think we can describe the scenarios under which we are going to exit. It is going to take a while until we get the balance sheet down to $1 trillion, at which point I guess we'll start possibly becoming able to see an end to this program, unless there is something we're missing about President Lacker's position—namely, that we could do it all by IOER. And maybe there is something that says: that's not true at $4 trillion, but it is true at $3½ trillion. If so, then we can stage an early exit. But I very much doubt that we can do that. We need to think about how we're going to exit, but that shouldn't be high on our list. It would be nice if it was high on our list of priorities, but I don't think it will be.

The last point, again, is just to support the need for explaining what we're going to do—preparing answers to frequently asked questions, et cetera—so that even people who are not engaged in buying and selling these things know what it is that we're going to do. There are probably tens of millions of American citizens who learned about open market operations in their

economics textbooks and have trouble figuring out what on earth all this is about. Why don't you just do it in a good, old-fashioned way? I think we have to worry about explaining ourselves even more than usual. Thank you.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. I began this exercise, whenever we started talking about it months ago, with a strong set of financial stability concerns, which, unlike many of you, have not abated during the course of these discussions. But it has become apparent to me over time—and I think part of today's discussion was a reaffirmation of this point—that the financial-stability difference between just ON RRP and a mix of ON RRP and term RRP is probably not that great relative to my source of concerns. And I think President Lockhart and President Kocherlakota have put their finger on the source of my concerns, which is, as President Lockhart put it, an exit plan. And I guess I disagree with Governor Fischer. I think we'd better think about an exit plan for a reason I'll explain in a minute.

There are two ways that things could go here. One, with a large-ish ON RRP, we begin liftoff at some point in the future, and it turns out that things go pretty smoothly, and the take-up is nowhere near the cap—if there is a cap—that we've put in place. And as President Plosser suggested, at the next meeting we can reduce the cap without any concerns about what happens. A powerful message will be sent to the money market fund industry and, indeed, to everybody else.

The other scenario is one in which it turns out that there is substantial take-up. And in subsequent meetings, there is still concern that—as Narayana was suggesting—in the absence of the continued use of a very large ON RRP, there may be some difficulty in getting within the target range, or at least in having confidence that we'll be within the target range. It seems to me

that this is the scenario to worry about. I don't know what the probabilities are regarding that scenario. I don't know that anybody could say with any great assurance even the order of magnitude for what the probabilities are, but I think they're nontrivial.

And here is where the question of, as Dennis put it, the exit plan comes into play, because I think what we confront is a variant of a time-consistency problem: That is, at any given meeting, it always seems like the best thing is to make sure you hit the range with confidence with a big ON RRP facility, and any financial stability issue is speculative. It's not around right now, of course, and is probably for tomorrow's Committee, not even the members who are on the Committee right now. This is precisely why, in general, policymakers pay more attention to short-term issues and why long-term problems often don't get addressed—because of the decision pressures that we all face. So I think, under those circumstances, there are two ways to deal with those longer-range contingencies. One, which I'm going to come back to in a second, is some variant on a commitment device—that is, sort of an ex ante approach. The second is having more options as you go forward, a kind of ex post approach.

Several people have already stated why, notwithstanding their preference for option 1, they think it might be a good idea to continue to investigate, through testing and otherwise, other tools that may be available, and I would agree with them. So my instinct would be to let the Desk test anything it thinks might be useful at some point to give us as an option.

With respect to the first way—that is, the commitment device—the only thing I have heard, and I have heard it from almost everybody who has spoken to this point, "Well, we said it's temporary." Well, you know, this is what a time-consistency problem is defined by. You have a stated policy, which of course is the preference. But when you come to the point of making the decision, it turns out that that gets trumped by the shorter-term considerations, and

that at some point other actors begin to figure out that that's the circumstance you're in. So stating that something is temporary, I don't think, in and of itself, can be hugely reassuring, even though it helps, and there is no question that it is better to say it and to say it repeatedly than not to say it.

But I do think that other kinds of commitment devices should at least be thought about: for example, whether there is some way to tie the maximum size of an ON RRP over time, even to the balance sheet, which may not change for quite some time, so that at least there would be a clear ending point. I don't know what other ideas there are, and I think Governor Fischer is right in suggesting it's going to be hard to come up with them. But I'm left quite uncomfortable just relying on our saying, "Well, it's temporary." And I heard many people say, "As appropriate, we would bring it down," or "As possible, we would bring it down." Well, what if that decision still seems a hard one? It then becomes hard to bring it down.

The problem with a commitment device is that, of course, it puts a constraint on discretion. That's the definition of a commitment device. But you've got to do it. If you don't do it, and you're not willing to do it ex ante to some degree, then it suggests to me that we're not putting any value on financial stability considerations, which I think is different from saying we put dominant value on the precision of the monetary policy execution but are still placing some value on financial stability considerations.

As I say, I can't value it, but it does seem to me that we don't want to have our children or somebody looking back at some point and saying, "You know, the Fed just slipped into this. At every point, it was easier to make that decision. They allowed this industry to get started, and then what happened? There was a major run circumstance in which everybody ran to the Fed, and their successors were sitting there saying, 'We'd better increase the ON RRP. Otherwise,

there's financial instability.'" So that's why, whether you call it a decision tree as President Fisher suggests, or President Lockhart's exit plan, or just gaming it through—I think which was what Narayana was suggesting—I do hope that we can think more about this between now and March and see whether we can get beyond mere words with something ex ante, then allow Simon and Lorie to test a bunch of stuff that may help us develop some ex post options as needed later on. Thank you, Madam Chair.

CHAIR YELLEN. Thank you.

MR. WILLIAMS. I had a two-hander. I actually feel that you left out of your comments many of the things that were said that would actually deal with this very issue. I think the points you made are excellent. But I view adjusting the IOER to be above the range as exactly the kind of tool that we could use so that we didn't have to rely on the overnight reverse repo so much. Let me go through that scenario. That's what I meant when I said we have these other backstop policies—like TDF, changing the spread, or raising the overnight IOER, and things like that. And I think term reverse repo also is like that. That's what I meant when I said we should keep these in reserve so that if we find that to hit our range or, say, to keep the federal funds rate in the range, we need to have a $1 trillion overnight reverse repo and we don't want to keep it there, we can use the other tools to avoid that. I think that, actually, I agree with the points you're making, but I do think that that's what I and maybe others mean when we said, "Well, you should use these other steps as backup."

MR. TARULLO. I hope that's right, John.

MR. WILLIAMS. That's what I meant.

MR. TARULLO. I hope that's right, and I think the things you suggested would fall into the category of ex post other options, which I identified. But I also heard you say that it was

already pretty complicated, and I've heard a number of other people talk about the virtue of simplicity in execution. So I don't discount the possibility that when, at some future meeting, rates are already—I can't even remember what our ranges are now. You can't say 75 basis points anymore. You have to think, 12½ less than, 12½ more—up somewhat and we have this discussion and people say, "Oh, gee, it would make it complicated to try to introduce a different IOER spread or term RRPs." Again, if it's thought through a bit beforehand, and it's communicated, including to the public, you then begin to alter the lay of the land, and maybe you are creating a soft commitment device. But that's really what I'm calling for, not just relying on the fact that at some point in the future we'll think better of it.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. My conception is very similar to that of President Williams in terms of having these other tools. And if you don't like the tradeoff that you find after liftoff, you can adjust these other tools in a way to achieve a better tradeoff. I think in terms of the simplicity/complexity argument, simplicity at liftoff is particularly important. And after liftoff, I think you can introduce more complexity if you want to set the tradeoffs at a different place than you do in liftoff. So I would distinguish liftoff, in terms of the need for simplicity at liftoff, from later, when I think you could have different tradeoffs.

MR. TARULLO. I know everybody has done that, Vice Chairman Dudley, but I don't quite understand why that's so—why I should believe or why any of us should believe that we are really going to feel that way. I mean, maybe we will, but—

VICE CHAIRMAN DUDLEY. If we truly don't like the tradeoffs, why wouldn't we pick some other parameters to adjust to get to a better place?

MR. TARULLO. What I was suggesting is the calculus of a tradeoff at any given moment will weigh heavily toward as precise an execution of one's monetary policy objectives as one can achieve. And, thus, other norms, just as now I think they are being pushed—not obliterated, and nobody denies them—but I think they are being downplayed now. I think the same dynamic, psychological and otherwise, takes effect at any given point along the way. And there is a very rational, logical reason why you should be right, which is to say that credibility having been established initially, we would all be more comfortable with more softness. But I don't know that that's the way everyone, or even the majority, of the Committee, or some future Chair will feel about it. So that's why I think talking it through first and communicating upfront the way we're thinking about it does, as I say, serve as a form of soft commitment device—not as hard of one as I would like, but at least a soft commitment device—as opposed to just telling ourselves, if we don't like the tradeoff later, we can do it differently, but not getting beyond that. I don't think there is any disagreement conceptually with what the options are. I'm just thinking in terms of institutional dynamics.

CHAIR YELLEN. President Fisher.

MR. FISHER. I want to come back to a point I made before, and I think Governor Tarullo was endorsing it—that old quip, "Trust in Allah, but tie your camel." I just want to make sure we have simplicity of liftoff, but that in our back pocket, we have done the studies. And if it doesn't work the way we want it to work, we pull out these different tools, and that's what I call decision tree management. That was one point I was trying to make. I think you agreed, Dan.

MR. POTTER. That the main thing we can do is sell assets, and we know how to sell the Treasuries pretty easily.

MR. FISHER. So, again, I won't be here, but I hope you develop these alternatives, and explain at least to the Committee some of the thinking. I'm not sure we should explain it to the public. I'm not saying that. I mean, we do have to have something in our pocket, and we have to tie our camel. That's the point I was making.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. President Fisher is proving, with his colorful metaphors, why he'll be missed so much. [Laughter] But in a serious vein, I think Governor Tarullo has hit the nail on the head here—that at any given moment in time, there is a tendency to focus on the short-term needs and the short-term actions and the short-term dynamics. And I think it will be useful to provide underpinnings to the public regarding what we mean by "temporary," and why we feel comfortable with it being temporary, not only in terms of having a plan in our heads, but also having a plan that we communicate to the public that will make it clear that we know how we're going to be temporary about this.

CHAIR YELLEN. Okay. Governor Powell.

MR. POWELL. It has been a very interesting discussion. I was tempted to two-hand myself there. [Laughter] I'm not sure if that's a legal move.

MR. WILLIAMS. We'll take care of that.

MR. POWELL. Anyway, I'm going to start in the short term and then come back to the excellent questions that Governor Tarullo and others have discussed here. I think we have, for the purposes of the short term, established that we want the reverse repo facilities to be temporary in time and as limited in size as they can be, consistent with an appropriate degree of control over monetary policy. I think with that established, we can, should, and must use our tools aggressively to achieve that level of control. And based on what market participants are

telling us and what the tests seem to show, if the market perceives that the cap is unlikely to be binding, then RRP will provide a good floor for our target range and rates will be close to the middle of the range. I think that's a great place to start.

So my prior is: At liftoff, we should have not overwhelming force but overwhelming headroom. And, looking at the options, I guess I'm somewhere around "option 1½." By that I mean where I would be is, $400 billion or $500 billion overnight repo and term. I would do term at quarter-end, every quarter-end for a while, at around $200 billion. That's the way I would do it.

I would say, in terms of the control point, it's one thing if rates plunge below the overnight rate in June 2017, and it's another thing if they do that right after liftoff. I think it's one thing if the Fed chooses to allow, and is seen to choose to allow, rates to go out of our range. It's another for people to see that the Federal Reserve doesn't have the tools or doesn't use its tools well enough to keep rates in the range. So I think that it really is important to do what we're all suggesting, which is to have a pretty substantial degree of control at the beginning.

As far as the other tools are concerned, I start with the idea that the IOER rate ought to be at the top of the range and the ON RRP rate ought to be at the bottom of the range. I think moving them both around at the same time is confusing. I think my first tool off the bench, if you will, if we need it, would be to move the ON RRP rate up 5 basis points. That seemed to do the trick. That moved up the federal funds rate almost basis point for basis point. So that could be a tool, but I would hold that in abeyance. That does go to the point of using not so much the size.

Coming back to the medium-term and longer-term issues, these are great points. I think President Lockhart's idea of an exit plan or at least further consideration of the conditions under

which we would exit is well worth exploring, and if there are other commitment technologies out there, they would be worth exploring as well to deal with the time-consistency problem.

It seems to me we've learned a great deal in the testing, and testing has in a way performed just as we hoped it would. And the possibility of sending negative signals really hasn't happened except, I think, with the segregated balance accounts. That takes me to considering the point: "Let's not test something that we're probably not going to use, because if we test it, people are really going to expect us to use it. So let's not do that." I would certainly be comfortable with testing term RRP over the March quarter-end. I guess I wouldn't test off quarter-ends if we're not going to use it, and it doesn't seem like to me we're going to use it. On TDF, it seems to be kind of a peripheral tool, but I guess the chances are that we may well use it. So I'd be okay with further testing.

Generally speaking, I would default in the direction of more testing except where I think it's sending a signal that we're testing a tool that we're not going to use. We should look like, if you will, an army that's doing a lot of drilling and practicing and marching and committed to using our tools well and achieving a good level of control. I think that's exactly what we're starting to look like, and, again, aside from that one negative signal, I don't see that the possibility of other negative signals has materialized. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. We are in quite unique circumstances. Monetary policy has now been at the lower bound for about six years, and we have excess reserves at a level that we have never dealt with before. So at this very unique moment, it's of paramount importance to demonstrate decisively that we can maintain the federal funds rate

within the range that we target. I think the failure to do so could potentially have long-term corrosive effects on the efficacy of our monetary policy.

Any initial inability to move the rate within its desired range, particularly if it persists for any period of time, would call into question that we have the tools or the will. And the risk is amplified by the slight awkwardness of the timing. The likeliest meetings for liftoff, which are those that coincide with a press conference, all happen to take place very close to quarter-end. And they raise a specter of the liftoff announcement being followed immediately by a downward drift and a possible breach in the new floor.

Fortunately, we have already seen that we can have pretty strong confidence that we have the necessary tools well within our authority. The use of the IOER in tandem with the reverse repo facility should provide the requisite monetary control if we set the cap on the reverse repo at a sufficient level to have high confidence in achieving that target. Our experience so far with using that facility to impose a soft floor has been limited to periods in which the federal funds rate has been close to zero and, therefore, likely receiving some support from that threshold. As rates move away from the zero bound, we should be prepared for the possibility that the amount of reverse repos that are needed to support that floor initially might increase temporarily. We should also be prepared, as was suggested in the memo, to temporarily narrow the spread between the IOER and the RRP rates at the outset with a view that it will increase over time.

I agree with those who have said that they are less worried about the exact size of the increment in the cap. The cap itself is less important as a safeguard against risks from the ON RRP to financial stability and changes to market structure than the perceived impermanence of this facility. In terms of making sure that we don't lead to a permanent change in market structure or introduce some risk of a flight to this market during periods of elevated stress, it is

very important that we firmly commit that this facility will be temporary and used only for the extent and duration necessary. I think apart from stating that very clearly at the outset, there are a number of ways that we talked about doing that around the table. We will not be in these unique circumstances for very long, and we should see over time that the IOER rate starts to exert more of a pull on the federal funds rate and that it trades closer to IOER rate. At that juncture, we'll have the option to widen the spread and make the RRP rate much less attractive. So there's a natural potential exit path that I think we have talked about using, and I hope we will, in fact, use that along with some of the other tools.

So with those strong reservations about making sure that we are clear that this not a permanent addition to the structure of the short-term money market, I very much support option 1.

CHAIR YELLEN. Well, I think we've had a great round of discussion, and we agreed earlier that we would come back to the testing resolutions after we had this discussion. What I'd like to suggest is that we do that first thing in the morning. The staff can give us some proposals for testing in light of the discussion, and we would take it up, if that's acceptable, before we go into policy discussions tomorrow morning.

MR. CLOUSE. There was one outstanding question of whether you would like to see two proposals, one for just quarter-end testing or another one for the limited testing that Simon has already talked about.

CHAIR YELLEN. Why don't we try to get a sense of that? I mean, most people have addressed that, and a variety of views were expressed. In terms of the quarter-end testing, although there was a diversity of views, what I heard was that most people were supportive of

quarter-end testing. Could I see a show of hands on how many people would be supportive of quarter-end testing of the term RRPs?

MR. FISCHER. You mean extra?

CHAIR YELLEN. No, just the testing at quarter-end, not outside quarter-end. I'll take that separately. [Show of hands] Okay. And who would be opposed to the quarter-end testing? [Show of hands] Okay. Although we don't have unanimity, I think coming back to us with that proposal is appropriate. Now let's take, I think, the more controversial piece, which would be testing of term RRPs over the next month or two?

MR. POTTER. We could do some testing from late February to early March.

CHAIR YELLEN. Right. So making it a relatively small scale, not at quarter-end, and I think a number of people felt this shouldn't be part of our liftoff toolkit. In fact, I heard pretty broad support for the view that we shouldn't use that tool at liftoff. Nevertheless, I did hear a number of you say that, ultimately, as we may want to reduce the cap over time on the overnight RRP facility, this is something that we might potentially want to use. It's not clear we would use it, but if we did, it might be useful to test it to see. Governor Fischer.

MR. FISCHER. I thought we should ask for that to be done because there was a lot of interest in the morning about the extent to which the term RRPs are a substitute for overnight RRPs. We didn't get an answer yet, and doing it away from the quarter-end would give us some information about that. So it would be useful, I think.

CHAIR YELLEN. Let me ask for just a general show of hands, as I think we heard considerable support for something along the lines of option 1 as a way to go into liftoff. Nevertheless, there remain some reasons that we might want to understand more about the

substitutability of non-quarter-end term RRPs for overnight. How many people would be in favor of, I think we're talking about a modest testing program?

MR. POTTER. It would be small.

CHAIR YELLEN. A small testing program that maybe would end at the beginning of March. How many people would be interested in seeing a proposal along those lines? [Show of hands] Okay. And how many people would feel really opposed to doing that? [Show of hands] Okay. I think my suggestion, seeing that, would be that maybe you come back tomorrow morning with two proposals. People, of course, can sleep on it, and we're not forced to go ahead with both things, but I think I see enough support for the testing of non-quarter-end term, especially a small-scale test, that maybe we should see a proposal. President Lacker.

MR. LACKER. Yes, I'd like to suggest that the staff give some thought to this—and maybe this is just terminology. You know, the Desk brings us a proposal for, say, the next round of testing, and I'm continually asking about, all right, what's on the horizon after that? On the horizon after that is the next quarter-end, which could be the consequential one. Now, a couple of people around the table spoke of quarter-end term RRPs as something they want to initiate and just carry right through to liftoff, right? So they want to have it in place and keep going. Well, that suggests we're not really testing. I mean, no one spoke about how compelling these research questions in the memo were. Basically, people were thinking about whether they want term RRP to be in place from now until we lift off. So this should raise in our minds the question of, when is it not testing and when is it a program? When is it official that it's not a test? We may want to just hold in our minds that, all right, it's official, but we're going to call it testing until we lift off. I don't know, but I think it would be worthwhile for us to think about that before June, when it's upon us, or April, when we have to think about June testing.

CHAIR YELLEN. I think that's correct.

MR. FISHER. Madam Chair, may I ask a question just to help answer this tomorrow? When you say "a small amount," what do we mean?

MR. POTTER. I think up to $50 billion would be the amount we would ask for. Whether or not we would get to that in any single operation, I'm not sure. This is one on which you would start very small because we're not doing this over quarter-end, and you don't want to do anything in a test that could have adverse consequences.

MR. FISHER. Thank you.

MR. POTTER. There the issue for us is that at quarter-end we have a very good feeling for the quantity that might be demanded. Because we haven't used this tool away from quarter-end, we don't have that kind of knowledge. So if you agree to do something like this, it would be very small at first, and we'd have to interact back with the Chair after the first one to understand whether we wanted to go any bigger than that. And it does have some issues related to how we describe it, as Governor Powell suggested, that there is some risk that people will take more signal from doing a test like this than we'd like. That also suggests keeping it quite small.

MR. FISHER. Madam Chair, I just want to clarify my hand-raising here. I'm not against testing things, because I want to have the best toolkit that we can possibly have, as long as it doesn't send the wrong signal.

CHAIR YELLEN. Right, and that's exactly what Simon is concerned with.

MR. POTTER. We have had an experience recently with that, which wasn't very pleasant.

MR. FISHER. Yes. Thank you very much.

CHAIR YELLEN. Okay. If you think you would be able to provide a concrete proposal tomorrow, I think we can do that first thing. Okay. Thank you. I think we've had a very thorough and very useful discussion of these operational issues. The Board meeting is now concluded. So let us now proceed to the economic and financial situation. I'm going to first turn things over to Steve.

MR. KAMIN.[5] Yes, switching things up. Because some of the key influences on the U.S. economy's prospects—especially oil prices and the dollar—are indeed emanating from the international sphere, David and I thought we would switch our usual order, with me going first. I will be referring to the materials that are labeled "The Foreign Outlook."

Before getting to oil prices and the dollar, I will address our forecast for foreign economic growth, shown as the black solid line in panel 1. In putting together this forecast, we steered a middle course between giving in to the anxiety about prospects abroad evidenced in financial markets and succumbing to excessive enthusiasm about the positive effects of lower oil prices, weaker currencies, and more accommodative monetary policy.

As before, our forecast of foreign growth strengthening to its potential pace of about 3 percent rests on a number of difficult judgment calls. First, in our projection, China's economic growth declines only gradually in the next few years, from 7¼ percent in 2014 to 6¾ percent in 2017, and the country avoids sharp disruptions associated with the ongoing correction of its housing market. Fourth-quarter GDP came in at 7 percent, a touch lower than our projection in December, and we marked down our outlook going forward by about ¼ percentage point, in part reflecting the appreciation of the renminbi that has occurred as the currency followed the dollar up.

Second, in our forecast, Brazil and other ailing economies in South America pull out of their recessions and eventually regain near-trend rates of growth. The appointment by reelected Brazilian President Dilma Rousseff of a new, market-friendly economic team is encouraging, but the region faces critical challenges, and we've marked down the pace of the projected recovery.

Finally, our forecast of quickening growth depends on the euro-area economy shaking off its malaise. Despite the doom and gloom of much commentary, a number of recent indicators came in stronger than expected, and we've marked up our fourth-quarter GDP estimate to 1 percent, roughly its current rate of potential growth. Going forward, as shown by the solid black line in panel 2, GDP growth picks up to 2½ percent by 2017, driven, among other things, by the substantial monetary stimulus announced by the ECB last Thursday and described by Simon earlier today. By our

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

reckoning, the ECB's prospective purchases of €300 billion in private assets and about €900 billion in public bonds—carried out through September 2016—should raise the level of euro-area GDP by more than 1 percent. Some of these purchases were already anticipated in our December forecast (the dashed red line) and much of them were built into our January forecast (the dashed blue line), but the announcement on the following day nevertheless surprised us on the upside, and over the weekend we boosted our euro-area projection a bit further.

To be sure, there are many downside risks to the euro-area outlook, including those posed by Greece. The far-left and anti-austerity Syriza party won nearly a majority of seats in Sunday's parliamentary election and will form a coalition government with another populist party. We expect contentious negotiations between the new government and its official creditors, the IMF and EU, on the terms of new lending, and difficulties in these talks will likely create financial stresses that spill over into the rest of Europe. However, as failure of these talks could lead to Greece defaulting and exiting the euro area, our best guess is that agreement will ultimately be reached, with only limited damage to the euro-area recovery.

Returning to panel 1, our forecast for total growth (the black solid line) is nearly unchanged from the December forecast (the dashed red line). As I noted earlier, we revised down the projections for China and South America. However, other developments have boosted the outlook and largely offset these downward revisions. First, as shown in panel 3, oil prices are down further since the time of the December Tealbook, and we estimate this should add about 0.1 percentage point to overall foreign growth. The boost would be bigger, except that lower oil prices led us to mark down the outlook for Mexico and Canada, oil exporters that account for a large share of our trade-weighted aggregate for foreign growth. Second, the broad dollar is up another 3 percent (panel 4), which adds another 0.1 percentage point to foreign economic growth.

Finally, monetary policy is more accommodative than in the December Tealbook not only in the euro area, but also in Canada, where the policy rate was cut to ¾ percent, and in the United Kingdom, where we now see liftoff being delayed to the end of this year. If these easing actions were in response to a weakening of economic activity that was not already anticipated in our outlook, they would not necessarily boost our economic growth forecast. But, especially in the euro area, monetary loosening appears to be importantly motivated by risks that falling oil prices may push down headline inflation (panel 5), so far as to unhinge inflation expectations. Much the same considerations led the BOJ to amp up its QQE program late last year. Thus, all told, these monetary easings are a plus for global economic growth.

As Simon has described, financial markets are evidencing some gloom about the global outlook, and there is certainly no shortage of downside risks. Nevertheless, it is worth noting some risks on the upside as well. For starters, we've built a reasonably limited boost from falling oil prices into our forecast for foreign economic growth, and taking into account the uncertainty attending estimates of these effects,

we would not be surprised if lower energy costs triggered stronger improvements in confidence and spending than we've written down.

Additionally, the decline in oil prices may have further to go. As shown in panel 3, our projection regarding oil prices, based on futures markets, turns back up over the forecast period. This partly reflects expected increases in the demand for oil as global economic growth picks up and users respond to lower oil prices. In addition, lower oil prices are expected to damp oil production in higher-cost producers such as the United States. But the extent to which U.S. oil production will fall off in response to lower prices is quite uncertain. Although rig counts are down and oil investment projects are being scaled back, future extraction will be concentrated in the most productive wells. The Department of Energy is projecting that U.S. oil production will still move up through the early part of the year. We would not be greatly surprised if oil supply held up well enough to push oil prices below levels called for by futures markets. This would likely push U.S. and foreign growth up further, although it is possible that as oil prices fall to very low levels, some financial vulnerabilities—especially in EMEs most dependent on oil revenues—might be exacerbated.

Finally, I'd like to turn to the dollar, shown in panel 4. Since your December meeting, the dollar has risen further as expectations mounted for additional monetary easing abroad, mainly in the euro area. Looking ahead, we expect the broad real dollar to move sideways as our monetary tightening boosts the dollar a bit further against other industrial-country currencies, while the dollar depreciates a touch against EME currencies. Since last summer, we have been regularly underpredicting the rise in the dollar, and we could certainly be doing so again. But as the dollar gets higher, the chances that it could surprise us on the downside have also grown. The dollar's current valuation partly reflects material probabilities of very adverse developments abroad, such as renewed crisis in the euro area or a hard landing in China. If these downside risks do not materialize and confidence in the global outlook improves, much of the dollar's recent run-up could be reversed, as shown by the red line in panel 1 of your next exhibit and as we discussed in the alternative scenarios in the Risks and Uncertainty section of the Tealbook. As well, oil prices, in panel 2, might rise more steeply than in our baseline forecast. Panels 3 and 4 show the effect of these developments in our general equilibrium model SIGMA, whose results may differ from those encompassed in the staff's judgmental projection. The decline of the dollar in this scenario leads to a rise in GDP above its baseline path, which is only partially offset by the effect of the higher oil price, while these developments work together to deliver a large but transitory run-up in inflation. David will now continue our briefing.

MR. WILCOX.[6] I will be referring to the packet titled "Material for the U.S. Outlook." I'd like to begin by providing just a word of background for those who did not grow up immersed in baseball culture: Most of the time, one baseball game per day is considered quite enough, but a few times each season, opposing teams will

[6] The materials used by Mr. Wilcox are appended to this transcript (appendix 6).

play two games in one day, and this is referred to as a "double-header." In view of the length of today's meeting, the question obviously arises as to whether there has ever been a "triple-header." [Laughter] Indeed, according to Wikipedia, "there are three recorded instances of a triple-header in Major League Baseball. . . . These occurred between the Brooklyn Bridegrooms and Pittsburgh Innocents . . . [in] 1890 (Brooklyn won all three); between the Baltimore Orioles and Louisville Colonels . . . [in] 1896 (Baltimore won all three); and between the Pittsburgh Pirates and Cincinnati Reds . . . [in] 1920 (Cincinnati won two of the three). Triple-headers are now prohibited under the current collective bargaining agreement." [Laughter] I trust that the Committee will seek counsel's advice as to whether the remainder of today's triple-header will have to be played under protest.

The latest tranche of data suggests that real activity here at home was on a somewhat stronger footing during the second half of last year than we thought at the time of the December Tealbook. For example, as shown in panel 1, real GDP is now estimated to have increased at an annual rate of 5 percent in the third quarter. While we do not think that it maintained that torrid pace, we did also nudge up our estimate of GDP growth in the fourth quarter. The greater-than-expected strength in second-half spending was concentrated in personal consumption expenditures, and as you may recall, most of that good news was already in hand by the time of the December FOMC meeting. This morning we received the advance report on durable goods orders and shipments in December. This release was just a shade weaker than we'd been looking for, but the broad contour of our near-term outlook remains very much intact.

The incoming news about labor market conditions was also somewhat better than we had anticipated. The level of total payrolls in December was about 50,000 higher than we had expected, and the unemployment rate—shown in panel 2—was 5.6 percent last month, 0.1 percentage point below our December forecast.

Panel 3 shows our labor market conditions index, or LMCI, which attempts to extract a common signal from 19 indicators of labor market conditions. In the inset box, the red bars show the monthly change in the LMCI based on the information available at the time of the December Tealbook, while the gray bars show the latest estimates. Viewed through this lens, labor market conditions have improved noticeably during the past six weeks.

A key question for your deliberation now, as always, is where the real side of the economy stands relative to its sustainable position. Panel 4 provides three perspectives on that issue. The dotted blue line shows the traditional Tealbook method for assessing this question—namely, the percentage difference between actual and potential GDP. The red line shows the "production function" version of the output gap as estimated in EDO, one of the DSGE models that we maintain at the Board. The black line—labeled FRB/US—provides an early-stage report on a different approach, one that we aim to build on during the next couple of years. This measure is based on work done by Charles Fleischman and John Roberts. It has the virtue of attempting to combine the information from a variety of production, income,

labor market, and price indicators while also explicitly allowing for measurement error. According to all three measures, considerable progress has been made in closing the gap in resource utilization in recent years. Indeed, by any reasonable standard of precision, the economy now is operating at or near its sustainable position. I would note that the confidence interval shown around the FRB/US estimate ignores both coefficient uncertainty and model uncertainty, and so it surely understates the true level of imprecision. I look forward to updating you on our progress as we pursue an ambitious line of work to refine this measure and put it more at the center of our macroanalysis.

Turning from the "nowcast" to the forecast for real activity, three main considerations are relevant. First, the greater-than-expected strength in spending and the labor market during the second half of last year implies some greater momentum in real activity coming into the first half of this year than we previously believed.

Second, the stronger exchange value of the dollar that Steve discussed implies some restraint on spending and employment. By the end of 2017, the stronger dollar relative to the path in the December Tealbook would subtract 0.4 percent from the level of real GDP and would, taken alone, add about 0.2 percentage point to the unemployment rate, all else being equal.

Third, the further plunge in oil prices that Steve also mentioned provides, on balance, a countervailing boost to aggregate demand. To be sure, not all of the effects of the decline in oil prices on the U.S. economy will be positive. In particular, we anticipate some considerable reductions in drilling and mining investment in the next few quarters. As well, if oil prices stay low, oil production should level off this year and then edge lower, in contrast to the steep uptrend of the past few years. And, as suggested by work, authored jointly by our Federal Reserve Bank of Dallas colleague Mine Yücel, states, large fossil fuel sectors will take some sizable hits to employment relative to what they would have experienced otherwise.

All that said, we continue to see the drop in oil prices as a plus for the U.S. economy, but the question remains as to how much of a plus. During the intermeeting period, we spent some time digging into this question. As Hess Chung summarized in his briefing to the Board yesterday, there simply is no way to know with any precision. Absent any add-factoring, the FRB/US and SIGMA models both predict that a persistent decline in oil prices similar to what we've seen since the middle of last year should boost the level of real GDP by roughly 0.4 percent after two years. However, the median estimate reported in an internal BIS review implies a boost to the level of GDP of 0.7 percent, and a VAR model that Board staff maintain implies an output dividend of 1 percent. But the range of uncertainty surrounding all of these estimates is wide. To illustrate, I would simply note that the estimates surveyed by the BIS ranged from 0.3 to 1.5 percent. Moreover, last week's staff memo to the FOMC discussed a number of relevant risks, including ones coming from the financial side of the economy. On balance, though, we judged our previous FRB/US-based rule of thumb to have been a little on the slim side, and so, in preparing our latest forecast, we adopted an elasticity in line with the median from the

BIS review. Even so, the further drop in oil prices since the December Tealbook adds only about 0.3 percent to the level of real GDP in the baseline forecast by the end of 2017.

On net, the three factors that I've cited—stronger incoming data, a stronger exchange value of the dollar, and lower oil prices—were roughly a wash, leaving our medium-term projection for GDP growth little changed from December. Or, putting the point somewhat differently, the upward revision to the level of activity in the near term carries forward through much of the projection period, yielding a slightly higher degree of resource utilization in this forecast than in the previous one.

One other important endeavor during the intermeeting period was to provide you with another installment in our series of memos laying out various aspects of our forecast methodology—this installment covering the methods we use to set the main financial variables in the projection.

The last two panels of your exhibit summarize the inflation outlook. As shown in panel 5, the near-term outlook for headline PCE inflation now looks much more negative than before, mainly on account of the further plunge in energy prices. In addition, as you can see from panel 6, core PCE inflation also appears to be on a softer trajectory over the near term. Most of this latter revision reflects incoming data, including our translation of the December CPI and PPI. Over the medium term, however, the inflation forecast is little revised, as the slightly tighter margin of resource utilization in this projection has only a minimal effect on our inflation forecast. As in previous Tealbooks, we expect core inflation to increase slowly over the forecast period, reaching 1.6 percent next year and 1.8 percent in 2017.

I would close by noting that in the Tealbook, we assessed the downside risks to inflation as having intensified somewhat since your previous meeting. A fairly lengthy list of factors weigh in my thinking in that regard, including two consecutive CPI reports that were softer than we had expected, the further plunge in oil prices and the risk that may cause inflation expectations to come unglued to the downside, the further rise in the dollar, the continued weakness in wages, and the continued downtrend in TIPS-based inflation compensation. For now, we continue to judge a "steady as she goes" inflation forecast as the best base case for your deliberations, but we perceive the odds of a shortfall as having risen.

MR. KILEY.[7] I'll be referring to the handout labeled "Financial Stability Developments." My remarks draw on our recent QS financial stability report. Focusing first on our topline assessment, we continue to judge overall vulnerabilities in the financial system as moderate, as highlighted in the box at the top left of your first exhibit. This assessment reflects the interaction of three key factors. Specifically, while we judge valuation pressures, on balance, across a range of markets, to be notable, the degree of leverage and maturity transformation in the

[7] The materials used by Mr. Kiley are appended to this transcript (appendix 7).

financial system is low to moderate, and the level of borrowing by the nonfinancial sector has not picked up appreciably.

The remainder of the exhibit focuses on developments in key asset markets. Since the start of the fall, volatility in a number of asset markets (some examples of which are plotted to the right) has edged up, with modest spikes in October and recently. On balance, valuation pressures have perhaps eased modestly over this period.

Our review of valuations across a range of markets highlighted continued or building valuation pressures in corporate debt markets and the commercial real estate area. Focusing first on commercial real estate, CMBS issuance (the blue bars at the middle left) approached $100 billion in 2014. At the same time, CMBS spreads (the black line) fell to post-crisis lows over 2014. More accommodative underwriting in this market is apparent in rising loan-to-value ratios and increases in interest-only loans in CMBS pools, as well as in the continued easing in lending standards on commercial real estate loans reported in the Senior Loan Officer Opinion Survey on Bank Lending Practices.

The remaining exhibits focus on corporate debt markets. As shown in the middle-right panel, yields on high-yield bonds, the orange line, are up modestly since the last assessment in October. Yields on investment-grade bonds, the green line, are little changed, on net, since the October assessment. That said, the yield on the 10-year Treasury is down notably over the same period, so spreads on both high-yield and investment-grade bonds have widened, on net, over the past several months. This widening appears to reflect both some increased concerns about near-term credit risk and some reduction in risk appetite. A contributor to the increase in high-yield spreads is pessimism about the outlook for credit quality in the energy sector: As indicated by the teal line, yields on high-yield bonds of the energy sector have jumped up. As discussed in a box in our report, we do not anticipate significant strains on the broader financial system due to the drop in oil prices because leveraged positions related to oil appear limited and the degree of loss-absorbing capital at large banks is much increased. Still, some regional and small banks with concentrated exposures could face notable strains related to loans that are likely to default at the current level of the price of oil.

The widening in spreads in the riskier segment of the corporate debt market has been accompanied by a slowing in issuance, as shown in the bottom-left panel. The combination of junk bond and leveraged loan issuance slowed in the fourth quarter, largely reflecting a slowing in leveraged loans due to reduced refinancing activity as financial conditions tightened. The level of outstanding debt in these segments (the black line) has advanced rapidly over the past few years, and it remains to be seen whether recent developments represent a sustained softening in growth.

We have received hints that underwriting quality for leveraged loans may have improved late last year. Average debt multiples (the bottom-right panel), which are one measure of underwriting quality, declined slightly in the fourth quarter for large

LBO loans and middle-market loans, perhaps reflecting some response to the intensified supervisory message following the 2013 leveraged lending guidance. Possibly also in response to the guidance, there have been indications that underwriting of deals by smaller broker-dealers or private equity firms has picked up.

Your second exhibit looks at broad measures of leverage and maturity transformation. The rapid growth in riskier corporate debt has boosted net leverage among speculative-grade corporations (the black line in the upper-left chart). The debt burden, as measured by the interest expense ratio (the red line), has stayed low, but rapid growth of the type seen in recent years has, in the past, presaged elevated defaults in subsequent years.

In the aggregate, business debt relative to nominal GDP (the lower-shaded portion in the exhibit on the right) has increased only modestly, while household credit relative to nominal GDP has moved sideways through the third quarter. We have yet to see a detectable turn in the credit cycle, and the reduction in private nonfinancial debt relative to overall income seen over the past five years is an important contributor to our assessment that overall financial stability risks are moderate. Nonetheless, we are attuned to the fact that private nonfinancial debt relative to GDP remains above levels seen prior to the mid-2000s.

A range of indicators suggests that the degree of maturity transformation and liquidity risks in the financial sector remain moderate. For example, the ratio of net short-term wholesale funding of the broad financial sector to nominal GDP, shown in the middle-left panel, remains subdued. We also have seen a sizable increase in the liquidity buffers at large banks, presumably reflecting the phase-in of the Basel III liquidity-coverage ratio. Nonetheless, we highlighted in our assessment the possibility that the large increase in the role of bond and loan mutual funds promising daily liquidity when the liquidity of the assets held by such funds is uncertain could produce strains if flows out of such funds were to surge.

Leverage in the financial sector also appears low. Much of this assessment stems from the increase in loss-absorbing capital within the banking sector: As reported in the middle-right panel, the leverage ratio (the blue line) has continued to edge up at CCAR banks, while their Tier 1 ratio (the black line) has remained at a level much above pre-crisis levels, reflecting the combination of Basel III requirements and the resilience required in the annual stress test exercises. The current DFAST and CCAR exercises are under way and will be concluded in early March.

Outside the banking sector, pockets of the financial system continue to use high degrees of leverage to boost returns. Hedge fund leverage, shown at the bottom left, remains near post-crisis highs. Recently, several hedge funds active in foreign exchange trades made headlines by reporting significant losses in relation to the sudden appreciation of the Swiss franc.

As highlighted in the first bullet to the right, we expect the effects on the financial system of the sharp appreciation of the Swiss franc earlier this month to be limited.

At the moment, no significant counterparty issues have emerged. Some large U.S. banks experienced trading losses, but these appear modest.

As discussed in the second bullet, one source of volatility since October has been a rekindling of concerns related to Greece and peripheral euro-zone economies, and the potential for surprises remains palpable. Direct exposures of the U.S. financial system to proximate flashpoints appear notably lower than those seen two to three years ago.

We also continue to investigate, as highlighted in the final bullet, the factors that contributed to the volatility in the Treasury market on October 15. The staff has been coordinating with the CFTC to share data and analyses, but work remains ongoing.

We have also included, on the last page of your handout, our overall stability dashboard for your reference. This dashboard summarizes our assessment and provides a comparison of conditions today with our current assessment of conditions in 2004 and 2007. That concludes our set of remarks.

CHAIR YELLEN. The floor is open for questions to any of our briefers. President Fisher.

MR. FISHER. The only little point I'd like to make on financial stability is that I would suggest that we keep our eye on subprime auto loans. Auto loans now are approaching $1 trillion. We talk a lot about student debt loans, but if you look at what has happened in terms of used cars this past year, at least according to Morgan, it strikes me that it's a vulnerable area. I did note on January 20 the lead fellow for Honda at the auto show said that auto lenders are doing "stupid things. We've seen this movie before. We know how it ends, and it's not pretty." I had the staff look into that a little bit. They found that used cars accounted for 73 percent of subprime auto ABS last year, with terms out to eight years. It's just a small fact in the overall credit picture, but you might just want to keep your eye on it. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Yes, thanks. I'd like to ask both David Wilcox and Michael Kiley a question. David, you showed us PCE, and I was wondering whether anything is happening to real wages in your forecast.

MR. WILCOX. We have real compensation picking up over the course of the next couple of years to, in real terms, about 1½ percent by 2017.

MR. FISCHER. Okay. Thanks.

MR. WASCHER. In Q4, it's plus 2¼ percent, which reflects the sharp decline in oil prices in the near term. And it's then plus 7 percent at an annual rate in the first quarter. But, again, that's mainly due to the big decline in consumer energy prices.

MR. FISCHER. Yes.

MR. WILCOX. Nominal compensation gains have been running in the neighborhood of around 2 percent, so if you smooth through the employment and PCE prices, real compensation gains have been quite meager.

MR. FISCHER. Thanks. Michael, I'm just trying to figure out, even with this higher leverage and higher debt and all that, I take it that interest burdens may well be significantly down. You can see that in the top-left chart in exhibit 2, as an example. I don't know how general that is, but I assume it's pretty general?

MR. KILEY. As you can see on the right, for the business sector as a whole, debt growth really hasn't looked like that in the speculative-grade portion. So it is the case that the trend you've seen on the upper left is steeper for leverage than it would be for the overall business sector. That's reflective of the fact that it has been an area in which there has been a lot of growth—more than 10 percent each year for three years.

It certainly is the case that the interest expense ratio is depressed by the low level of interest rates today, so one might have concerns that that would reverse when the interest rate rises. Certainly we would expect that to happen somewhat. While leveraged loans tend to be floating rate, it is the case that even speculative-grade firms also issue high-yield bonds. We

have seen a lengthening in the maturity of their debt obligations, and they have the ability to hedge some of their interest rate exposure in various ways. I wouldn't take as much solace in the low interest rate expense ratio as might be seen by the quite low recent reading of the red line. Nonetheless, we do think that the debt burden is not as high as would be expected by the high leverage ratio, because interest rates are expected to stay low and the term has been lengthened these liabilities.

MR. FISCHER. Thanks. Thank you, Madam Chair.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I have a couple of questions for Steve. In exhibit 2, you display the behavior of PCE price inflation in this alternative scenario. I first had a question about core price inflation. And my other question tries to tie this back to the scenario in Tealbook A, which had a faster recovery with higher inflation. That scenario seemed to rely on a steeper Phillips curve than is usually used in the Tealbook, and I was wondering what assumption was being used about the slope of the Phillips curve in exhibit 2.

MR. KAMIN. On exhibit 2, that's total PCE prices. And for core, the effect would definitely be much more muted, because there is an awful lot of kick in the total happening from the rise in oil prices. The total increment here to headline inflation is about 1 percentage point, and it's more like ½ or ¼ percentage point for the core prices.

And your other question, I think, is referring to the alternative scenario that pertains to the domestic economy.

MR. KOCHERLAKOTA. No, I'm sorry. I complicated things.

MR. KAMIN. This one uses our standard SIGMA model, for which we have not altered the Phillips-curve assumptions that we used in previous runs.

MR. KOCHERLAKOTA. Okay. Thank you.

MR. WILCOX. Just to be clear, think of a two-by-two matrix in which the columns are different models and the rows are different assumptions about the Phillips curve. Steve's presentation is in some diagonal that's different from the one that generated the alternative simulation in Tealbook A. What we used was the FRB/US model with a juiced-up Phillips curve. What he used was SIGMA with SIGMA's standard Phillips curve.

MR. KOCHERLAKOTA. And SIGMA's standard Phillips curve is juiced up or not juiced up relative to FRB/US?

MR. WILCOX. I would answer, definitely juiced up. It's much more price-responsive.

MR. EVANS. Well, that's its normal state.

MR. KOCHERLAKOTA. That's its normal state, yes.

MR. KAMIN. That's probably truest in the dynamics, right? You know, the "impact effects" of shocks.

MR. WILCOX. That's right.

MR. KAMIN. Partly, I think, the assumption of perfect foresight and partly other aspects of the model definitely juice it up. What I would do is, I would take a look at panel 3, if you're interested, to get the message that the fall in the dollar and the rise in oil prices would certainly lead to a faster rebound in inflation, but not necessarily take the actual magnitude to the bank.

MR. KOCHERLAKOTA. Thank you, Steve.

CHAIR YELLEN. President Evans.

MR. EVANS. Thank you, Madam Chair. I was a little distracted, because President Williams just reminded me that it has been 20 years since he developed—

MR. WILLIAMS. I helped work on—

MR. EVANS. —helped work on the FRB/US model. It's quite an old— [Laughter] Back when he was—

MR. KOCHERLAKOTA. Six years old. [Laughter]

MR FISHER. And Al Gore was running the Internet.

MR. EVANS. More seriously, I'd like to ask David if he could make a few comments on a couple of the alternative scenarios. Picking up on Governor Fischer's question about wages, I couldn't help but notice the "Weaker Wage Growth" simulations and how, when wage increases are assumed to stay at their current low of 2 percent rate instead of picking up to that 3½ percent rate, total PCE inflation just goes to 0.9 percent in 2018. What's really interesting, of course, is that the federal funds rate over this period is lifting off and going up to 3 percent. During that period, the economy is doing quite well, but there is a disengagement between economic activity and inflation. So a few comments on that would be good. Also, against that, there is the "Faster Recovery with Higher Inflation" scenario. I confess I didn't read that very carefully, but I did notice that the numbers are quite different. The funds rate is much higher at the end point, and inflation only is at 2½ percent at the end of the simulation period.

It looks to me like this analysis is another piece of evidence that shows it's a lot easier to deal with rising inflationary pressures because we can increase the funds rate, but we have trouble with these disinflationary periods in which—well, in this case, the funds rate is going up, so I'm not quite sure as to what is going on—it's more difficult to get inflation up to target. If you could comment along those lines, that would be helpful.

MR. WASCHER. In the "Weaker Wage Growth" one, the weaker nominal wage growth flows through into lower inflation, and, as you noted, real activity isn't really affected very

much. In a way—when we run these simulations, we basically turn on the inertial version of the Taylor rule at liftoff.

MR. EVANS. It doesn't seem to be very effective, does it?

MR. WASCHER. And it is the inertial part of it. In general, it lifts off, but it's not very effective at bringing inflation up. The responsiveness of inflation in the model to activity isn't very big, and I think that's what you're seeing there. We did run an alternative scenario in which we implemented the policy rule with an inflation floor included, and that's noted in a footnote in the text. That one still lifts off at the same time, but the increase in the funds rate is much more gradual in that version of the policy.

MR. EVANS. That seems in keeping with my thinking that, when inflation is at these relatively low levels because of something that is difficult to deal with, it requires a more extraordinary use of accommodation—in this case, a "flatter" Taylor rule. That's what the inflation floor is doing, relative to what we would normally think.

MR. WILCOX. There is a lot of model uncertainty surrounding this question, apropos of the comment earlier about the SIGMA model.

MR. EVANS. But I'm just trying to get at the characteristics of the analysis.

MR. WILCOX. Monetary policy is much more powerful in the SIGMA model in boosting inflation than it is in the FRB/US model. So monetary policy in FRB/US has a really hard time getting inflation up to the 2 percent objective.

We do some apples and oranges in presenting to you some scenarios in this section of the Tealbook, some that are generated using the FRB/US model, others that are generated using the SIGMA model. We think that's a virtue, to demonstrate for you the fact that one can develop

different results using different models. I think it's a useful reminder that this is an area where there is a lot of uncertainty and some pretty heated debate about what the right response is.

MR. EVANS. That's fine. The more damaging response that I was hoping I wouldn't get back from you, which I didn't yet, is that, except for the 2018 time frame, that inflation rate is actually still going up. I would have guessed that it's the inertia in inflation, so it's actually much worse. I'm pointing to this and thinking, "That faster inflation, it's really not that bad of an outcome, because inflation is at 2½ percent." But if you told me that that was on its way to 3 percent, then I would say, "Okay, that's more of a 'symmetry of distaste' across these simulations." But your comment about uncertainty as to the mechanisms here also suggests we're in a different situation. We're in a situation right now in which inflation is below our target, so something that lifts up inflation just isn't that bad at the moment, because we need it to go up anyway. That's how I come out from that. Thank you.

CHAIR YELLEN. President George.

MS. GEORGE. Thank you, Madam Chair. I have two questions on the financial stability report. One is on the capital ratios that you show on page 2. How much different does the leverage ratio look when you use GAAP and net derivatives versus if you use international accounting? Is it a significant difference on that leverage ratio measurement?

MR. KILEY. For the U.S. banks, I'm not actually sure of the answer to that. I know that's a large issue when we make international comparisons.

MS. GEORGE. I assume it would be less, though, under those. My other question is on the conclusions that the report draws. The measures of cyclical vulnerabilities look fairly reassuring. But it's not as clear to me how I should think about the state of structural vulnerabilities and how you evaluate those relative to those conclusions in there. And in the

report, it talks about that as being an important limitation of your ability to quantitatively measure risk to the financial system. So my question is, really, how do you incorporate those here? In view of all of the reforms and changes that may be under way, where do you gauge structural vulnerability, or how should I think about it in relation to the conclusions that you've drawn here?

MR. KILEY. Just to provide a little more context for your question, because your question did reference our additional chapter in our assessment in which we did a purely quantitative approach to developing the dashboard that's shown on your left page, that more or less basically compares a set of numbers with their historical perspective and uses historical ranges as the benchmark. That is purely a cyclical perspective. So, for example, if something historically looks very low right now, but very low is still a terrible position, our quantitative folks would say, "Oh, that's fine, but structurally there may be a problem."

That supplemental report looks at many of the same factors that we looked at here. Our judgmental report looks at many others, but it faces the same set of challenges. We try to say, "How do conditions look today relative to history?" And that's easy, because in the case of those indicators for which we have some history, we can say, "Well, things are high or low, and high is good or low is bad," and put together an assessment. The more difficult challenge is that, historically, there may be indicators—for example, like the historical amount of leverage of banking organizations—for which our assessment now is that it always was too low. And so, of course, it's high now, but the question is: Is it high enough?

If you look at the quantitative indicators, various categories are not green or yellow as they are in our judgmental assessment, but are ice-blue cold. So, for example, if you look at the picture for capitalization in the bank sector, all of the numbers are much higher than before,

much higher than at any other time for the data that we have. Our judgmental assessment is, indeed, capital positions of banking organizations are much improved, that we've put in place new requirements. The banks have transitioned to them. Indeed, they have in most cases already exceeded things like the leverage ratio under the proposed U.S. G-SIB surcharge. Our assessment there would be that if things are actually much improved, they may be green or something. I don't know about ice-blue cold, like in the pure quantitative approach. And then if we were to look elsewhere, there really haven't been changes. So that's why we have a green for financial-sector leverage and not a blue.

For example, on maturity transformation, if you look at the chart I showed you, net short-term funding is much reduced from a cyclical perspective. In other charts that are in our report, high-quality liquid assets are up within the banking sector. So there seems to be a reduction in maturity transformation and in liquidity risk in the banking sector. Nonetheless, if we think of leverage or maturity transformation outside the banking sector through securitization or other vehicles, those are much reduced, but some of that reflects more cyclical positions, and there haven't been as many structural reforms on the shadow banking side. There we would still note that we have yet to see what the effects of money market reform will be. Those proposals are only coming into effect next year. We note increased liquidity transformation in mutual funds. I highlighted bond and loan funds, but there may be other cases as well.

I think we do see the structural vulnerability as still being important, and that's why we have a much more yellow assessment than the sort of blue thing. I mean, the cyclical position looks weaker than what our judgmental assessment would be, and that reflects the structural factors.

CHAIR YELLEN. Thomas.

MR. LAUBACH. My apologies, Madam Chair. I just want to quickly add one little bit to David's and Steve's responses to President Evans's earlier question. I think for the "Weaker Wage Growth" scenario, one thing to keep in mind is that, from the perspective of not the inertial Taylor rule but the Taylor (1999) rule, right now the funds rate is surprisingly depressed, as you may remember from Tealbook B. Taylor (1999) would say it already would be at 2 percent now. And I think one thing that's going away in that simulation is, effectively, this factor that is keeping the funds rate depressed. So even though inflation is running so low, it's appropriate under that rule that policymakers gradually bring the funds rate back up. I think the peculiar thing is in that scenario, even though inflation is so low from a real-activity perspective, the economy looks reasonably healthy because the unemployment rate is running relatively low. So the rule looks at it as though the economy is actually strong. Now, this is how the scenario is being constructed, and you might, of course, ask yourself, if you find yourself in such a situation, whether you then might want to reassess what, for example, the level of the natural rate is, but that is outside the scope of this scenario.

MR. EVANS. Right. Thank you. I think that's an example of why these simple rules can often keep us well away from our goals because we're holding to a rule like that, when all of a sudden there's something else going on that's unusual historically. We ought to offer some additional accommodation; or that's my interpretation of that. Thanks.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I have two questions for David Wilcox and one for Steve Kamin. I'm looking at the forecast summary, panel 5, PCE prices. When you're talking about output gap estimates, and we've talked about this issue before, you say, "Well, there's a lot of model uncertainty as well and other types of uncertainty," so the shaded region is

really understating the amount of uncertainty associated with this estimate. Then I go look at the PCE prices, let's say, for the fourth quarter of 2015, and I wonder if something similar applies so that this confidence region is actually much wider than it appears. And what always gets me in looking at these pictures is, it looks to me like half the probability is above 2 percent and half the probability is below 2 percent. So, really, insofar as we can learn something informative from this model about inflation in the fourth quarter of 2015, it is that it's a coin flip whether headline inflation will be above or below 2 percent at that point. Is that a fair assessment or is that an overstatement?

MR. WILCOX. Well, let me clarify first. My comments about the confidence interval being understated pertained to panel 4, which comes out of the state-based model. Now, with regard to panel 5, I think it's less obvious that the confidence interval there understates the true uncertainty. For one thing, while we use FRB/US-based stochastic simulations to generate the confidence intervals in this panel, we also benchmark those against the actual track record of the staff in real-time forecasting, and we get confidence intervals that are a little narrower for the FRB/US model than for the staff real-time track record. But the two are broadly consistent.

That said, I think there are some important aspects of those confidence intervals that we've been digging into deeper lately, pertaining to issues like the ones that you raised about symmetry, for example. And my expectation is that, over the course of the next six months or so, we're going to be trying out some new products in the Tealbook that attempt to address those kinds of issues. For now, I take these confidence intervals as helpful, indicative, but even we don't confuse them with the gospel truth or anything like that.

MR. BULLARD. Okay. Let me turn to panel 6, then, which is core inflation. Because it's President Fisher's final meeting, I'll ask you whether it would be possible to do some of the

analysis in the future based on the Federal Reserve Bank of Dallas's trimmed mean of PCE price index as possibly a more rigorous way to think about a smooth measure of inflation instead of core inflation.

MR. WILCOX. Well, I hate to send President Fisher out on a disappointing note, but I'm a little skeptical about our ability to do that. That would be a pretty thoroughgoing exercise because we'd have to recalibrate our models. This would not be a simple undertaking. The implications of that, I think, would run fairly deep through the structure of the model. I don't want to be encouraging about that.

MR. BULLARD. You're saying you're going to use an inferior measure permanently. [Laughter]

MR. WILCOX. We're going to use the measure that the Committee had indicated that it is focusing on as their objective for monetary policy.

MR. BULLARD. No, headline inflation is the objective.

MR. WILCOX. Yes, and the one that is most closely related to that. Also, I'm making a cost-benefit judgment that, in terms of the priority of some of our modeling projects that we have in the pipeline—as helpful as that one might be—I can't really process in real time what that would be. Some of the other projects that we have in mind for analytical development, I think, will pay very big dividends.

MR. BULLARD. Okay. I'm going to interpret that to mean you think it wouldn't make that much difference relative to the time cost that would be involved.

MR. WILCOX. Correct, yes.

MR. BULLARD. Okay.

MR. FISHER. Madam Chair, let it be recorded, I appreciate being fought over. [Laughter]

MR. BULLARD. Okay. Let me turn to the presentation "The Foreign Outlook," exhibit 1, panel 1, "Foreign GDP." I'm interpreting what you said was, you turned something in to the Tealbook, but then the ECB surprised you to the positive side. You upgraded the forecast, which is in panel 2, and now it looks like you're really not changing your world GDP outlook appreciably, according to my reading of panel 1.

MR. KAMIN. That's essentially correct, although the unexpected part of the increment to euro-area GDP growth that we have built in, in response to the announcement, was in the neighborhood of ¼ percentage point per year for all of the next few years. With the euro area in general having a weight in our foreign aggregate that's less than 20 percent, or in that neighborhood, it didn't end up changing the foreign GDP line that much. So before the announcement, our current forecast, that black solid color line, was just a teeny bit below where it is now. I think the story both before and after the announcement was pretty much the same, which is that our outlook was broadly unchanged.

MR. BULLARD. Well, I think one of the things that the Committee is going to debate is uncertainty surrounding that outlook. According to you all, has uncertainty associated with that outlook changed, or is it about the same?

MR. KAMIN. Well, okay. So it's good to focus on the difference between the change in the modal outlook and the increment to the confidence interval. There are plenty of uncertainties in the outlook, both on the upside and the downside, and arguably some of those have gotten wider over the past few months. But I think you could argue that the ECB announcement, representing this forceful action by the ECB, might have diminished the downside risks for the

euro area in addition to boosting the modal outlook for the euro area a bit, because all the additional asset purchases probably provide some cushion against financial downside risks, particularly those, for example, that might emanate from Greece.

MR. BULLARD. Okay. Thank you.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Yes, thank you, Madam Chair. I wanted to follow up on President Bullard's conversation with David about chart 5 on the forecast summary. Are these numbers quarterly or are they 12-month averages?

MR. WILCOX. No, these are quarterly.

MR. KOCHERLAKOTA. I see. Okay.

MR. WILCOX. Jeremy, these are quarterly changes?

MR. RUDD. Yes.

MR. KOCHERLAKOTA. Okay. That's helpful to know when I look at Tealbook A. On page 72 there's a report on probability of inflation events, and the probability of inflation being below 1 percent over the course of 2015 is reported to be 74 percent. The probability of being below 2 percent is pretty high.

MR. BULLARD. So what should we believe? I'm looking at the fourth quarter on the chart.

MR. KOCHERLAKOTA. This chart is going quarter by quarter, and not showing changes over the full year backwards.

MR. BULLARD. Sure, okay.

CHAIR YELLEN. Okay. So next we have an opportunity to make comments on financial stability, and I have, I believe, three people who have asked to be recognized. I'll start with President Rosengren.

MR. ROSENGREN. I'll be pretty quick. I just want to follow up on President George's comment. She used the word "reassuring," and, I guess, when I look at the global context for financial stability, "reassuring" would probably not be how I would characterize it, and it gets to her comment on structural vulnerabilities. So while the overall forecast for Europe seems like it's improved with the policy change, the risk of a pretty bad outcome, that tail risk, probably has gone up with the Greek election and other things going on with Russia and Ukraine.

And when I think about whether the domestic characterization of asset valuation, leverage, and maturity would pick up the global financial shocks, I'm not sure. We've kind of structured our monitoring, which I think is very useful, to a domestic shock that occurred last time. And if I think about importing a financial shock from abroad, that might be a different transmission mechanism. The report highlights, for example, the money market funds' holdings of European securities. But during the fall of 2011, it seemed like the broker-dealers were actually one of the major transmission mechanisms, in two respects. One is, our monoline broker-dealers got very elevated credit default swap rates, which started to create financial vulnerabilities potentially in the United States, and we started to get worried about some of the monoline investment banks. And going the other way, European banks are still very large in terms of their very large broker-dealers in the United States. So a serious problem in Europe on transmission mechanisms would be through the broker-dealers.

It's just a comment about maybe thinking about financial stability shocks that are not domestically oriented. Emerging markets and Europe right now would strike me as two areas.

We talk about the exchange rate and net exports, the financial transmission mechanism separate from those two might be an area to think about at future times. So that's just an observation that follows up on President George's.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. I'm not going to make any further comments. I think Michael answered my question on structural issues.

CHAIR YELLEN. Okay. And, last, I have President Fisher's name, with a question mark.

MR. FISHER. No, ma'am.

CHAIR YELLEN. Okay. And is there anybody else who would like to comment. Vice Chair.

VICE CHAIRMAN DUDLEY. One thing I worry about, and I guess I'd encourage the staff to look at, is that, in Germany and Japan right now, we have 10-year interest rates that are extraordinarily low. And if central banks actually do achieve their objective of getting back to 2 percent inflation, it would seem that those bond yields are going to move pretty substantially. And I think it would be useful to understand what the consequences of that type of bond market revaluation might be, because it could be several hundred basis points in a fairly short period of time if they actually are successful in what they are trying to engineer. I just think that would be worth taking a look at. Thank you.

CHAIR YELLEN. Others? Nellie.

MS. LIANG. Madam Chair, may I respond to one comment by President Rosengren?

CHAIR YELLEN. Yes, of course.

MS. LIANG. We have in the past year looked at transmission channels to the United States from both the EMEs and China through—besides oil and the economy—financial-institution channels. And that would include, first and foremost, through the large banks, including broker-dealers and the trading books and the loan exposures, et cetera. So we have tried to trace that, and in the end, at least over the past year or so, we feel that most of the transmission will be through the economy, through real activity, and that the financial sectors themselves don't have the direct exposures. That's not to say there can't be a lot of indirect exposures, because some of the European banks could have large exposures to the EMEs. Almost certainly they have bigger exposures than banks do in the United States. But, first order, we have been looking at it. I think we've gotten a little bit of comfort. I don't know if "reassuring" is the right word. I don't think we used "reassuring," but we've gotten some comfort from the fact that institutions recognize these channels and have been taking steps to reduce their exposures, especially to Europe, in the past couple of years. So it's a trend. We did, I think, evaluate shocks from the EMEs and from China recently, in the past six months or year. We've looked at them closely. We'd be happy to send that to you if you haven't seen it.

MR. KAMIN. And I would add that in the case of our deep dives in the QS report, both on China's financial system and on emerging market turbulence, we looked very carefully not just at the possibility of these instabilities abroad, but also the channels by which they might affect the U.S. financial system. And our plans are to work more on this to formalize our analysis of the financial-stability issues abroad and bring them into the overall picture of U.S. financial stability.

CHAIR YELLEN. Governor Brainard.

MS. BRAINARD. On the international front, obviously, the things that we have been most focused on are risks in Europe, Japan, and China. But as we think about the combination of continued dollar strengthening and a potential interest rate change, there is going to be a different set of countries and financial markets and corporate sectors that have some exposures there. And we're probably not that exposed in concentrated ways, but we should certainly be monitoring that.

MR. KAMIN. We are, certainly.

MS. LIANG. We are, absolutely. We think we will have that in two meetings from now.

MS. BRAINARD. Thank you.

CHAIR YELLEN. Any further comment? All right. After looking very carefully, I see none. So what I'm going to suggest is that we begin our economic go-round and maybe go for 20 or 25 minutes, and then have a coffee break. And to start us off, President Fisher.

MR. FISHER. Thank you, Madam Chair. I want to thank President Bullard for his strong endorsement of the trimmed mean measure of inflation that the Federal Reserve Bank of Dallas produces. I do wish that the various trimmed mean measures would be discussed—not just ours, but others too—more frequently at this table.

I'm going to talk about my District first, Madam Chair, because of the intensity of coverage given to it recently in the media, especially in light of the energy price developments. Then I'm going to talk about oil and gas and its effect on the U.S. economy, something you and I spoke about on the phone and that you asked me to expand on. And I'm then going to conclude with some general impressions of U.S. economic activity, drawing upon inputs from my CEO contacts. This being my last FOMC meeting, I felt that you should hear at least one more reference to my interlocutors, having been subjected to them for the past decade.

First, with regard to my District—and I remind you, 98 percent of the output of my District is generated by one state, the state of Texas—labor market data released on Friday were in keeping with what we at the Dallas Fed had forecast and I had reported to this Committee over the past several months. Despite the precipitous declines in oil prices since June, and particularly since November, payroll activity in Texas increased at a 3.67 percent annual pace in December, spot-on to our forecast of 3.6 percent. Employment growth did fall by at least 1 percentage point in the energy-intensive areas of Houston, Midland, and Odessa, but expanded in the technology-intensive areas of Dallas, Arlington, Fort Worth, and places like College Station and Austin. And, thus, the state unemployment rate fell 0.3 percentage point in December to 4.6 percent.

There is no question that sustained lower energy prices affect Texas. We produce 37 percent of the nation's crude oil and one-fourth of its natural gas. That said, and I think this is the tendency of J.P. Morgan and others who have looked at us, this is not the 1980s all over again. First, our economy is far better diversified than it was. Oil and gas and mining and all of the support services for those three sectors account for 2.6 percent of total nonfarm employment in Texas. The share of oil and gas in Texas's nominal GDP or the state equivalent is 13 percent. Those shares, however, are well below their peaks in the early 1980s, when oil and gas accounted for 5 percent of employment, almost one-fifth of our output, and 17.7 percent of Texas state government revenues. Today, because of a diversified economy and a diversified tax base, oil and gas accounts, as of the end of 2014, were only 4.1 percent of the total state revenue.

Second, thus far, the oil price decline is less than that experienced in the 1986 crash, although it may approach the same. Prices fell 63 percent in that period, from November 1985 to

July 1986. And from June 2014 to now, prices have declined 53 percent, although I used the number 55 percent in the presentation earlier.

Third, simultaneous with the oil price debacle of the mid-1980s, we did have the U.S. Tax Reform Act of 1986, which changed how commercial real estate was taxed. It crimped CRE profitability and compounded the severe downturn in commercial real estate in Texas and the banks that loaned to commercial real estate investors. And, while we do have some small banks in the panhandle, in the Permian Basin, where activity is related to oil and gas indirectly—and almost everything they do is related to oil and gas—most of the middle to larger-sized banks we have contacted say their energy customers are hedged, and that they were hedged before they made their E&P loans to them. I also note that large banks and other investors generally do not have highly leveraged positions related to oil. Across the LISCC and community banks, outstanding oil and gas loans are, at most, 15 percent or, at the highest that we can see, 40 percent of Tier 1 capital.

Fourth, it's important to note that in the mid-1980s, the oil futures trading market was in its nascent stages. It was not very deep, like it is today. Of course, before 1982, basically there was a fix for oil prices kind of like the gold market spot fix. But if you look at charts of spot WTI, as we have done, or, most importantly, refined petroleum products going back to 1954, you will notice that before 1986, there was very little short-term volatility, whereas post-1986, as trading markets developed, there are significant price movements in both directions. That shift in volatility has had an effect on the way bankers and Texas investors finance projects, the success of which depends on the price of oil and gas.

Now, having said all of that, we do expect that if prices remain where they are for a prolonged period—remember, I have argued, based on my contacts, that we believe that we are

in a price-discovery process led by the Saudis, the Kuwaitis, and the Emirati. If this were to last more than a year or even two, we at the Federal Reserve Bank of Dallas expect that, on net, the growth of nonfarm employment will be crimped by job losses in this sector and in related sectors. And the widely quoted model by two of our economists, Mine Yücel and Michael Plante, indicates a loss of 140,000 or so jobs both directly in this sector and due to knock-on effects. Netting out the benefits to consumers and business users of energy, the bottom line for my District, for Texas, is that we presently expect job growth of 2 to 2½ percent in 2015. Being half-Norwegian, I'll say that this is not Edvard Munch's portrait of *The Scream* as JP Morgan and others have forecast. We are, however, going to see a slowdown in our employment growth rate, but to the pace of the rest of the United States. So we will have weaker but still positive employment growth.

Let me just add that we have released our manufacturing index on Monday. We're soon to release our service index and our retail index, and this is reflected in those numbers, particularly the new orders index, which, to me, is the most important component.

With regard to the nation as a whole, and returning to oil and gas and energy, I think it's very important for those who are looking at this and its effects to realize that the share of employment for the nation as a whole of this sector is 0.4 percent. It's half of what it was at its peak in 1982, when it was 0.8 percent. The nominal share of the oil and gas sector in U.S. GDP is 2.2 percent. I would add, parenthetically, excluding Texas, it's 1 percent. Now, that 2.2 percent is down from its peak of 4.3 percent in 1981. And, finally, cap-ex spending on structures and equipment in the oil and gas sector, important as it is, and having increased in recent years, was 1.2 percent of U.S. GDP. So we concur at the Dallas Reserve Bank with the summary of the Board memo on oil prices in the Tealbook forecast. For the United States as a whole, supply-

induced lower oil prices are a net benefit to the U.S. economy, and I would say, as I said to you on the phone, Madam Chair, especially for the two lowest-income quartiles.

With regard to the effects of oil and gas price declines on inflation, lower prices temporarily reduce headline inflation but do not, we believe, have a sustained appreciable effect on core inflation—of course, depending on longer-term inflation expectations being well anchored and on an indication that we at the central bank do not indicate that we are responding directly to movements in retail fuel prices.

With regard to the broader economy, on Friday we received the December Federal Reserve Bank of Chicago national activity index. It summarizes the information, as everybody, especially President Evans, knows, in 85 different indicators of real activity. We at the the Federal Reserve Bank of Dallas combine the three-month moving average index of the Federal Reserve Bank of Chicago with the ISM manufacturing new orders sub-index to get what we feel is a real-time forecast of annualized current-quarter real GDP growth. For the fourth quarter of 2014, that forecast was 3.2 percent, the same as Macroeconomic Advisers. The Tealbook is, I think, considerably lower than that. To be sure, GDP growth is noisy from quarter to quarter and very difficult to predict, but I think the appropriate inferences are that, one, the economy stayed on a solidly above-trend growth path in the final quarter of 2014, and, two, the risk to the Tealbook forecast, in our opinion, is tilted to the upside.

I am hearing this from my CEO contacts and my corporate interlocutors. As one of them summarized, "It's not bending the mast, but we have a good deal of wind in our sails." For example, of the 22 sectors serviced by the nation's largest railroad, 18 are performing strongly and only 4 are weak. The telephone companies that I speak to, particularly the two largest, report that their large enterprise business is booming, something they haven't seen for many

years, while small business spending continues to chug along. Now, to quote Randall Stevenson, the CEO of AT&T and Chairman of the Business Roundtable, he is "as bullish as I have been since the year 2007." This may have to do with the resurgence of confidence among U.S. manufacturers. An example is that we know that today, anything that uses electricity has a semiconductor component. And while business for Texas Instruments has expanded handsomely internationally over the past several years, for 2015 it expects 15 percent of its sales to come from within the United States. That's versus 10 percent only four years ago.

The retailers I talked to, which ranged from Walmart to 7-Eleven to the casual diners—my favorite term—to J.C. Penney and others, as well as the airlines and broadcasters and hoteliers, all of them reported a surge in demand at year-end, and especially in the first three weeks of January, except in the sales of apparel. An example: Disney's theme parks "broke every record in the book," according to their CEO. They are running 96 percent occupancy in their 40,000 hotel rooms despite the measles outbreak in Los Angeles. Apple's CEO, Tim Cook, reported a surge in spending in what he calls discretionary spending apps, things that people—he wouldn't say this publicly, by the way—really don't need but they're spending money on. Some of the telephone retailers report that their discretionary items, like power boosters for cell phones, sold strongly after the Christmas holiday and have done so for the first three weeks of January. Consumer electronics, TVs, et cetera, ended the year strongly. Overall, according to MasterCard's SpendingPulse program—which I like to study the entrails of—retail sales, ex auto, ex gas were up 4 percent in December, closing the year at plus 3.9 percent for 2014. And in January, according to the CEO of MasterCard, it was "a bit stronger than that."

If you look at the Conference Board's report that was released today and you look at the NBER survey that was released yesterday, the reports of my interlocutors seem to confirm what

we saw from the combination of the Federal Reserve Bank of Chicago's National Activity Index and our own bank's read of the ISM entrails. So I judge the economy to be in a position to continue to see a reduction in unemployment, increasing confidence, and maintenance of price stability, albeit lower than 2 percent.

I judge the risk to the Tealbook forecast as tilted to the upside. I believe the United States, absent some exogenous shock, to be in a very sweet spot. And as to the output gap, as indicated by David Wilcox, I believe it is close to being closed. And I will close by reminding you that we are mindful, especially at the Federal Reserve Bank of Dallas, of the nonlinearity or the convex nature of the Phillips curve. Thank you, Madam Chair.

CHAIR YELLEN. Thank you, President Fisher. President Lacker.

MR. LACKER. Thank you, Madam Chair. In recent weeks, our anecdotal reports have become noticeably more optimistic on balance. For example, a bank CEO from South Carolina said "Fear has subsided," and that loan demand and credit quality are now better than at any time since 2007. He also added that an increase in the funds rate would be no event, in his view, because borrowing costs would still be quite low. Our other bankers are reporting good growth in pipelines as well and are using excess liquidity to support new lending. Both our composite manufacturing index and our services revenue index, released just this morning, indicated continuing broad expansion in our District in January, and expectations for six months ahead are remarkably high in both surveys as well. I will add that our retail services sector index rebounded significantly after dropping from November to December. In housing, the continuing themes and reports in the Fifth District are strength in multifamilies and sluggishness in single-family housing. A comment from one of our directors, the CEO of a bank with an active

mortgage servicing business, was typical of what we are hearing. He said that he doubts that first-time homeowners are coming back anytime soon.

With regard to national conditions, the key element in the Tealbook forecast is the trajectory of consumer spending. The spending data we've received in the past few months of 2014 were quite strong on the whole, and the Tealbook has revised its projections of consumer spending growth markedly higher. The staff now expects consumption growth at about 4 percent this year and 3½ percent for next year. Compared with the 2¼ percent consumption growth we saw for most of this expansion, this represents a noteworthy pickup, and I'm now convinced that this is likely to persist. Falling gasoline prices have no doubt provided a significant boost to real income and real spending, but this is a one-time level effect, and the growth effect is likely to dissipate in a couple of quarters. The strength in consumer spending has also been driven, I think, by improving labor markets and higher net worth. My sense is that these will leave a more lasting imprint on consumer spending growth after the one-time level effect of the decline in oil prices has played out. So I think consumer spending growth this year is likely to start out strong but tail off perhaps a little earlier than in the Tealbook.

I also concur with several other elements of the Tealbook forecast. Nonresidential investment looks positive, with an improved outlook for equipment and tangibles offsetting weakness in oil and gas exploration. Government spending will be flat, and net exports are likely to be a drag on economic growth, because of the strength in the dollar. On housing I'm not nearly as optimistic as the Tealbook, though, because I think the shift in housing preferences that we've seen is likely to be more persistent. The bottom line is, my GDP forecast would be somewhat below Tealbook for this year and next but still stronger than it was in recent meetings.

Turning to inflation, I'd like to thank the staff for their extensive and very timely analysis of inflation expectations. The TIPS-based measures of inflation compensation have been grinding lower over the past several months, and it's natural to worry about whether that reflects an erosion in credibility of our commitment to 2 percent inflation. It's striking that, as documented in the Tealbook and the accompanying memo, an array of approaches using different methods and different data all indicate that longer-run inflation expectations—as opposed to compensation—have been quite stable, even as headline and core inflation have fallen in recent months.

If oil prices were to decline further, it would put further downward pressure on headline inflation and might yet pose a risk to inflation expectations. However, if oil prices have reached bottom for this cycle, as it appears may be the case, then the stability thus far of measures of expected inflation would make me fairly confident that we will emerge with inflation expectations well anchored near our target, and that core inflation will move back to 2 percent. Barring further shocks, I would expect that to occur somewhat more rapidly than at the glacial pace shown in the Tealbook.

The striking divergence between inflation compensation and inflation expectations over the past few months highlights the importance of the distinction between the two. At times it's easy to treat compensation and expectations as synonymous, but I'm afraid that we are not always careful enough about this difference in our external communications. We have been careful with the literal wording of our statement. The last sentence in the first paragraph says, "Market-based measures of inflation compensation have declined somewhat further; survey-based measures of longer-term inflation expectations have remained stable." That's the sentence in the first paragraph. But this may place too much emphasis on measures that we know are

flawed as indicators of expected inflation. It leaves out the fact that market-based measures of inflation expectations have also remained stable. I think we should be quite mindful, as we go forward, of that distinction between inflation expectations and compensation, and in future communications I think we should try to find a way to deemphasize inflation compensation and draw more attention to market-based measures of expected inflation.

One final thought: The economic outlook has improved significantly in the past six months. I think the inflation outlook could also change significantly over a short period as well. Thank you very much, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. The economy is showing solid momentum, with positive news from nearly every sector. Given continued exceptional job growth and steady declines in unemployment and other measures of slack, I expect our full employment goal will be reached by the end of this year, if not sooner. The improving labor market along with the plunge in energy prices have also brightened prospects for households. Consumer sentiment and consumer expectations of future income growth have jumped sharply.

While our economic recovery from the Great Recession is nearing completion, the opposite is true abroad, where progress has been halting. The strong global cross-currents that are present in the outlook require special attention, and in this regard the recent announcement of further quantitative easing by the ECB is very welcome news for economic growth prospects. The various global factors, including the plunge in oil prices, the stronger dollar, and the bond rally, appear largely offsetting, and these developments seem to be a modest boost for U.S. growth this year and a modest negative in 2016. Specifically, since our previous meeting, like the Tealbook, I have edged up my forecast for U.S. real GDP growth this year to nearly

3 percent, and based on the maximum employment mandate alone, we should be in the process of normalizing policy already.

Of course, the big question mark is the outlook for inflation. Actually, for a brief moment there were some disturbing developments in the intermeeting period. You know, being at the Federal Reserve Bank of San Francisco, we look at a lot of high-tech measures of economic and financial conditions and use Google Trends, and we noticed a lot of discussion of deflation. But then, of course, we found it was another one of these New England Patriots activities. [Laughter]

MR. TARULLO. Undocumented.

MR. EVANS. Well, 11 out of 12 were deflated. That's not documented? [Laughter]

MR. WILLIAMS. I do know that the defense in Seattle are buying many air pumps so they'll make sure that the balls are properly inflated for the Super Bowl.

In terms of the underlying trend in inflation, we're only about ½ percentage point below our objective, but our continued progress toward that objective remains a forecast. And like any forecast, it is subject to uncertainty and risks. Of course, the drop in energy prices has pushed down headline year-over-year inflation numbers to zero and even into negative territory. Even for core inflation, I expect the downward price pressures from a stronger dollar and the path to a lower energy price will offset for a time the upward pressure arising from reduced slack.

Based on the experience of the past two decades, these transitory influences should not have persistently depressing effects on inflation, and I continue to expect a gradual move back of inflation toward our 2 percent objective over the next two years. I find some support for this view when I look at disaggregated PCE price data. First, and I actually have this written down, the trimmed mean PCE price index—which I do refer to quite often here and in the public,

because I do find it a useful measure of underlying inflation—shows little sign of deceleration. Second, my staff finds that, at least so far, the disinflationary pressures seen in overall PCE prices are driven by a relatively narrow set of items. That is, the current downward price movements are not nearly as broad based as they were, for example, during the 2009 to 2010 episode, when expenditure-weighted diffusion indexes showed the price declines distributed across a wide swath of categories.

A key driver of my expectation that inflation will gradually return to our objective is the reduction in economic slack, but there is some uncertainty about the strength of this linkage, and a Phillips curve, broadly interpreted, can be formulated in many different ways. In this regard, I too appreciated the Tealbook's special "Alternative View" box that examined a nonlinear version of the Phillips curve as a substitute for the Tealbook's baseline specification. More generally, I think such alternative perspectives are really valuable and helpful, and I applaud each and every one of them for helping us avoid the trap of groupthink and really helping us think through some of these important issues.

Now, theoretical support for a nonlinear Phillips curve can be found in the downward rigidity of nominal wages. As the Tealbook showed, the problem faced by standard Phillips curve models is that, despite the substantial fall in unemployment over the past several years, nominal compensation growth has remained tepid. As I described last April, my staff has found that this pattern of weak nominal wage growth during the early and middle parts of the economic recovery is not unique to this episode. In fact, in the recoveries of the early 1990s and the early 2000s, we saw a very similar pattern in which wage gains lagged the cycle. In each episode, unemployment gaps narrowed significantly before nominal wage growth picked up from low levels.

To explain this lag in wage acceleration, my staff focused on difficulties in cutting nominal wages. The constraint on wage cuts was particularly binding after the Great Recession, due to the severity of economic shocks along with the low inflation rate. As a result, a very high share of workers reported that they earned the same wage as they had a year earlier. Now, in a flexible market, many of these workers would receive wage cuts during the recession. So wage growth fell, in fact, by less during the recession than it would have otherwise. As a result, once the economy starts to recover, there is a stock of past-deferred wage cuts that need to be slowly overcome as inflation and productivity growth bring real wages back into the balance before nominal wage growth can return to normal. Additional recent work by my staff finds further support for this mechanism by looking at cross-industry comparisons. They show that this stock of pent-up wage cuts that needs to be worked off is bigger in those industries for which the downward nominal wage rigidity appears to be most prevalent. These are the industries in which nominal wage growth has been slow relative to declines in unemployment. In industries for which rigidities are less widespread, nominal wage growth has returned to levels more consistent with the current labor market conditions.

The key takeaway from all of this work is that the recent tepid wage growth is, in fact, entirely consistent with an improving labor market in a low-inflation environment. As we close in on full employment over the next year, the return to more normal patterns of wage growth should reemerge. Indeed, we are seeing incipient signs of this normalization already with the share of workers experiencing zero wage adjustments starting to come down. Now, all told, this process should help inflation move back to target. Thank you.

MR. FISCHER. May I ask a question?

CHAIR YELLEN. Yes.

MR. FISCHER. One of the things that I thought was that unemployment is usually the lagging indicator, and it seems to be well ahead of wages and prices at the moment. Is that unusual?

MR. WILLIAMS. I think my view is that unemployment is a lagging indicator relative to, say, GDP. But in terms of wage growth, I think the typical pattern is a slower response of wages relative to unemployment or output gaps. At least that's my view of what we usually find in these Phillips curves.

CHAIR YELLEN. President Fisher.

MR. FISHER. Governor Fischer, we wrote an economic letter on this subject that goes into some detail on what President Williams just mentioned in terms of the lag between unemployment and wage acceleration. I'd be happy to share it with you.

MR. FISCHER. Could you get it into the mail tonight?

MR. FISHER. I'll have it to you by coffee break, all right?

MR. WILLIAMS. You have to get access to your BlackBerry.

MR. FISHER. We don't want to flood you, however, with memos. [Laughter]

MR. WILLIAMS. A blizzard of memos.

MR. FISCHER. I know how productive the Dallas bank is, but we're not flooded yet from Dallas.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. I'm going to respond briefly to some of the comments that President Lacker made about inflation compensation versus expectations. You know, as the Federal Reserve Bank of Minneapolis has exposited in a recent memo, there is a distinction. We actually think that that distinction favors the usage of

compensation as opposed to trying to tease out some magical expectation measure, one that I'm not sure exactly where it comes from, as opposed to actually relying on the hard data on compensation. Now, why do I say that? It's because of the fact that compensation measures are compounding two different things: one, where inflation is going to be going on an average basis going forward, and, two, in terms of what the real outcomes are that are going to be associated with the average for inflation. When compensation declines, it could be either because the average inflation rate that people are expecting going forward is going down, or because they're associating that expectation with a very poor outcome in terms of real activity. I think both of those should lead us to be more concerned about a low inflation outcome than we would be otherwise. So I think there's an argument to be made, that we've made in the past, for focusing on compensation measures as opposed to what's a much more arduous measure of teasing out expectations.

With all of that said, I think there's room for rich debate on those topics. I'd be very opposed to removing references to market-based compensation from the statement. I think we should, first, stick as much as possible to the factual statements in the first paragraph and, second, removing that just because those are moving downward at this current moment in time does not send the right kind of message about data dependence and transparency on the part of this Committee.

Let me turn now to briefly discussing conditions in the Ninth District before returning to the national inflation picture. President Fisher did a great job of talking through the oil picture in Texas, and the lower oil prices are also going to be affecting my District through the Bakken region of western North Dakota and eastern Montana, which has fewer people living in it than

Texas. We expect that the effects on investment and employment within western North Dakota and eastern Montana will become more noticeable as we move through 2015.

But the Ninth District economy remains strong. Right now the unemployment rate in Minnesota has fallen to 3.6 percent. It is about 0.5 percentage point below its pre-recession low in 2006. Interestingly, at the same time, wage pressures remain moderate, even in low-unemployment locales like the Twin Cities, whose unemployment rate is 3.2 percent. These observations are consistent with a number of different hypotheses. One is that the natural rate of unemployment in Minnesota may be no higher, or may even be lower, than it was prior to the Great Recession. Another alternative is, as President Williams was making reference to, that wage rigidities were more significant in the wake of this particular recessionary episode. And another possibility is that inflation expectations have declined. They would all push in the same direction of constraining wage growth.

This brings me to the national economy. As many of you have noted in past meetings, 2014 was an outstanding year in terms of improvements in the labor market. Despite those improvements, however, the inflation outlook did not improve, and by some measures deteriorated significantly. I'm not talking here about the near-term outlook, which is naturally being dragged down by the unexpected decline in the prices of energy goods and services. The issue is that well after those oil price effects wane, Tealbook A, projects that inflation will still rise very slowly, not returning to target until 2019. Furthermore, as the minutes from our previous meeting note, the key assumption in the inflation forecast in Tealbook A, is that long-run inflation expectations, which the staff currently estimate to be 1¾ percent, will rise back to the Committee's goal of 2 percent. So a key underlying aspect of the staff's forecast right now is that longer-run inflation expectations are at 1¾ percent, but they will rise back to the

Committee's goal of 2 percent over time. This is a fine benchmark assumption, and I don't quarrel with it, but I don't think we can take this assumption for granted. Except for a couple of months in early 2012, PCE core inflation has been below 2 percent for more than six years. Headline inflation has been below 2 percent for more than two and a half years, and here I'm referring to the 12-month trailing moving average. Elsewhere around the world, disinflationary trends seem strong. All of these observations have the potential to create downside risk to the credibility of our inflation target—that is, doubts in the mind of the public about the inflation rate we will actually achieve in the longer run. In my view, we cannot be confident about the staff's assumption with regard to inflation expectations unless our actions display a clear desire to return inflation to target.

The behavior of financial market prices over the past six months and, really, especially over the past month reinforces these credibility concerns. In particular, market-based five-year, five-year-ahead inflation expectations or compensation fell further to new lows over the intermeeting period. The premiums that option traders are paying to insure themselves against low inflation have also risen. It is true that survey measures of long-term inflation expectations remain within their historical ranges, and that is comforting. But if we think about this as a signal extraction problem, the overall signal about the credibility of our inflation target from both kinds of measures of longer-term inflation expectations has to be seen as sobering.

Many of you have suggested that the recent gratifying improvement in labor market performance justifies further tightening of monetary policy even though inflation has remained muted. But I see credibility risks in basing our monetary policy choices too much on the evolution of the real economy. One way to interpret the monetary policy events of the 1960s and the 1970s is that the public became convinced that the FOMC was basing its policy choices

largely on the evolution of employment rather than on the evolution of inflation. As a result, the public lost confidence in the FOMC's willingness to take systematic actions to keep inflation low, and inflation expectations became unanchored to the upside. Fast forward to 2015, and the FOMC is contemplating tightening policy in the absence of inflationary pressures simply because employment has risen, quite smartly, for the past year. Such a decision may suggest to the public that the FOMC is, again, basing its decision primarily on the real economy, as opposed to nominal measures. And, just as in the 1960s and 1970s, this focus on the real side creates a risk of unanchoring inflation expectations, but this time to the downside as opposed to the upside.

I'll have more to say about our policy choices tomorrow, Madam Chair. Thank you.

MR. LACKER. Madam Chair.

CHAIR YELLEN. Yes.

MR. LACKER. If I could just offer a brief and friendly rejoinder to my friend from Minneapolis. The first thing to say is that I don't feel that the inflation-expectations measure is any more magical than things like underutilization of labor or maximum employment or the longer-run normal rate of unemployment. But on a more serious note, I commend the Minneapolis Fed for putting in print a very clear explanation for both a broad audience and a technical audience of the relationship between inflation compensation and inflation expectations. I thought it was a great contribution. It makes clear that inflation expectations are a simple weighted average where the weights are probabilities of future possible inflation rates. Inflation compensation is the same thing, one in which the weights combine both the probability and the margin of utility or a version of the states of the world in which particular inflation rates take place.

I'm very sympathetic to the notion that deriving our behavior from the fundamentals of individuals' welfare would lead us to take very seriously those margin utilities. On the other hand, I view our consensus statement as basically making a statement about expected inflation, about what inflation itself is supposed to average, not the combination of inflation and a marginal utility. I think it's a little easier to picture, a little easier for people to imagine, easier for people to think about. And to use an analogy I've used several times before, it's easier to put into your retirement-planning software than it is to put in inflation compensation. That motivates my focus on this. But I just wanted to acknowledge, first of all, the contribution of the exposition and, in addition, the worthy point that the preferences of the people that make up our economy are important to take into account.

MR. KOCHERLAKOTA. I will forgo the opportunity of offering a further rejoinder to the rejoinder. [Laughter]

CHAIR YELLEN. And I will take this opportunity to suggest that we have a break for about 15 minutes to grab some coffee.

[Coffee break]

CHAIR YELLEN. Let's get going. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. Deflation has been in the headlines of the leading New England papers all week, although rather than focusing on the general price level, they have focused on 12 footballs used in the Patriots game. [Laughter] So I didn't ignore President Williams's observation. Interestingly, taking credit for deflation seems no more popular for football players than it is for central bankers. My own view of recent data is that we should be particularly humble about future inflation trends and be sure that we learn from the

mistakes of our Japanese and European colleagues to ensure that we do not allow inflation to drift significantly below our inflation goal.

Reconciling the message from the real economy with readings on inflation is a bit complicated at this point. There has been a clear improvement in labor markets, reflected by the 5.6 percent U-3 measure of unemployment. However, the ultimate success of policy should not be judged by how much improvement has occurred from a truly horrific outcome, but how long it will take to achieve our dual goals. For unemployment, that is complicated by the lack of precision in measuring full employment. In light of the absence of wage and price pressures in aggregate or disaggregated data, and the fact that since 2007 the workforce has become more educated and older, I've reduced my estimate of the full-employment unemployment rate to 5 percent, and it's quite possible that evidence over the next year may convince me to move it even lower.

However, unlike our unemployment goal, our inflation goal is absolutely precise. We have a 2 percent PCE inflation goal. In the presence of the oil shock, focus on core inflation seems justified. In fact, for this very reason, I would have preferred to focus on core inflation as our target when we chose the target. My forecast for core inflation for 2015 is below the Tealbook forecast and much below our 2 percent target. My low inflation forecast is unfortunately consistent with the growing evidence in financial market prices of the loss in confidence that we will attain our inflation goal any time soon. The 10-year Treasury rate is below 2 percent, and a variety of forward spreads that embed inflation expectations are at lows last seen during the financial crisis. These financial signals are concerning and should make us less confident that we will reach our inflation goal within a reasonable time. While we can parse the data to downplay its importance, in view of the forceful monetary actions being taken in

Europe and Japan to reverse their historically low inflation rates, we should be quite sure we are not repeating their mistakes. In both Europe and Japan, large inflation misses have proved to be quite difficult to reverse.

I take little comfort in stable survey measures. In Japan, longer-run survey-based inflation expectations were surprisingly stable even after the data had made it quite clear that Japan had a deflation problem. Nor do I take comfort in inflation equations that have been adjusted over the years to reflect a "well-anchored" assumption, because most of these models are used to replace inflation models that failed to reflect changes in expectation settings since the mid-1980s. We may once again be missing how expectations are formed at a time when central banks in developed countries globally are having difficulty reaching their inflation goals.

Finally, the risks to even our good news on the real side of the economy seem skewed to the downside. Actions by Russian dissidents in Ukraine and the potential for Greek political upheaval are both troubling. The likelihood of significant negative shocks is too high, in view of our inability to offset their effects completely.

I am a patient person. I hope patience is sufficient. Thank you.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. The anecdotal reports we received in the cycle of District contracts ending last week broadly line up with the incoming data. We heard positive and optimistic characterizations of demand and hiring needs side by side with decidedly cool descriptions of business expectations for input cost inflation, wage pressures, and pricing power. Oil and gas exploration spending is being curtailed, and some layoffs in that sector are occurring. Otherwise our contacts generally confirm a continuing, rather robust pace of business activity. Labor demand is reasonably strong and consistent with sustained payroll jobs growth,

similar to that which we've seen in recent months. The wages picture really hasn't changed substantively. Firms report an intent to give raises of 2 to 3 percent on average. There seems to be growing anticipation of wage pressure, but this hasn't yet translated into broad compensation pressure and action in response. Finally, the improving tenor of business sentiment seems to be generating greater appetite for business investment. Capital expenditures for expansion are being mentioned across a broad swath of industries, most notably in the transportation sector.

My outlook is little changed from the December meeting and pretty much in line with the Tealbook. With the strength evident in the second half of 2014, I'm assuming a GDP growth run rate of around 3 percent. Both the recent incoming data and anecdotal reports have increased my confidence in that view. Associated with this optimism about economic growth, I expect continuing payroll job strength and declining headline unemployment. I continue to project the U-3 unemployment rate to reach 5.3 percent by year-end, consistent with the December SEP central tendency, and I would not be surprised if a U-3 reading at this level came earlier.

My outlook for prices has year-over-year headline PCE near zero at midyear. I'm not expecting much of a pass-through of lower crude oil prices and declining gasoline and refined product prices on core inflation numbers. But at the same time, I expect no real firming of core inflation readings over the coming months, and I am increasingly apprehensive about dismissing the behavior of market-based inflation expectations measures.

It's evident to me that the discussion of the timing of liftoff in the go-round following this one reflects some sentiment in the Committee favoring June liftoff. A projected June liftoff could imply the signaling of that potentiality in March. I'm not very comfortable with that prospect given the Committee's repeated promulgation of data dependency as our guiding light. Between now and our March FOMC meeting, we will get really only one incremental monthly

retail price report, the January CPI and PCE reports. I'm not hopeful that this January data will clarify matters and bolster confidence that the inflation trend is soon to turn in the direction of our target. So any forecast-based signals sent in March that start a two-meeting countdown to liftoff will rely on rather light evidence, in my view. I think there is a good chance that it will feel more like a leap of faith than a data-informed forecast.

Let me end on what, for me, is a discomfiting thought. I'm finding it difficult to reconcile the data on growth in employment with the data on wages and prices. To say this differently, I see a puzzling and confusing disconnect between the strong real economy performance represented by top-line GDP growth and labor market data, on the one hand, and wage and price trends on the other. I don't think we can entirely rule out the possibility that an unusual and persistent state of the world is developing. This is a legitimate question. It's not going to be resolved in any serious way by the next meeting. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Plosser.

MR. PLOSSER. Thank you, Madam Chair. The Third District economy continues to grow modestly and is improving in all three of our states, and our coincident indexes are showing growth in line with the nation. Notable progress is occurring in the areas of commercial construction, and the value of contracts is now stronger than any time since 2001. Job growth has been rather robust, with the overall District unemployment rate falling by 0.7 percentage point over the three months ending in December to 5.4 percent. Pennsylvania's unemployment rate is now down to 4.8 percent, and initial claims in the region are at their lowest level since 2001. Bank lending on C&I loans was particularly robust in December, increasing 22 percent, and is up 10 percent year over year. Credit card usage was also higher in December than a year ago, reflecting a holiday season that was better than last year's.

Our manufacturing sector, however, seems to have experienced some loss of momentum similar to that experienced in the nation as a whole. Because of some abnormal seasonal behavior, it's probably best to average through December and January's general activity indexes. That average yields a value of 15.3, a number that's consistent with continued moderate growth, but is off the peaks we saw earlier in the fall. Also, the unemployment index nudged into negative territory in the most recent survey. However, the respondents still appear optimistic. The future activity index came in at 50.9, and the future employment index remains at a high level. Thus, it appears that our manufacturers are regarding the current lull as largely transitory. The pace of activity in our nonmanufacturing business index also witnessed a noticeable decline, and our housing sector continues to be weak with little signs of strong renewal.

However, I think we have to recall that in the second and third quarters of this past year, we witnessed real GDP growth of 4.6 percent and 5.6 percent, respectively. It should not be surprising that the fourth quarter has not kept up such a torrid pace. That's consistent with the weakening numbers, and it suggests growth, but at a somewhat slower pace. Even with the softer fourth quarter, we are likely to observe the last three quarters of 2014 as showing above 4 percent GDP growth.

Regarding the national outlook, I'm still fairly confident that the economy will grow above trend in 2014 at about 3 percent. A good deal of my optimism revolves around continued increasing strength in the labor market that's reflected in almost all of the labor market data we have seen. The strength in the labor markets, along with improved household access to credit and falling prices at the pump, imply that consumer spending will support somewhat above-trend growth. There are, of course, some risks. The likely suspects are weakening conditions in Europe and China and the effects of a stronger dollar. Yet overall lower oil prices are also a

positive for Japan, China, India, and Europe. And while the stronger dollar may weaken exports, the overall magnitude of such trade channel effects within the U.S. economy remains modest.

While headline inflation, as expected, has been pushed down by falling oil prices, we should look through such relative price movements in this regard as we've done in the past. I'm comforted by the fact that alternative metrics of underlying inflation, which have already been mentioned—such as medians, trimmed means, and other statistics—have remained remarkably stable over this period. That should be encouraging to us about what the future may hold. And as has been pointed out by President Lacker, the decline in oil prices may be near the low point for this cycle and, therefore, inflation should begin to strengthen and perhaps may strengthen much faster than the Tealbook anticipates. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. Business conditions in the Fourth District are little changed since our December meeting, with contacts reporting continued moderate expansion. Nearly half of our Beige Book contacts reported an improvement in business conditions over the past six to eight weeks, but some firms have been negatively affected by the decline in oil prices. Some firms expect reductions in energy investment plans to come later this year, although there hasn't been much change yet. The four large banking organizations in the District have some exposure to the oil and gas extraction industry, but it is relatively modest. On the plus side, many contacts noted benefits of a strong decline in oil prices on input costs. Retailers and manufacturers in the motor vehicle industry are optimistic. Some auto parts suppliers now report that they are considering investment in new production lines as auto demand continues to increase. In fact, across Beige Book contacts in all sectors, capital expenditure plans continue to rise.

Conditions in District labor markets continue to improve. Employment growth picked up last year, and the District unemployment rate is nearing 5 percent. So far, wage pressures remain limited to occupations where there have been labor shortages for some time, such as trucking. In general, prices for finished goods remain stable, but a slightly higher percentage of contacts reported higher prices compared with a month ago.

My view of the national economy has changed little since our previous meeting. The incoming data on output and employment indicate underlying momentum is increasing despite a weakening export sector. Employment gains accelerated in the fourth quarter. Measures of unemployment and underemployment continue to decline. Economic fundamentals have improved. Headwinds, such as the needed deleveraging of household and business balance sheets and the recapitalization of banks, may have damped the effect of highly accommodative monetary policy on the economy earlier in the expansion, but these headwinds have substantially dissipated. The January Senior Loan Officer Opinion Survey shows that credit standards are easing and credit demand is rising. At the same time, we have a tailwind in the form of lower oil prices, which will support faster household and business spending even as it leads to some retrenchment and dislocation in parts of the domestic energy sector. For the U.S. economy, the decline in oil prices will be a net positive and offset the negative effect of dollar appreciation on our exports.

My modal forecast continues to be for output to grow about 3 percent, which is somewhat above trend, over the next two years. While the weaker foreign economic outlook is a downside risk, European policy action is welcome. I see stronger economic growth as a result of the oil price decline as an upside risk to my forecast. I expect continued improvement in labor markets. As economic growth and employment continue to expand, I expect some acceleration in wages.

This is consistent with the Federal Reserve Bank of Cleveland's staff research that finds that while there hasn't been a stable Phillips curve relationship between unemployment gaps and price inflation since the 1980s, there does seem to be a more stable Phillips curve relationship linking unemployment gaps and nominal wage growth. If the unemployment rate falls more sharply than I currently anticipate and wage growth remains modest, perhaps I'll need to rethink my estimate of the longer-run unemployment rate, which I have at 5½ percent. But for now that seems premature, and in light of the very large error bands around point forecasts of the natural unemployment rate, I don't feel compelled to make a change at this point.

The sharp drop in oil prices is showing up in much lower headline inflation numbers. The appreciation of the dollar is showing up in lower input prices. So far, there has been only modest pass-through to core measures. For example, the Federal Reserve Bank of Cleveland's median CPI inflation measure has remained near 2¼ percent since April of last year. I note that research by my staff finds that the Cleveland measure appears to have some predictive power for headline inflation over the medium term. My expectation is that inflation will gradually move back up to 2 percent as economic activity continues to strengthen and oil prices stabilize. This assumes longer-run inflation expectations remain anchored. Based on the survey measures, inflation expectations have been stable. The Federal Reserve Bank of Cleveland's 10-year expected inflation rate did slip from 1.85 percent in December to 1.66 percent in January. Despite this slippage, this reading is essentially in the middle of the range of readings we have seen since the financial crisis.

The market-based measures of inflation compensation have continued to decline. The chart on page 26 of the Tealbook Data Sheets gives a longer history of inflation compensation measures, which helps put things into perspective. Now, it's difficult to ascertain how much of

the decline reflects liquidity effects and inflation risk premiums rather than a change in inflation expectations, especially in times of increased market volatility and flight-to-quality flows into U.S. markets. But as the Tealbook notes, models that sort through these measures suggest that inflation expectations have remained largely stable, and the recent MarketSource analysis suggests that the sharp drop in oil prices may also be having a larger-than-expected effect on breakeven inflation rates. So at this point, I don't view the decline in measures of inflation compensation as indicating an unanchoring of longer-term inflation expectation.

That said, these inflation developments bear close monitoring. I see quite a bit of difference between the situation in Europe, where inflation is falling and economic growth is very weak, and the situation in the United States, where an oil price shock is driving down measures of headline inflation and economic growth is increasing. As long as inflation expectations remain anchored and economic growth continues to be at or above trend, I'm comfortable with it taking a while for inflation to return to our target. I'm much less comfortable with the outcomes in the Tealbook forecast, which has us undershooting the staff's estimated natural rate of unemployment for at least the next five years with only a gradual pickup in inflation. I think there's considerable risk in trying to engineer such a feat. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I continue to interpret data on the U.S. economy as well as anecdotal reports from contacts in the Eighth District as consistent with above-trend growth in output and robust improvement in labor markets. I continue to view the Eighth District as lagging slightly the nation as a whole, in terms of economic growth. The District unemployment rate has fallen to 5.9 percent, the first reading below 6 percent since

2008, and just 0.3 percentage point higher than the national level of 5.6 percent. Many District contacts reported robust sales during the holiday season, driven in part by improved consumer confidence and lower gasoline prices. District firms that have an international presence generally indicated that the U.S. portion of their businesses remained robust, while reports on the international portion were mixed.

My view on the national economy has not changed. I continue to expect that GDP growth will exceed 3 percent for all of 2015 and that job gains and unemployment declines will build on the banner year we had in 2014. I now project that the unemployment rate will fall below 5 percent in the third quarter of 2015.

I note that the Committee has generally tended to be too pessimistic with regard to labor market improvements over the past two years. In a recent speech titled "Ghosts and Forecasts," I evaluated Committee forecasts in recent years. This evaluation covered projections made in June for the entire subsequent January to December period—so, for instance, June 2013 for January to December 2014—this is all bad news, by the way. The Committee's entire forecast range often does not encompass the actual outcome. So while you may think there's a lot of disagreement on the Committee, there's evidently not enough disagreement. The Committee's central tendency is rarely wide enough to capture the actual outcome. In each of the past two years, the Committee has missed in the same way. Forecasts of economic growth are relatively accurate, at least if you average over the two years. Unemployment rate forecasts are too high. The Committee forecast higher unemployment than what actually occurred, and inflation forecasts were also too high. The Committee tended to forecast higher inflation than what actually occurred.

The pleasantly surprising readings on labor market outcomes during the past two years would, under conventional monetary policy logic, be thought to have moved the Committee

toward a more aggressive path regarding the policy rate normalization. However, a look at the data for June 2012 versus today suggests that this is not so. Today's market expectation of the policy rate path is everywhere below the market expectation as of June 2012. In other words, labor markets packed a powerful positive surprise over the past two years and yet actual policy expectations have moved in a dovish direction. In my mind, this raises serious questions about the nature of the Committee's reaction function to incoming data. Of course, the inflation forecast was also inaccurate, but in my view, the extent of that surprise was insufficiently large to rationalize the move toward a more dovish stance in the face of substantial labor market improvement.

It may help us to be clearer in our own discussions, as well as with those outside the Committee, why policy has evolved as it has over the past two years. One of the biggest surprises of 2014 was the global market bond rally. My preferred interpretation is that the rally was driven to a large extent by the specter of ECB quantitative easing. One year ago, it was still considered unlikely that the ECB would ever adopt unconventional monetary policy action on the same basis as the United States, Japan, and the United Kingdom. However, continued declines in euro-area inflation and inflation expectations raised the probability of major ECB action throughout the year, culminating in last week's landmark decision by the Governing Council. While QE is certainly not a panacea, I do think it is generally welcome news for the euro-area economy. As a byproduct of this process, U.S. longer-term yields generally declined all during 2014. This is a bullish factor for U.S. growth prospects in 2015. Coupled with the substantial decline in oil prices, I see two powerful tailwinds for the United States as we enter 2015 on the top of considerable momentum in the last three quarters of 2014.

One aspect of ECB QE bears watching. For the U.S. experience with QE2, in particular, many of the effects were anticipated by financial markets ahead of actual asset purchases. During the autumn of 2010 in the United States, for example, real yields declined, equity prices rose, inflation expectations increased, and the dollar weakened. However, once purchases actually began in November of that year, these effects were much less obvious. Something similar could occur with regard to ECB quantitative easing. If so, any further bond rally on a global basis or currency effects may be much more muted in the period ahead than it has been during 2014. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. For the most part, my directors and other business "interlocutors"— I'm going to miss being able to say that with a chuckle [laughter]— indicated a similar outlook as at the time of our December meeting. Most reports continue to be positive about both current activity and the prospects for economic growth going forward. Automakers, for example, enjoyed strong end-of-year sales. For 2015, Ford told us that its official forecast is for sales to continue near last year's second-half pace of 16¾ million, but it sees some upside to this number. Of course, there are some sector-specific challenges. Orders have dropped for construction equipment used in preparing fracking sites and for steel used in drilling wells. Farm machinery sales and orders also are down considerably, because of lower crop prices. Our new Chicago director, who is the CEO of Discover Financial Services, said that lower gas prices are not yet showing through to higher retail sales to the extent that Discover had expected.

My own outlook for the real economy continues to project real GDP growth averaging about 3 percent over the next two years. That should be enough to bring the unemployment rate

down to around 5 percent by the end of 2016. I must point out that my forecast is based on an assessment of appropriate monetary policy that is not very different from current market expectations regarding the federal funds rate; that is, it is lower than the Tealbook projection, and lower than the assessments of most people around the table.

Regarding my projection of a 5 percent unemployment rate in 2016, my staff has done a good deal of research on changes in labor force participation and its composition that suggests the natural rate of unemployment could easily be as low as 5 percent. The current anemic wage growth and low inflation pressures reinforce this inference. It seems evident to me that labor slack, as many have said, is notably larger than many infer simply from the unemployment rate being 5.6 percent. So I don't see my unemployment rate forecast as undershooting the natural rate over the projection period as much as the Tealbook does.

With regard more directly to pricing pressures, inflation developments since December have not been supportive of the assessment that inflation is headed back to 2 percent within an acceptable period of time. My last SEP submission had inflation only slowly crawling back up to 2 percent sometime in 2018, and my inclination today would be to nudge that path down just a touch further. Recent data on core inflation have been soft, and there is a good chance they are going to soften even further, because of the appreciation of the dollar and the prospect of some pass-through from energy prices. Indeed, all else being equal—that's a strong statement—the dollar's appreciation delivers an extra degree of financial restrictiveness that acts as if monetary policy has already tightened a bit. And as I already mentioned, nominal wage growth is far below where it should be if we were hitting our inflation target.

I find recent financial market signals to be especially worrisome. And let me take this opportunity to thank the staff for putting together a very nice collection of memos on how the

projections of financial market variables are put together in the Tealbook and the other analyses that they have done, in addition to all of the special memos about the policy tools and liftoff. It's a lot for all of us to go through, but it's really valuable information, and I appreciate it. Now, on financial markets, the Board's measure of TIPS five-year, five-year-forward breakeven rates has declined to 1.8 percent. And this is on a CPI basis, so on a PCE basis, it is more like 1.5 percent. And this is for inflation 6 to 10 years ahead, so it's not good news for a longer-run period beyond the medium term. I agree strongly with President Kocherlakota's decidedly mainstream analysis in terms of risk-neutral pricing. I was on a panel three weeks ago at the Becker Friedman Institute, and it was a conversation in which Nobel Prize winner Lars Hansen was asking me questions. He went out of his way to pick up on Narayana's comments on risk-neutral pricing, and it was very interesting. Either inflation expectations have dropped much lower or investors are viewing low inflation as being associated with dramatically more costly economic outcomes. Either way, these data are flashing red. Our recent FOMC statements seem to downweight these observations, and President Lacker was suggesting just a few minutes ago that we should weight them even lower in the statement.

Why should we ignore these signals? I have several comments on this. Let me start with a benign alternative, which I have to say I don't particularly find compelling—namely, that these movements in breakeven rates could be just noise that we can safely ignore. As I understand the Board model—and one of the contributors to it is now a staff member at the Federal Reserve Bank of Chicago—the liquidity premium between nominal and indexed Treasuries is a key part of the decline in breakevens. But liquidity is just a convenient label for a latent variable in this analysis. It sounds relatively benign with that type of label, but it could include other unknown or unmodeled factors. And, in fact, looking at the way the Board staff described it, they used the

term "term premiums," which, as I understand it, also includes liquidity premiums. Few models actually attempt to identify liquidity effects from changes in bid–ask spreads, market transaction data, or the like. One model that does is the Federal Reserve Bank of New York's term structure model, and it attributes very little of the recent declines in breakevens to its liquidity adjustment factor. So there is a good chance that what the Board model and some other models benignly label as liquidity or other premiums are really something that could be a cause for concern.

Whatever its interpretation, the time-series properties of these estimated liquidity premiums suggest the effects on breakevens should be relatively transitory. That is, the underlying assumption that is used to estimate these finds that they ought to be relatively transitory, and this is something that we can monitor. It's a positive, not a normative, statement. So if we don't see breakevens mean reverting over the next few meetings, we should rethink the role of such temporary factors and the weight we put on this benign interpretation of the decline in breakevens. And, furthermore, there is a more problematic interpretation of these so-called liquidity premium developments, and one that could be persistent, namely that they could reflect a more persistent increased preference for safe assets. This would be consistent with President Kocherlakota's worrisome analysis, as I interpret it. I think these are reasons not to downplay this data, but to understand them much more than we do.

Another not-so-benign possibility is that market inflation expectations actually are too low, and, indeed, some affine term structure models do project low inflation. Term structure models require a number of assumptions to identify the pricing kernels. Alternative implementations can give, and do give, different answers. As I already mentioned, the Board analysis seems to be consistent with stable inflation expectations. Another approach is the term structure model developed by Luca Benzoni at the Federal Reserve Bank of Chicago. This

analysis doesn't make reference to the TIPS data at all. It uses other assumptions and modeling to examine the same issues. To assess inflation pressures more directly, this analysis relies more on the breakdown of inflation among food, energy, and core inflation to better capture the dynamic relationships between interest rates and inflation. These model forecasts for five-year, five-year-forward inflation also have come down about 20 basis points over the past year. More important, the model is projecting very low inflation for quite some time. The three-year-ahead average PCE inflation forecast for December 2017 is 1.62 percent. This is average inflation from December 2017 to December 2019. That's too low.

Our Chicago model also does not use surveys of longer-run inflation expectations in order to assess stability of inflation expectations. In contrast, some analyses appeal to the stability of survey measures of inflation at longer horizons to achieve reasonably stable longer-run inflation projections. I worry that survey measures of longer-horizon inflation expectations are like looking at a stopped clock. Longer-run measures don't move much, and I'm skeptical as to whether survey measures of longer-run inflation expectations move meaningfully at times of great risk, and that's something that President Rosengren was mentioning with regard to Japan. Or is it the case that the survey respondents see a looming risk, but they are confident that we, the FOMC, will act appropriately? Do we even agree among ourselves on what these appropriate actions should be? The divergence between market and survey measures gives me great concern.

Now, putting all of these models aside, no matter how you view the breakevens, we still need to grapple with the signal content simply coming from the very low level of the 10-year Treasury rate. If real rates are low, then markets are expecting poorer economic outcomes over a longer term than our SEP paths likely embody. If inflation expectations are low, then we likely

have inadequate accommodation in place, and our SEP numbers are too optimistic on that score. If it's noise, well, okay, no worries, and I guess we can go ahead with planning policy normalization sooner rather than later. But in my book, this adds up to only one out of three possibilities being acceptable. And I just don't like those odds.

To conclude, I think we're most likely finally on a path to achieving the employment part of our mandate in a reasonable amount of time, but my outlook for inflation is nowhere near satisfactory. From a risk-management standpoint, I just can't see the argument for hurrying. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. The 10th District economy continues to expand at a moderate pace. The effects of the decline in oil prices have, on net, been favorable, with nearly 50 percent of firms in our manufacturing and services surveys reporting a positive effect on their business, while around 20 percent report a negative effect. Of course, District states that are most dependent on energy production—Wyoming, Oklahoma, and New Mexico—face a somewhat less favorable outlook.

Oil rig counts have started to decline rapidly, and capital spending is expected to be down considerably in 2015. Based on our quarterly energy survey, nearly half of respondents expect more than a 20 percent reduction in capital spending this year. Significant layoffs are already being announced at some District energy firms, and more are expected. Analysis of hedging and debt positions shows that firms headquartered in the 10th District, which account for about one-third of all large independents, are comparable to other U.S. shale oil firms but with sizable differences across those firms. In general, the smaller firms are more highly leveraged, but also better hedged, than the large firms. Although most states now rely considerably less on the oil

and gas extraction sector than 30 years ago, it is possible that energy-dependent states like Oklahoma could experience double-digit percentage declines in energy sector jobs, and perhaps slight declines in overall employment.

For the nation as a whole, my outlook for economic activity is little changed from the previous meeting. Weaker foreign economic growth and a stronger dollar may weigh on GDP, but lower energy prices, on net, should provide a boost. As a result, I continue to anticipate moderate growth of around 3 percent this year. Consumer spending was strong in the second half of last year, and consumers' assessments of current economic and labor market conditions have brightened. I expect low oil prices and further labor market improvements to provide ongoing support to household spending.

The labor market has maintained its momentum, and my outlook for further improvement is optimistic based on the Federal Reserve Bank of Kansas City's labor market conditions indicators, which showed that the level of activity improved again in December, and its momentum rose to its highest level over the past two decades. Of particular note, among the 24 labor market variables that are used to construct this index, the five strongest contributors to improvement over the past six months are predominantly leading indicators—a rise in the quits rate, a decline in those working part time for economic reasons, improved job flows from unemployment to employment, an increase in the percent of firms planning to increase employment, and a shift downward in the Blue Chip unemployment rate forecast.

In an environment of above-trend economic growth and falling unemployment, of course, inflation remains low. Clearly, lower oil prices and the stronger dollar will exert some downward pressure in the near term, but these are relative-price movements that should prove temporary and not affect the longer-term inflation outlook. For this reason, the recent decline in

market-based measures looks puzzling, as others have discussed, and I agree that this is a development that we will need to watch.

While inflation is running below our stated quantitative objective, it is less clear to me at this point that the goal of price stability over the longer run is at risk. Furthermore, I do not think we can judge the cost of low inflation in isolation from other economic developments. Inflation below target in an environment of above-trend economic growth and falling unemployment seems less of a concern to me than low inflation combined with slowing economic growth and rising unemployment. As oil prices and the dollar stabilize, my forecast implies that inflation will move upward, and spare capacity and tightening of labor markets will gradually lift inflation back toward target. So unless signs emerge that the economy's performance is faltering, I see no need to delay normalization for the purpose of accelerating a return to 2 percent. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. My views on the economy haven't changed much since the previous FOMC meeting. I view the incoming data as consistent with an economy that continues to grow at an above-trend pace, marked by rising household and business confidence. While it's true there have been some data points that have raised some questions—for example, for December, we had a weak retail sales report and a decline in average hourly earnings—I view these as likely to be anomalies that will be reversed in the coming months.

One question I have been wondering about is the timing of the effect of the decline on oil prices on U.S. economic activity. We have the positive benefit of lower oil prices boosting real income, and this factor appears to be supporting consumer spending. But, against this, we have

the prospect for a significant decline in oil and gas investment. Although I agree with the conclusion that the net effect is a positive, I wonder about the timing in which these effects fall. Does the boost in consumer spending happen first, followed by the drop in investment, or not? I think understanding the likely timing here will help us better assess the trajectory of economic growth. If it is consumption first as a positive, and investment later as a negative, which would be my own expectation in terms of relative timing, that suggests that there is a risk that the momentum to economic growth fades as we get deeper into the year. I raise this issue as it might be relevant to thinking about the appropriate timing of monetary policy liftoff.

Another key issue for me is the trend in wages and labor compensation. If growth of nominal wages and labor compensation stays steady or firms in the face of declining headline inflation, then this implies more real income growth, all else being equal. And it also implies that the lower headline inflation rate or the drop in market-based measures of inflation compensation are not having strong depressing effects on the wage-setting process. In terms of labor compensation, some of the survey measures I have seen recently imply strengthening rather than weakening. For example, the Federal Reserve Bank of New York's consumer expectations survey indicates a generally firming trend for one year ahead in terms of household income growth expectations. And in the same vein, the most recent National Federation of Independent Business survey showed a firming compensation trend, with a net 25 percent of firms reporting paying higher compensation—that's an increase of 4 points from their prior monthly survey—and a net 17 percent planning to raise compensation in coming months. That's up 2 points over the prior survey.

The second issue that I'm focused on is the level of full employment. In the last SEP round, I lowered my estimate of the longer-run unemployment rate to 5 percent. I think there is

some risk that this estimate is still too high. There are several reasons why my estimate is coming down. First, demographic trends in the workforce are consistent with a lower longer-run unemployment rate. The composition of the workforce is getting older, and this should be pushing down the longer-run unemployment rate because older age cohorts typically have lower unemployment rates. I asked my staff to isolate how much lower the current full-employment unemployment rate would be, compared with its value in earlier periods, if the only thing that had changed was the age composition of the labor force. If we go all the way back to 1980, the net effect of the changing age composition of the labor force is worth nearly a full percentage point in the longer-run unemployment rate. Nearer at hand, comparing the situation with 2004, which was when in that cycle the unemployment rate first reached 5.6 percent, the same level as it is now, the shift is worth about 0.2 percentage point.

Second, the national full-employment unemployment rate depends on what is happening in the labor markets in different regions. If there's a lot of dispersion in labor markets, some very tight and others very loose, then this should lead to a higher national full-employment unemployment rate, all else being equal. With the drop in oil prices likely to hurt disproportionately those states that have higher labor demand and lower unemployment rates, I would expect the dispersion of labor market conditions across the country should lessen, and this should directionally lower the longer-run unemployment rate a bit. We tried to estimate how much this might be worth, and it turns out this effect is likely to be quite small—no more than 0.1 percentage point.

Third, as we all know, the unemployment rate is not a sufficient statistic of labor market slack. To the extent that the current unemployment rate understates the degree of slack in the labor market, it also understates the degree of slack relative to the full-employment

unemployment rate. I think this is very much the case today. To assess this effect, one can measure the degree to which there is underutilization of the labor force—for example, part-time workers who want to work full time—relative to the unemployment rate. In this cycle, the unemployment rate is unusually low compared with the amount of slack measured by those who want to work more hours. If we normalize the underutilization of hours in relation to past cycles, this would imply an unemployment rate of about 6.1 percent currently, so that's a gap of 0.5 percentage point.

The final factor that might be relevant is the fact that labor compensation and inflation trends are unusually low at the current unemployment rate. Real total compensation based on the core PCE inflation rate and the employment cost index is only running at about an annual rate of ½ percent. Now, I'm not sure what this precisely means in terms of how much slack we have and what that means for the full-employment unemployment rate, but when the labor compensation trends are this low, it would seem to allow us the ability to be somewhat more patient.

A third issue that I've been thinking a lot about is the outlook for foreign economic growth and the dollar. Here I have a mixed view. On the one hand, and I think this is consistent with Steve Kamin's briefing, the pessimism about the outlook for growth abroad looks a bit overdone, especially with respect to Europe and Japan. When I look at both Europe and Japan, while I see plenty of problems, I also see a number of positives, including lower oil prices, weaker currencies, more expansive monetary policies, and less fiscal drag. The ECB's QE initiative has gotten good reviews so far. And most noteworthy to me was Mario Draghi's comment that the program will continue until the ECB expects its inflation objectives to be achieved. The fact that it's open ended is, I think, very, very important.

On the other hand, I am worried that the dollar's strength will not just persist but intensify. QE in both Japan and Europe certainly would seem to push in this direction. I understand the reasons for the Tealbook's forecast for the dollar. If it was obvious that the dollar would continue to appreciate, then it would already have happened. Nevertheless, I view the risk of a much stronger dollar as the biggest risk to my forecast of above-trend economic growth and rising inflation. So that's the biggest risk to what forms the foundation of my expectations that we can safely lift off with respect to monetary policy later this year. A firmer dollar is something I am definitely concerned about as a risk to our forecast. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I'll be saying a lot of what has been said before, but I guess we're taking a consensus. It won't be entirely in the consensus, though.

What has been happening to activity is very impressive. Economic growth forecasts of most people around the table are around 3 percent. The Tealbook has 2.8 percent, essentially, for 2015 and 2016. And, of course, the unemployment rate is now very close to our estimates of the natural rate. We have consumer sentiment doing very well. We have low oil prices, which almost everyone sees as positive for the economy. This, includes President Fisher, who sees the negative side of low oil prices as well, but he came out in favor of a net positive effect. It will have an effect on investment, but housing is beginning to show some signs of growth—it's nice having a sector that you expected to grow and doesn't grow, because you know one day it will grow, and then it will contribute to economic growth.

I want to say a word about our estimates of the natural rate of unemployment. I'm going to say something I've said here before, and I apologize, but I think it happens to be true, so I'll keep saying it. If you look at what economists say the natural rate of unemployment is and run a

regression on it—and when I say "economists," I'm usually talking about Bob Gordon, who at some stage used to produce an estimate of the natural rate of unemployment with sufficient frequency that you could run regressions on it—what you find is that the stated natural rate is 4.5 percent plus half the gap between the actual unemployment rate and 4.5 percent. So poor Vice Chairman Dudley worked very hard to come to roughly—[laughter]—that estimate.

VICE CHAIRMAN DUDLEY. Could have saved a lot of work.

MR. FISCHER. Yes. There is a tendency to reduce our estimate of the natural rate as the unemployment rate comes down, but at some point that stops. It will be at 4.5 percent, 4.8 percent maybe. Bill is right that it's now about 5 percent.

I want to talk next about foreign activity and how to think about that. China has slowed down. That has a much bigger effect on the world than you might have guessed. It's affecting Australia, it's affecting Latin America, and if you go down the list of countries that produce metals and other commodities—Brazil, Chile, and all the others—you'll find they're all being hit by the slowdown in China. Now, you know, it is a slowdown from 10 percent to 7 percent, and it seems funny to call it a slowdown, but that's what it is. We've also got to worry about Greece because we're certainly going to get a lot of alarm bells ringing about Greece, even if the likelihood is that it turns out to stay in Europe. We've got Ukraine, and that one is really a potentially huge mess, and we've got a war in the Middle East, which is getting very ugly. But we do now have the ECB having undertaken this very brave and very difficult set of measures, which Mario Draghi managed to get through his executive board. And we've also got the Japanese trying to restore their economic growth.

If you ask what is happening in our capital markets, I think it's that interest rates are very low everywhere else, and people don't know about covered interest arbitrage or they don't

believe in it, one or the other. So they're coming here, because exchange rates apparently never change in their minds. And that's, I think, an element that is driving our rates down. The major problem for us is the appreciation. As we saw in the Tealbook, its effects about two years out outweigh the effects of the benefit from oil, assuming the exchange rate stays roughly where it is now and oil prices stay roughly where they are. They probably won't. They'll probably go up some.

So now, having talked about lower interest rates, we need to go to inflation. Well, what are we looking at? According to the Tealbook, core inflation was 1 percent last quarter and will be 1.8 percent in the second half of 2015. They have it at 1.7 percent at the end of 2016 and 1.9 percent at the end of 2017. So what do we do, and how do we think about that? Well, I have to think about the consensus statement all the time, and that tells us what we should do. We should have a balanced approach. The balanced approach is essentially summarized by the utility function, which weights losses, the square of the divergence between inflation and target inflation squared and unemployment and the natural rate squared. That has a nice, smooth tradeoff, and it will give you something like the Taylor rule when combined with a model. It has inflation with a positive sign on the interest rate and unemployment with a negative sign on the interest rate, and you trade the two of them off. Now, what I've been listening to for some time is a different utility function. It's called the Leontief utility function, which says that our utility is the minimum of the difference between inflation and expected inflation and unemployment and the natural rate—that is, if unemployment is at the natural rate, we can't move until the inflation rate gets to the target rate of 2 percent. That's how the conversation is going, but, in fact, our consensus statement says we trade things off.

In reading through all the material that came through, I noticed, quite a few times, more implicit acceptance of the view that we're going to have to push unemployment below the natural rate in order to get inflation up. And that seems to be something that changed—and I'll ask the staff afterward to explain how that happened—because a few months ago several people here were dead-set against that possibility. But I think there's a tradeoff that what we say in the consensus statement would require us to take into account, and it wouldn't necessarily say you can't do anything about the interest rate at this point. In fact, that tradeoff says it will give more weight to the unemployment rate. At some point when we see any signs of progress, when the unemployment rate is going down below the natural rate, we will be beginning to look at raising the interest rate.

So what are we going to do? Well, we're faced with a very tough choice, but I don't think we should proceed on the basis of thinking we can't move at all until the inflation rate hits 2 percent, which is roughly what I've been hearing. And I know that this is unpopular, but I think we do not know the difference between 1.8 percent and 2 percent inflation in terms of its effect on the welfare of the representative consumer in the United States. And it's true we wrote down 2 percent. I would have been more comfortable working with a range of the inflation rate, because I think our lack of knowledge of what precisely is the relationship between the inflation rate and utility of ordinary individuals is quite considerable.

We will make those decisions. We will discuss those tradeoffs further tomorrow. And I do want to add one thing. I'm very uncomfortable working at the effective lower bound. I know that everybody says we can't move from here, but my guess is we can move from here. And you say, "We'll go back to the effective lower bound with high probability." First of all, it's not high probability in the very excellent analytic work we've been given, and using the FRB/US model

to run stochastic simulations tells us that it doesn't make much difference if you go sooner or go later. We'll have to discuss this tomorrow, but I suggest we don't discuss it in terms of the idea that there is no tradeoff until you're right at the point of inflation at 2 percent and unemployment at the natural rate. Thank you.

CHAIR YELLEN. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Governor Fischer, I want to follow up on what you've said, just to understand better. So the costs of our current policy of remaining accommodative, maybe for a longer time than is envisioned in the Tealbook, for example, are that interest rates would remain unnaturally low, artificially low, and that unemployment would fall below U^*. Is that an accurate summary of what you were saying?

MR. FISCHER. That's part of what I was saying, yes. That's not the whole story.

MR. KOCHERLAKOTA. And that there's a de minimis loss associated with having inflation run at 1.8 percent as opposed to 2 percent?

MR. FISCHER. A de minimis loss for two reasons. Number one, those utility functions have very little cost to being 0.1 percentage point or 0.2 percentage point away from target. So just by the nature of what we assume about the tradeoffs, of course, they are not very large. And, second, I think there is substantial uncertainty about this. I promise you—and I have the data to prove it—that I wouldn't worry about 2.4 percent inflation either, and I didn't. We were allowed between 1 and 3 percent, and being between 1 and 3 percent meant that when you got to 2.6 percent, you started saying, "Shucks, if we get above 3, we're going to be in trouble." So then you'd start doing things. But there's a lot of bumping around.

MR. KOCHERLAKOTA. As I think about what you've said, the observations about inflation are helpful, but they are not necessarily a guidepost in and of themselves.

MR. FISCHER. No, they're not.

MR. KOCHERLAKOTA. Simply saying 1.8 percent is close to 2 percent, well, 2.2 percent could also be close to 2 percent. We could wait until we get to 2.2 percent. The cost side is very helpful for me in understanding your perspectives.

MR. FISCHER. Yes. Okay.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. This will be fairly easy for me, because a number of people have already said most of what I wanted to say. I'll just make a few points. One, I obviously agree with everybody that general improvement has continued since the previous meeting. I'd just observe in passing that it was a very damaged economy that needed a lot of improvement. And because, with the exception of a couple of quarters, the pace of that improvement has never been all that rapid, I, again, don't think it proves too much to say we're continuing to improve.

Second, and I did check with President Kocherlakota over the weekend to make sure he was going to address inflation so that I'd be able to piggyback on his comments, but happily I can now piggyback on what Presidents Rosengren and Evans said as well. I guess I'm probably slightly different—although maybe not too different from where President Evans is—in saying I regard this as a downside risk rather than as a modal expectation. But it's a very troubling one, if it were to be realized. And, again, as a noncentral banker and a nonmacroeconomist by training in most of my professional life, I continue to be bemused by the concept of anchored inflation expectations. I mean, it does seem to me that an awful lot depends on anchored inflation expectations. I notice in the current Tealbook, for example, that the staff models downplay the decline in TIPS compensation precisely because the surveys suggest that expectations remain

anchored, therefore it all must be okay. An awful lot of work is being required of a factor that, so far as I can tell, is still not particularly well understood—that is, where it comes from and how it actually functions. That just makes me slightly nervous, but it doesn't seem to make most of you nervous. So I don't know what to make of that.

And then, finally, on labor markets, I want to pick up on something a couple of people alluded to, and then Bill elaborated and actually began to try to quantify some, which is the possibility that the natural rate is lower than the estimates most of us, including the Tealbook, have. And this is obviously really important, because, as I understand it, any significant difference in the natural rate plugged into any one of the various models that are used results in a quite different timing of liftoff and differences in what you do with regard to monetary policy thereafter.

I'm not about to argue something that I necessarily believe to be the case, but I just want to supplement some of the things Bill mentioned as potential points that may argue for the possibility that the natural rate is lower. To some degree, the possibility that the natural rate is lower is the flip side of the low labor force participation rate relative to what we would have expected with demographic trends, which is to say, lower, but not as low as it has been. That is, people who are currently categorized as unemployed may be more attached to the workforce and more skilled than the norm for unemployed workers historically. In addition, a lot of people who would have formerly been listed as unemployed, but who are actually less tied to or qualified for work, may now be listed as out of the labor force. And, by the way, there are a bunch of younger people who have parked themselves in school somewhere, waiting for things to improve. Now, that's an intuition to some degree, or a theoretical possibility, but it is buttressed by the fact that, contrary to expectations, the exit rate from unemployment to out of the labor force has actually

fallen relative to what it was pre-crisis, and entry into the labor force—again, taking demographics into account—has been low. So all of that would at least suggest, though not prove, that the quality, if you will, of those currently listed as unemployed is higher than the group historically included in that category of unemployment, and, therefore—no pun intended—naturally, there would be a lower natural rate. Maybe that's not true, but here, as with so many things with respect to labor markets I've been noticing for the past several years, every argument on one side, like on the issue of whether wages are about to rise, almost always has an equally good argument on the other.

The NFIB thing is my latest example. The NFIB survey predicts wages are going to rise. It has been doing so for the past two years. Someday it's going to be right. But it hasn't been to date, and so to me it doesn't actually mean all that much. Again, things like the quits rate—yes, the quits rate has improved, but (a) it improved really only modestly, (b) it is still not where it was pre-crisis, and (c) it actually dipped back down a little bit during Q4. So, again, let's not make too much out of things until we actually see something a bit more tangible, which I would come back to and say would be wages again. And I'm not going to discuss the implications of this, Madam Chair, because I think that's what the next go-round is about. Thank you.

CHAIR YELLEN. I believe you're right. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. This seems like a good opportunity to be succinct, so I will try to take advantage of that. On the real economy, as we all know, we have been through what are two pretty strong years, and I would also say that there has been apparently quite a meaningful gain in momentum in the second half of last year. And we are seeing numbers that seemed out of reach for many years after the crisis. The Tealbook forecast is that we will continue on that path and continue to eliminate slack at a rapid pace, fully

admitting that we don't know the value of the natural rate. And I'm comfortable with that forecast. In particular, the Tealbook points out that PDFP has been even stronger than GDP against a background of strong job growth, lower energy prices, and higher consumer confidence. That dynamic seems to me very likely to continue, and I think there is every reason to expect the real economy to continue on that path.

The big issue that we've been over and over is the risk of weakness abroad. It's worth pointing out that those effects are already incorporated in the Tealbook to a significant extent through the strong dollar. Of course, the dollar can still go higher. There can be bad geopolitical events. On the other hand, we have perhaps some hope in Europe as a result of lower oil prices and much better financial conditions with a lower euro and other effects of QE. So I wouldn't say those risks are at all currently balanced, but I would say they are coming closer to being balanced.

And that leaves you with what President Lockhart referred to as the "big disconnect" between the real economy and wages and prices, and interest rates as well, and how to think about that. And it's very discomfiting, and we're just not going to know with any confidence for a while. But what I would expect is that the effects of both the oil shock and the increase in the dollar—assuming the dollar flattens out in trade-weighted terms—will pass, and, indeed, we will see much more comfortable readings on both headline and core inflation rates in the second half of next year. But we won't know that, I think, for a while.

On market readings on inflation compensation, I talked about it at the previous meeting at some length, and I won't go over it again, but I do continue to think that much of that is not really expectations. On the other hand, I profess no certainty on that, and I think President Evans made a great point that if it's not representative of expectations, then at some point it should be

transient. With every meeting it loses its status as temporary or transient and becomes more concerning. Like Governor Tarullo, I will wait until the next go-round. I think those issues do raise significant issues for policy, and I will address them in upcoming rounds—possibly, Madam Chair, round 14 on day 6 of this meeting. [Laughter]

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. The data that we have seen since December reinforce this pattern of divergence. On the one hand, we see domestic activity continuing to strengthen, and on the other hand, we see price pressures continuing to soften. In characterizing domestic activity, I thought a banker in President Lacker's District summed it up very nicely when he remarked that business conditions are as normal as any time he has seen in the past six years. And I think "normal" is good.

Job growth in December, at about 250,000, was similar to the average for the year as a whole. And with initial claims remaining at a low level and job openings remaining elevated, it seems likely that we are going to continue to see gains close to this magnitude in the first part of this year. That should continue to push the unemployment rate down and should continue to put enough upward pressure on the participation rate to keep it from falling despite the downward structural trend.

I think recent indicators of aggregate spending also support that growth in labor demand despite the surprising drop in December retail sales. The data on consumer spending has been, on balance, positive, and further declines in energy prices, along with a substantial step-up in consumer sentiment, should support continued strong consumer spending, enough to more than compensate for the drop that President Fisher talked about earlier in drilling and mining

investment. Investment spending is a little bit more of a mixed picture, but December's data on housing starts were the most favorable we have seen in some time.

Despite that improvement, particularly in the labor market, we have seen no broad-based acceleration of wages, and that is a puzzle. The news on inflation has also been dominated by continued declines, particularly from oil prices. While I think we should expect to see the effect of these declines to be temporary, I am concerned about the possibility that deflationary shocks may continue for some time and eventually feed through to expectations. The news on core inflation was a bit softer than expected, and the annualized three-month change in core PCE prices is likely to be below 1 percent in December. Survey-based measures, as many have pointed out, have held steady, a development that holds out the hope that, when the effect of oil and dollar shocks subside, and as resource slack continues to diminish, inflation should move up toward 2 percent. But while I am mostly comfortable looking through the sharp decline in oil prices, I am increasingly uncomfortable doing the same with regard to market-based measures of inflation compensation, which have continued to decline. Because those measures are likely more forward looking than survey-based measures, I don't think we can dismiss the possibility that the risks to inflation and inflation expectations are on the downside.

Related to that, I have been somewhat preoccupied with the significant decline in longer-term nominal interest rates, which is striking at a time when this Committee is signaling the approach of liftoff. In particular, the 10-year Treasury has declined close to 1 percentage point over the past year. Two aspects of that decline are noteworthy. First, it's concentrated farther out along the yield curve, and, second, changes in the expected path of short-term rates do not appear to account for much of the change—or, put differently, it has been concentrated in the term premium.

I think understanding why this decline is happening is important for our policy deliberations tomorrow, and in this regard I think two explanations merit particular attention. First, the one that has been cited here: Extremely low longer-term interest rates in advanced foreign economies and concerns about a weaker global economic outlook may be exerting downward pressure on yields. That one, I think, is a slightly easier scenario to deal with. But the second is that there is some evidence that market participants may have materially altered the probability they assign to low inflation outcomes and weak economic conditions. Previously, when market participants appeared to be most concerned about the risk of higher inflation coinciding with unfavorable macroeconomic conditions, nominal Treasury securities had to yield more in order for investors to hold them. More recently, this concern appears to have been replaced by the concern that low inflation will coincide with unfavorable macroeconomic conditions. In these states, nominal Treasury securities have attractive returns. This consideration could explain why the term premium has declined. This scenario was laid out very nicely for us in an earlier memo from President Kocherlakota, and it is given some weight in the chart in the Tealbook that shows a striking shift in market-based measures toward a higher probability being placed on low inflation outcomes.

Finally and related again, there is something that many have commented on, the strong activity domestically comes against a divergent backdrop of weak foreign economic growth and deflationary pressures from abroad. Indeed, the one sector of the U.S. economy other than oil exploration in which prospects remain distinctly unfavorable is net exports. Since last summer, the dollar has increased about 10 percent. Staff models suggest such an increase will eventually subtract nearly 2 percent from the level of GDP, and the contribution of net exports to GDP

growth in the Tealbook averages a subtraction of about ½ percentage point over the next few years.

The size and the open-ended nature of the ECB's policy announcement on purchases of sovereigns surprised markets and sent a definitive signal that the ECB is prepared to take the necessary action to prevent deflation in the euro area, which is welcome. But challenges remain. The extent to which this recent action coincides with a stronger recovery in euro-area economic growth will depend on strengthening confidence about the outlook for activity and inflation, the emergence of stronger domestic demand, and the absence of further threats to the cohesion of the euro area. Upcoming negotiations between Greece and its creditors following the Syriza victory on Sunday will test the last of these. And, more generally, continued disagreement among euro-area members about the extent of needed structural reforms and fiscal support are likely to continue to weigh on the recovery. Developments beyond Europe are also not hugely encouraging. Even if a deceleration in China's economic growth occurs smoothly, the deceleration itself is likely to contribute to continued global deflationary pressures for some time.

The Tealbook projection, I think, involves an assumption that the dollar does not move further. My own assessment is that the risks associated with that forecast are in the direction of further dollar appreciation. Indeed, as we have seen, in response to last Thursday's ECB action, the dollar has already appreciated since the Tealbook was finalized. So, in sum, I think we can expect some persistence in deflationary pressures from abroad with dollar strength outweighing possible improvements in foreign economic growth. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Well, let me thank everyone for another very thoughtful round of observations on the outlook. I will, as usual, try to summarize a few of the main themes in your remarks, especially as they relate to actual progress we have made in achieving our dual

objectives and the likely pace of progress going forward. I apologize in advance that I won't do justice to all of the interesting and detailed analysis that some of you have presented. And then I'd like to add a couple of remarks of my own.

Starting with the labor market, I think we all agree that labor market conditions continue to improve, and most of us seem optimistic that further improvement is likely in the period ahead. The labor market report for December may not have quite lived up to the sizzling standards of November, but it certainly provided further evidence that the recent trend in employment has become stronger, appreciably stronger, than it was earlier in the year. The unemployment rate fell a further 0.2 percentage point, which is more than we expected, and broader measures of utilization have similarly moved down. Both the Board and the Kansas City indexes of labor market conditions have picked up. Even so, a number of you noted that there likely remains an appreciable margin of slack in the labor market despite these recent gains. The Tealbook, for example, emphasizes that the unemployment gap at this point appears to understate the true amount of labor market slack, in the sense that the output gap is currently estimated to be significantly larger than that consistent with Okun's law, reflecting the cyclical shortfall in labor force participation and involuntary part-time employment.

Of course, the behavior of labor compensation also provides some information on labor market slack. And as David noted in his presentation and as shown in the Tealbook simulation, it has important implications for inflation. Most measures of labor compensation still haven't moved upward in any convincing way. The average hourly earnings number moved in the wrong direction. And while that may be noise, we still really haven't seen any meaningful pickup in wage growth. Several of you noted that surveys hint that wage growth is about to pick up, but that's something we haven't yet seen.

I suppose one response to this that I heard from several of you around the table is that you are beginning to revise down your estimates of the longer-run unemployment rate. This is something, as Governor Tarullo mentioned, that also is perhaps a logical reaction to the notion that at this point more slack may be showing up in other forms, whether it's part-time employment or individuals who are not working but not actively looking and are, therefore, counted as out of the labor force. That may be another factor that has led to a downward revision to estimates of the longer-run unemployment rate, and I would add that I also am in the camp of those who, for all these reasons, have recently revised down my own estimate.

Of course, it's also important to remember, as President Williams emphasized in his comments, that the behavior of wages may continue to be influenced by downward nominal wage rigidity. If firms were constrained from cutting wages during the recession, they may face less pressure to raise them now than would be expected on the basis of the existing degree of labor market slack. In other words, a stock of pent-up wage deflation may currently be holding wage increases down. But as this source of restraint erodes, we could see nonlinearities emerge in the behavior of nominal wage growth and price inflation, and this is something that President Fisher has emphasized. I thought the Tealbook had an interesting box this time that discussed the implications of this type of view.

Turning to recent developments in the broader economy, most of you seem reasonably confident that real GDP will continue expanding at a solid pace, thereby enabling further improvements in the labor market. You noted that real GDP likely expanded at a rapid pace, maybe about 3¾ percent or so, in the second half of last year, and that the growth of consumer spending was quite brisk. And many of you expect this strength in domestic spending to continue this year, with household purchasing power having been markedly boosted by declining

gasoline prices. Several of you also noted a significant improvement in consumer confidence. But, as President Lacker noted, while the boost to consumer spending from declining gasoline prices should prove transitory, employment growth and the associated income growth and gains in wealth are ongoing factors supporting consumer spending. Business confidence also seems quite strong.

We had a good discussion around the table of the effect of lower oil prices. I think there was general agreement that, on balance, it should be positive, but it's really difficult to figure out exactly what effect it is likely to have with respect to capital spending and employment in the energy sector. It was good to hear from Presidents Fisher and Kocherlakota that they see less likelihood than was the case in the 1980s that these declines will have very serious negative effects on their regions and on, for example, banking conditions. But as Vice Chairman Dudley pointed out, the timing with regard to when we see effects on investment spending and employment in the energy sector relative to the boost to spending is really a significant factor for the forecast going forward.

Many of you discussed foreign economic developments in the outlook. I think there was broad agreement that the actions by the ECB are a positive and surprise to the upside. Nevertheless, there remain significant concerns associated with developments in Greece and with future developments in the euro area, Russia, Ukraine, China, the Middle East, and other areas. Many of you mentioned that the steep appreciation we have seen in the dollar is likely to weaken net exports in the years ahead by exerting a larger influence over time than the positive effects on spending from lower oil prices. And as some of you noted, further appreciation of the dollar is certainly possible and such an eventuality presents a downside risk to the forecast.

With respect to financial conditions, we had some discussion of why longer-term interest rates are so low. That's something I'll turn to in my own comments as well, but clearly there are a variety of scenarios with different policy implications. One possibility is that we are simply seeing spillovers from the rest of the world, which has seen an expectation of quantitative easing and has had weak economic conditions. And if that's the main scenario, that would seem to be a positive factor for our national forecast. But as several of you noted, other scenarios or explanations are also possible, in particular that the low level of rates may reflect low inflation expectations or expectations of weak economic growth.

On the inflation front, incoming data suggest that we are making somewhat slower progress towards our 2 percent goal than previously anticipated. The core CPI inflation rate in December was unchanged. The staff has revised down its core PCE inflation estimate in the fourth quarter to 1.1 percent from 1.6 percent at the time of the previous meeting. The staff currently anticipates that core PCE inflation will continue to run close to 1 percent during the winter but pick up a bit in the spring, and that's a downward revision. And some of you noted in your own discussions that you have also adjusted downward your forecast of PCE inflation and are increasingly worried that inflation may remain below 2 percent for some time. Some of you noted that the rise of the dollar since our previous meeting will put additional downward pressure on prices of imported goods and other commodities—and thereby lower readings on inflation during the first half of this year by more than you previously expected—and that the further decline we have seen in oil prices may also spill over into lower core inflation. I think it's fair to say that most of you emphasized that you don't expect these disinflationary forces to have a persistent effect on inflation beyond 2015, particularly in light of the continued stability of survey measures of long-run inflation. But a number of you certainly expressed concern that

inflation expectations may move down, and that we are likely to see little or no evidence in the next several months that will improve our confidence that inflation is going to move back to 2 percent.

I did hear some general concern about the continued decline of five-year, five-year-ahead inflation compensation and the risk it signals that longer-run inflation expectations could be starting to drift. Of course, as many of you noted, statistical models we look at suggest that the downdrift mainly reflects a decline in the inflation risk premiums or liquidity premiums. But as a number of you noted, it is not obvious, for reasons that Presidents Kocherlakota and Evans discussed, that this is an entirely comforting interpretation. And I also noted comments that, while survey measures may be stable, this is not entirely reassuring, as we saw stability of longer-run inflation expectations in Japan as well. So, clearly, this is something that needs close monitoring.

Let me stop there by way of summary. Would anybody like to comment or add anything? [No response] Okay. Then I'd like to add just a couple of comments of my own.

I certainly agree with everyone that incoming data provide confirmation that the labor market is making good progress toward a more normal state. And, knock on wood, I am optimistic that we will see continued progress toward fulfilling the employment leg of our dual mandate. And I find it reassuring that job growth actually could slow appreciably from its recent pace and still be well above staff estimates of the rate of job creation that is consistent with an unchanged unemployment rate. I think this is fortunate, because I am in the camp that thinks we still have some ways to go before we are back to maximum employment. In addition, when measured on a cyclically adjusted basis, the number of long-term unemployed workers and the percentage of involuntary part-time workers remains elevated, while the labor force participation

rate remains low. That suggests to me that the unemployment gap in the staff estimate understates the true degree of slack in the labor market. And, as I mentioned, I have also revised down my estimate of the longer-run unemployment rate. Finally, I think a tighter labor market would have other advantages with respect to the inflation leg of our mandate, as it would presumably speed up the return to our 2 percent inflation objective.

In contrast, incoming data—particularly the lower-than-expected core CPI inflation reading for December, the continued decline in oil prices, and continued upward pressure on the dollar—have, to my mind, made the outlook for inflation somewhat less satisfactory. The surprisingly steep decline we saw in the growth of average hourly earnings may well prove an aberration. But like many of you, I see little sign yet of any upward pressure on nominal wage growth, and that matters not only for the inflation outlook, but also for the strength of consumer spending. I worry that if wage growth doesn't pick up, and it does pick up in the staff forecast, that the strength of consumer spending we have assumed may not materialize.

I certainly haven't given up on my forecast that, in an environment of diminishing slack, inflation will move back to our 2 percent goal over the next two or three years. But I am concerned that, at midyear, PCE inflation will be running below 1½ percent on a 12-month basis, and that's a fact we need to take into account when we consider the appropriate time to begin tightening. The stability of survey measures continues to reassure me that longer-run inflation expectations remain reasonably well anchored, but I, too, am increasingly disturbed by the marked decline we have seen in far-dated measures of inflation compensation in recent months. I also would note that financial market data indicate an increased desire on the part of investors to insure against very low inflation, and that worries me—that there is increased concern on the

part of investors that the economy may fall into a state of very low inflation or even deflation in some regions.

Like many of you, I, too, am perplexed by the remarkably low level of long-term interest rates, which I find hard to square with our December SEP assessments of the appropriate path of the federal funds rate. One possible explanation is that while we and the market have similar views of the modal path for domestic short-term interest rates, investors perceive a distribution of possible outcomes that places significant probability on low interest rate scenarios. For example, investors may see a high risk that poor economic performance abroad will result in a persistent glut of foreign savings, resulting in a chronically strong dollar, a growing U.S. current account deficit, a low equilibrium real funds rate, and subdued inflation. If investors prove to be right, we're apt to boost the funds rate much less than we envision in the SEP forecasts, but in this low r^* world, the zero lower bound and "reach-for-yield" investor behavior will continue to be policy concerns for us for the foreseeable future. On the other hand, investors may be too pessimistic about global risks, and they may alter their views over time. And if that's the case, I worry we could be in for quite a bumpy ride. Increased investor optimism about the global outlook could prompt a significant fall in the dollar and rise in longer-term interest rates. If such adjustments occur quickly, we could see significant disruptions in financial markets.

Finally, it could be that the very low level of long-term interest rates simply reflects a decline in term premiums abroad in response to foreign monetary policy easing that, in turn, has led to lower longer-term yields domestically as market participants worldwide apparently reach for higher-yielding safe investments without overly worrying about exchange rate risk. The same mechanism may also be a factor boosting equity prices. In this case, absent a steeper path for policy rates than we anticipate, financial conditions may remain more accommodative than

we intend, although the strength of the dollar provides at least a partial offset. The persistence of such a conundrum will also likely have policy consequences. These scenarios hardly exhaust the set of possible explanations for the current constellation of financial market prices, but I think they highlight some of the risks that are present in the current situation.

Let me stop there. The next topic is the timing of liftoff and the pace of tightening. If you want, we can quit now for the day, or if you would like to stay for another 10 or 15 minutes, we could have Ed Nelson give us his briefing and then start off tomorrow with the go-round. So I leave it up to you. I think we have time tomorrow, if you want to defer until tomorrow. President Kocherlakota.

MR. KOCHERLAKOTA. I'll express my own perspective that I think it would be preferable to defer it, just so that people are fresh to take on this important new topic.

CHAIR YELLEN. Okay. Is that the general view? We will begin tomorrow, then, at 9:00 a.m., and we will discuss policy options concerning the timing of liftoff and the pace of tightening.

[Meeting recessed]

January 28 Session

CHAIR YELLEN. Good morning, everybody. We are going to start things off this morning by coming back to the testing proposals, and I'm going to turn things over to Josh Frost.

MR. FROST.[8] Thank you, Madam Chair. In yesterday's discussion, the Committee expressed interest in having the staff put forward two proposals for testing term RRPs—one that includes further testing of term RRPs over the March quarter-end only and one that includes the March quarter-end tests and a series of small-term RRP tests in February and early March.

The first option—further testing of term RRPs over the March quarter-end—would include the four operational refinements that Lorie mentioned yesterday. These refinements are based on lessons learned from the tests over year-end and are outlined in the top panel of exhibit 1. To reiterate, the four refinements are: one, reduce the amount of term RRP offered to $200 billion to improve our understanding of the effect of decreased capacity; two, have the term RRPs mature across multiple days in early April to avoid operational risks associated with having all of the operations mature on the same day; three, make modest changes to the frequency and tenor of term RRP operations, resulting in fewer operations and shorter maturities; and four, express the maximum bid rate as a spread above the ON RRP rate on the day of the operation to better allow for the possibility of a change in the target for the federal funds rate following the announcement of the term RRP offerings but before the actual operations commence.

The second option includes a series of small tests of term RRPs in February and early March, in addition to the March quarter-end tests that I just discussed. A possible structure of these non-quarter-end tests is outlined in the bottom panel of exhibit 1. If the Committee wanted to pursue these tests, it could authorize the Desk to offer a series of relatively short-term RRPs in modest sizes to learn more about the degree of substitutability between overnight and term RRPs, and to get more insight into the rate the market requires on term RRPs to induce such substitution.

To best balance the desire to learn about these issues with an inclination to keep the size of such tests relatively small, the Committee might want to instruct the staff to conduct a series of term RRP operations in February and March with a size limit of $50 billion outstanding at any one time. As is the case with the quarter-end term RRP testing, this limit would be in addition to the $300 billion daily limit on the overnight RRP.

These operations could be conducted beginning on Thursday, February 12, and all mature by Thursday, March 12. These dates would ensure that these operations do not conflict with the March quarter-end term RRP testing, and all of these operations would all mature prior to the Committee's March meeting. The operations could also

[8] The materials used by Mr. Frost are appended to this transcript (appendix 8).

be subject to a maximum bid rate of the prevailing ON RRP rate plus 5 basis points, and be awarded via a single-price auction. While the exact terms of these tests would be determined in the coming days, it is likely that we would plan to start relatively small at around $10 billion and utilize a maximum bid rate of the prevailing ON RRP rate plus 5 basis points, and conduct a series of four one-week operations every Thursday from February 12 through March 5. In the coming days, Simon Potter would inform the Committee of the detailed terms of the first of the planned operations after obtaining the Chair's approval.

Depending on which option the Committee chooses, the Desk could release a statement following this meeting, with more operational details announced through a future Desk statement. Draft resolutions authorizing each type of term RRP testing are provided in your handout as exhibit 2. We will have copies of the Desk statement associated with each of the options in case you would like to review. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Are there questions for Josh? President Williams.

MR. WILLIAMS. I just have a question about option 1. Looking forward, what would be our plan about the June quarter-end, abstracting from what monetary policy will or will not do?

MR. POTTER. As Vice Chairman Dudley discussed, I think we will recommend testing over the June quarter-end if we go ahead with this test over Q1. I think the appropriate way to do that as a test would be to have a Desk statement come out at the April meeting, or it's possible we could do that at the March meeting. But it's important that we have some interval in order to show it is testing and it's not an indication of any change in the policy statement.

MR. WILLIAMS. The idea, if I may, would be that if we were to use this on a permanent basis, we would announce it at what point?

MR. POTTER. The main option you have is the directive to the Desk, and you could put this into the directive that you vote on at each meeting. If, for example, at the June meeting you voted to increase the federal funds rate target range, you could take the testing that we're doing and you could increase the limit on it, if you wanted more comfort. We would probably recommend to go with the $200 billion, so there is no signal. If at that meeting you decided that

you wanted to raise rates, you could then direct the Desk to have more capacity than that $200 billion.

MR. WILLIAMS. But would we be announcing that for the foreseeable future we plan to do quarter-end? That's what I was asking about. I mean, we would be out of the testing stage.

MR. POTTER. At the moment it's in the directive, it will be out of the testing stage. But the directive is just for the period through the next meeting.

MR. WILLIAMS. It would just be a statement about the period through the next meeting, and we would repeat that as long as we were using term RRPs.

MR. POTTER. Yes. But there might be some more communication to help the market understand the regime that we would be operating in.

MR. WILLIAMS. Thank you.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Yes. Josh, on option 2, about the testing small operations in February and March, I want to understand more about the value you folks see in this. I believe I heard you say that it would be informative about the rate at which term substitutes for overnight. A general expectation is that it would be higher than the rate on overnight, but now I'm trying to think about what difference it would make to me as a Committee member to know what that rate is. Do you have a sense of what value it would be to the Committee? Or do you have some other purpose in mind for this test? If it's 8 or 10 or 15, what difference is it going to make to the Committee to know what that rate is?

MR. FISHER. Madam Chair, may I augment that question, please?

CHAIR YELLEN. Yes.

MR. FISHER. I'd like to also know in answer to the question, from the Desk's standpoint, would these smaller tests be a useful exercise just in terms of getting better muscle tone?

MR. FROST. I think in terms of what you would learn from the rate information, just suppose for argument's sake that the first few operations clear at a rate of 6 basis points, so 1 above. That might suggest that there is relatively little premium that would need to be offered to have people move from overnight into term. Instead, suppose it was 10, 15. I would think that it would be useful for the Committee to have some understanding of just how much of a premium would need to be paid in order to induce switching between the two.

MR. LACKER. I really can't see why, though. I mean, we set overnight rates, and we've done this for decades. The term structure of interest rates—the one-month, the three-month commercial paper rate—is what it is. Why would it matter?

MS. LOGAN. From the discussion yesterday, if we decided to lift the overnight RRP cap to a larger size, you wouldn't necessarily need that substitution. But there was also a discussion to the effect that you would want that cap to be temporarily increased, and afterward you may decide you want to bring that down and move some of that overnight into term. It may be useful to know what premium you would need to pay for that substitution. If it was very low, that might affect the exit strategy that Governor Tarullo discussed yesterday, and I think we would come back with other exit strategies.

MR. LACKER. Is it a matter of our budgetary cost for this that might affect our choice here? That seems second order for monetary policy.

VICE CHAIRMAN DUDLEY. President Lacker, I think my sense of it is that if you thought that term RRPs had a somewhat lower financial-stability risk than that associated with

overnight RRPs—so let's posit that—then you'd want to know how much that benefit cost you in terms of paying a higher premium. Now, if you don't accept the premise that term RRPs have a lower financial-stability cost than overnight RRPs, then that sort of argument is moot.

MR. LACKER. Well, I would question that. But even if you grant that, it seems hard to swallow that the difference in monetary cost between a few basis points is going to be material to the Committee in that situation, given what we're thinking about.

MR. POTTER. President Lacker, maybe we can flip it a little bit. If we can get a lot of substitution at or just a little bit above the overnight RRP rate, then we're not really disturbing the term rates that you're talking about. If, to get that substitution, we really have to jack it up over the overnight RRP rate, then we are affecting other term markets indirectly.

MR. LACKER. But how do you know that? That depends on what those other term markets are, not where the one-week is relative to the overnight. That depends on how other term rates move, right?

MR. POTTER. It does, and we would expect in the configuration rates that we have that they would be quite a bit above the overnight RRP rate, because we are setting that at the bottom of the range.

MR. LACKER. That's unpersuasive.

CHAIR YELLEN. President Fisher.

MR. FISHER. I don't want to belabor this point, but, again, just thinking as a practitioner, and given the fact that we want to have as many "bullets in our holster" as possible, if this helps inform the Desk and helps them, as I said earlier, "get their muscle tone," these are small exercises. I don't see why we would not—it's really a question of, is this a useful exercise from the standpoint of a practitioner? We don't want to muck this thing up. You can debate this

from that standpoint, President Lacker, I'm sympathetic, but it's really giving them the tools that they need to execute the policy this Committee instructs them to do. That's the way I would look at it.

MR. LACKER. Now, if I could, Madam Chair, I respectfully disagree. They have testing platforms. They can run their own auctions internally; they can run their own simulated auctions. I've seen them do this. I've participated in things like this. They've got plenty of muscle tone. They are a well-exercised crew, a very professional crew. They do an excellent job of executing on these things. They know what they're doing. I'm highly confident they don't need more market practice.

The broad concern here, I think, ought to be that we have seen that the more testing we do, the more market participants think these are going to be permanent features of the financial landscape. As well as we try to communicate that these are only tests, for some reason market expectations run ahead of the Committee's intended communication that these are just temporary tests of a facility. The financial-stability concern has always struck me as baffling. The idea is that there are runs out there that are being prevented now only because of a lack of an overnight RRP facility that people would be attracted to putting their money into. We would have had more runs in 2008 if we had an overnight RRP facility available for people to run to.

VICE CHAIRMAN DUDLEY. I don't think that's the argument.

MR. LACKER. Well, then, explain it to me.

VICE CHAIRMAN DUDLEY. I think the argument is more that if you have a facility that is an elastic facility, it can cause private-sector rates to go up by more. In the old regime, you had a fixed supply of the safe asset. When the demand for that asset increased, that caused the rate on that asset to fall dramatically. If you have an elastic facility, the price doesn't fall,

and that pushes up private-sector yields by more. So I think there is a fundamental difference in terms of having an elastic facility.

MR. POTTER. I think it's not the probability of the run. It's if a run starts, if you have something like this imperfectly elastic supply, it can make the effect of that run on the real economy worse. That's why we really were trying to be careful in considering the cap and other issues. But there are certain events that could happen in which you do get a run, and the existence of the overnight RRP facility would make the outcome worse for the real economy.

VICE CHAIRMAN DUDLEY. It's not the probability of the run that's changing, it's the consequence of the run. In terms of financial market conditions, that's the difference.

MR. LACKER. We're talking about the interval of time between such a run and the time that the Federal Open Market Committee, using modern communications, is able to convene and execute an offsetting change in interest rate policy, which we generally do. That seems, to me, like a fairly minor consideration.

MR. FISHER. I think you've heard point and counterpoint, Madam Chair.

CHAIR YELLEN. Okay. We did have a show of hands on this yesterday, and the takeaway for me was that most people actually favor both kinds of testing. Of course, there is no commitment at this point, President Lacker, to use term RRPs outside quarter-end as part of our program. That's certainly not something we have decided at all. We are just looking to test it. We need votes on both of these. I suggest we start with a vote on option 1, to test term RRPs over March quarter-end. All in favor, say "Aye." [Chorus of ayes] Any opposed?

MR. LACKER. Yes, I'm opposed.

CHAIR YELLEN. For the March quarter-end?

MR. LACKER. Yes.

MR. FISHER. This is versus option 2?

CHAIR YELLEN. We're going to take both separately. We just voted on option 1.

MR. FISHER. I add my vote to option 1. I apologize.

CHAIR YELLEN. Okay. Let's go to option 2 now, which is to test the term RRPs in small operations in February and March. All in favor? [Show of hands] Any opposed?

MR. LACKER. I'm opposed.

MR. FISHER. I'm opposed.

CHAIR YELLEN. Okay. I think the Desk has authorization. I guess what you call option 2 includes both of these things, and we've approved both of them.

MR. LUECKE. Just to be clear, among voters it would be nine-to-one in favor of both.

MR. POTTER. We'll have copies of the Desk's statement available if you want to look at it.

CHAIR YELLEN. Okay. Now we have got a lot of business to do this morning. Our next topic is timing of liftoff and pace of tightening, and I do think we'll be talking really about the policy decisions we face in this round. You remember we will also have to discuss our actual statement, but my guess and hope is that that discussion can be reasonably short because we'll cover quite a bit of policy-related comments in this go-round. President Evans.

MR. EVANS. If I can just ask a procedural question, in terms of how the minutes get constructed, in the past it's been based on the discussion that takes place with regard to the alternatives. Is it possible that the policy discussion for the minutes would also be based on the liftoff discussion, and we wouldn't have to repeat the same arguments?

CHAIR YELLEN. I think so.

MR. LAUBACH. The plan is that, as has been the case on occasion in prior meetings, that there would be a separate summary of this coming go-round perhaps under a heading like "Policy Planning," and that will, of course, summarize comments from participants.

MR. EVANS. Yes, but in the paragraph that talks about how the Committee discussed the policy options in the past, as I understand the rules of the game, unless you actually made the argument during that commentary, it doesn't necessarily get captured in the count. You couldn't simply say, "As I alluded to in the other discussion, there's no need for me to repeat that."

MR. ENGLISH. We're doctrinaire, but we're not that doctrinaire. [Laughter] If you say something for this go-round, we will include that in the summary of the policy discussion, as appropriate.

MR. EVANS. Excellent. I can see great economies being achieved by that.

CHAIR YELLEN. Good question.

MR. EVANS. I heard former Vice Chairman Don Kohn one time mention, "Well, one reason why I mention this laundry list here is because you have to say it."

CHAIR YELLEN. I'd like to call on Ed Nelson to get us started off—to introduce this topic.

MR. E. NELSON.[9] Thank you, Madam Chair. I will be referring to the handout labeled "Material for Briefing on the Timing of Liftoff and the Pace of Tightening."

Earlier this month, the staff distributed a packet of five memos that detailed how considerations related to monetary policy strategy might figure into policymakers' decisions about the timing and pace of policy firming. My remarks will distill some key messages from this material.

The first memo, by Mike Kiley, Dave Reifschneider, and myself, discusses various considerations that could influence your decisions regarding the timing and pace of adjustments to the policy stance in the period ahead. As you know from Tealbook B, many simple interest rate rules, as well as optimal-control policy, call for an immediate policy firming. However, research suggests that the overall trajectory

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[9] The materials used by Mr. E. Nelson are appended to this transcript (appendix 9).

of the federal funds rate expected by market participants is much more important for the behavior of real activity and inflation than is the precise choice of date at which to commence policy firming. As the memo noted, alternative benchmark policies that incorporate inertia, such as the inertial Taylor (1999) rule and the optimal-control policy, imply a smaller initial tightening and a more gradual subsequent pace of tightening than do the noninertial Taylor (1993 and 1999) rules. In simulations of the FRB/US model conditioned on the staff forecast, this gradual pace facilitates a more rapid return of inflation toward the 2 percent objective, in part because the policy allows the unemployment rate to run below the natural rate of unemployment for a time.

Another point highlighted in the memo is that your December SEP paths for the federal funds rate differ appreciably from the path implied by the noninertial Taylor (1999) rule. These deviations, which diminish notably over the projection period, may suggest that you have a preference for interest rate smoothing. Alternatively, they may indicate that your views concerning appropriate policy are influenced by factors that incline you to take a cautious approach to normalizing the stance of monetary policy. For example, some of you may worry that the economy remains somewhat fragile, on the grounds that the pickup in economic growth is so recent, or you may fear that an adverse shock could prompt serious retrenchments in spending and hiring, with attendant financial instability. Containing these risks might be a particular concern for the Committee because the effective lower bound on policy rates and the already-elevated size of the balance sheet could limit the Federal Reserve's flexibility in responding to negative shocks. In addition, some of you may see potential advantages to allowing the unemployment rate to undershoot estimates of the natural rate for a time; these advantages might include speeding the return to 2 percent inflation, or the opportunity to explore whether some portion of the recent supply-side damage can be reversed. As the memo also notes, however, adopting a cautious approach to tightening could be costly if taken too far, because it could generate an undesirably large increase in inflation or undermine financial stability.

Another memo to the Committee, from de Groot, Gagnon, and Tetlow, considers evidence from stochastic simulations of the FRB/US model of two alternative policy strategies: an "earlier and gradual" firming strategy and a "later and steep" strategy. The authors find that—provided that the data-dependent nature of Federal Reserve policy is well understood by the private sector—the choice between the two strategies is not of crucial importance, as measured by a policymaker loss function, under most scenarios. Each strategy is associated with prospective costs: An earlier-and-gradual strategy entails a higher probability of returning to the effective lower bound, while a later-and-steep strategy raises the probability that policymakers might have to raise the federal funds rate very rapidly.

Two staff memos discuss what can be learned from prior tightening episodes. One of these memos, by Meade, Nozawa, Petrasek, and Zickler, discusses FOMC deliberations that occurred around the initial tightening of monetary policy in 1994, 1999, and 2004. It shows that, in all cases, the decisions to tighten monetary policy were data dependent and forward looking. Expansion of the Federal Reserve's

communications tools likely left financial markets better prepared for policy firming in 1999 and 2004 than they were in 1994, when the market reaction to the initial tightening was sizable. The second of these memos, by De Michelis, De Pooter, and Wood, reviews the international experience with raising policy rates from the effective lower bound. Central banks differed in the precise manner in which they signaled their intention to transition from the effective-lower-bound policy; however, a common feature was that they provided broad guidance about the time frame or economic conditions in which policy firming would commence. In all cases, regardless of communications strategy, policy firming did not prove disruptive to financial markets. In addition, no case was found in which policy firming was too late or otherwise insufficient. Among the episodes considered, Japan in 2000 and Sweden in 2010 provide possible instances in which the tightening was premature or excessive, perhaps because policymakers gave undue weight to factors other than inflation and economic activity when making their decisions to raise rates. In both of these instances, policy firming was subsequently reversed and the policy rate returned to the effective lower bound. Canada, in contrast, had a more orderly experience when it tightened policy starting in 2010, perhaps because the firming was gradual and was closely keyed to macroeconomic conditions.

Focusing specifically on communications, the memo by English, Laubach, and Reeve offers language—reproduced on the third and fourth pages of your handout—that the Committee might consider employing in policy statements as it approaches and reaches the time at which policy firming is commenced. In addition, the final section of my memo with Kiley and Reifschneider noted two points that the Committee might wish to highlight in speeches, testimony, and other forums:

One: Once firming commences, the federal funds rate will not follow a predetermined trajectory; instead, all adjustments will be data dependent.

Two: Real activity could turn out to be stronger and inflation higher than expected, implying that policy would need to tighten more rapidly than envisioned in the SEP paths. Conversely, conditions could turn out to be weaker, making it appropriate to tighten more slowly or even to reverse course.

Furthermore, policymakers might come to a consensus that special considerations—for example, a desire to lower the likelihood that the Committee would need to return to the effective lower bound—were playing an important role in its deliberations. If so, the Committee might wish to describe these considerations in its policy communications.

Along with the memos, the staff distributed a few questions that you may wish to address in your comments during today's go-round. For your convenience, these questions are repeated on the last page of your handout. Thank you, and I would be happy to take any questions you might have.

CHAIR YELLEN. Are there questions? President Plosser.

MR. PLOSSER. Thank you, Madam Chair. These memos are excellent, and I enjoyed reading them and found them very interesting. One of the things that I think is important about the set of the memos is it begins to talk about monetary policy as a path, and that's the way it affects the economy. I applaud that.

One of the things that we do in our current statement is to repeat over and over again the fact that we believe that our large balance sheet continues to provide accommodation to the economy in one form or another, and that, in particular, it's presumably keeping financial conditions or interest rates at the longer term lower than they might otherwise be. If I think about accommodation and I think about calibrating the stance of policy going forward, how do I take into account, or how should the Committee think about, the existence of a large balance sheet and the way it perhaps—may or may not, depending on the staff's views—influences how we calibrate the pace of tightening or the level of tightening at any point in time? How do these two things interact, and how should we think about them?

MR. E. NELSON. Well, the elevated balance sheet, by providing stimulus, makes conditions more favorable for economic expansion and for inflation to return to 2 percent than otherwise, and in that sense it's a conditioning factor in the decisions concerning the target range for the federal funds rate. That's one way of thinking about how that separate monetary policy instrument fits into the overall strategy.

MR. PLOSSER. That means we should think about a policy path that looks higher or lower or unchanged, depending on the size of the balance sheet?

MR. WILCOX. If I may, for just a second, one way that we tried to reflect that in the baseline projection is that we built in an assessment of the influence of the portfolio on the term premium of longer-term interest rates. Eric Engstrom and his colleagues attempt to calibrate the

effect of the size of the portfolio on the time profile of longer-term interest rates, and that's providing a separate influence on financial conditions aside from the funds rate. In the baseline projection, we treat the funds rate as the active tool of monetary policy that's governed by the monetary policy rule, but in the background, under the set of conditions that are specified in Tealbook B, the size of the portfolio is evolving, is melting away, and with that the downward pressure on term premiums is diminishing as well. That may go part way toward providing some help on the question.

MR. PLOSSER. But if I, as a policymaker, were trying to think about how do I set the right level of the interest rate path—steeper, higher, lower—I'm a little bit confused about how I think about the effect of the balance sheet. Unless I'm just going to follow a rule and we're going be done with it, we're going to make some arguments about why we think the path ought to be lower or higher than it otherwise might choose to be. I'm trying to figure out how I think about that as a policymaker to determine whether I like one path versus another.

MR. WILCOX. I can't answer that because I don't know your preferences, but the way in which we tried to lay it out for you is to give you a prospective view of how we think resource utilization is going to evolve and how inflation will evolve conditioned on both dimensions of monetary policy.

MR. PLOSSER. You say the balance sheet is given. Its effect on the economy is given, predetermined in your baseline.

MR. WILCOX. Sure, it's given in the same sense that the funds rate trajectory is given. We're trying to give you something that's internally consistent in a sort of general-equilibrium sense, in which the economy, the portfolio, and the funds rate path all go together, and you

ultimately need to make the judgment about whether you prefer a more accommodative stance relative to that benchmark that we try to give.

MR. PLOSSER. Could I choose something different that said maybe the balance sheet goes down faster?

MR. WILCOX. Sure.

MR. PLOSSER. My choice of the funds rate in that equilibrium would go up less?

MR. WILCOX. Absolutely.

MR. PLOSSER. But we don't really know, at the margin, how much difference that would make. I guess that's kind of where I was coming from.

CHAIR YELLEN. President Kocherlakota.

MR. KOCHERLAKOTA. Yes. Thank you, Madam Chair. I apologize to President Plosser, but I felt that over the years he's made his positions on policy quite clear. [Laughter]

MR. PLOSSER. I didn't realize that David was confused by that, but that's okay.

MR. KOCHERLAKOTA. I'm going to pick up on the same line of questioning as President Plosser. I find that I understand the treatment of asset purchases, as David Wilcox and Ed Nelson have explained, in the optimal-control exercises. I find it more difficult to understand in the Taylor rule formulations. It would seem to me that the rule is supposed to be dictating where the level of policy is relative to some kind of steady-state normal, and that should include asset purchases as being part of that abnormal provision of stimulus. When I read the memos and was remarking on, "Boy, we're more accommodative than noninertial Taylor (1999) rule," I thought, well, we're actually a lot more accommodative because we've got all these asset purchases in there as well providing stimulus. I didn't find the framing of the policy decisions of

the Committee in terms of noninertial Taylor (1999) rule as compelling because I just think that we're much more accommodative because of the inclusion of asset purchases.

I think Thomas has something he wants to say, but, first, I have one small point on the financial-stability issue. I think it's right to be thinking about how accommodative policy can lead to the risk of financial instability, and I encourage us to be doing that. It is also important, though, to keep in mind, as the memos point out, that tightening too early can also lead to financial instability, and there are the risks associated with that as well. The memos are very clear on that. I think it's important for us as a Committee to keep that in mind.

MR. LAUBACH. May I quickly respond to President Kocherlakota? I'm a little afraid that what you laid out might sound a little bit like double counting. The way that monetary policy transmission largely works both in the staff projection and in the FRB/US model is through longer-term interest rates. Now, that's how the term-premium effects that we are still assuming, and that are shown toward the end of Tealbook B, figure in. For any given path for the federal funds rate, current and future, longer-term interest rates do reflect these term premiums. Insofar as the rule mechanically responds to current conditions, these current conditions will be stronger simply because longer-term interest rates are lower than they would be for the same path of the short-term rate if the balance sheet didn't continue to exert downward pressure on term premiums.

MR. E. NELSON. One way of putting it is, the right-hand side of the Taylor rule includes variables that respond to the LSAPs because of the endogeneity of output and inflation. In a sense, it's allowing for the presence of an elevated balance sheet. This is an issue that was covered at great length in staff memos a few years ago in response to your input.

MR. KOCHERLAKOTA. I feel we are retracing ground that we covered at that time. I am not sure we will make much progress in convincing each other of our views. Thank you.

CHAIR YELLEN. President Evans.

MR. EVANS. Thank you, Madam Chair. On this topic, there's a completely different way to characterize accommodative policy. You can do it with regard to whether we're achieving our goals in an environment in which the unemployment rate is still higher than the natural rate and inflation over the forecast is underrunning our goal. You could say it's not really accommodative enough.

But at any rate, I have a question about the proposed statement on page 2. The proposed paragraph 3 includes the phrase: "Based on its current assessment, the Committee judges that economic conditions," et cetera, et cetera. My question basically is whether this an unusual usage of this phrase because it's singular, as if there's only one assessment of the Committee. It strikes me that that's not unusual at a point when we are making a decision to change policy, like taking an action to change the funds rate. But when we're contemplating a future action in a couple of meetings and we say "the Committee's assessment," I'm wondering, how narrow this is? If you don't quite agree with that assessment, then you're going to get into discussions about the appropriate conditionality. But it strikes me that, because of the future aspect of this, it would be better to somehow try to characterize the likelihood of that assessment or to use something slightly more probabilistic, the central tendency of that. I guess my question is, doesn't this sound a little unusual in its current usage? It led me to add a different modifier in my own formulation.

MR. LAUBACH. I think the probabilistic aspect of this judgment of a couple of meetings or possibly more ahead is intended to be conveyed through the "may" or "could

potentially." But I will make no bones about the fact that we struggled long and hard to convey just the right sense of the probabilistic nature of the assessment. Obviously, it would be great to have a better way of doing it.

MR. EVANS. I know it's wordy, but if you were to say "median assessment" or "central forecast of the Committee," or something that indicates there's some element of a range, however narrow that may be. It seems to me that would augment the ability to achieve a stronger consensus at an early stage of our planning.

CHAIR YELLEN. That's very useful. Thanks. Governor Fischer, did you have a comment?

MR. FISCHER. Yes, just two small points. I think that the Swedes raised the interest rate in 2010 primarily for financial-stability reasons—they were scared about what was happening to housing prices—and they had to backtrack from that later. I don't know if there's a lesson there, because we don't have a large sample.

David, a question. If the place in which we reflect the size of the balance sheet, which is an issue we're going to talk about at great length during the next couple of years, is all reflected in the term premium, can't you do simulations with the premium effect and without the premium effect and with a smaller premium effect and tell us what the effect of reducing the size of the balance sheet would be at given policy interest rates?

MR. WILCOX. I can't think of a reason why not, off the top of my head. We ought to be able to do that.

MR. LAUBACH. It's very closely related to the studies concerning the efficacy of asset purchases that we've done in the past because, in effective, those memos also contemplated the macroeconomic effects of varying the size of the balance sheet.

MR. WILCOX. I don't think that's a controversial proposition, and I guess I'd like to just be absolutely clear that I think what Thomas was saying was entirely consistent. I don't know whether you meant to be making a different point than I did.

MR. LAUBACH. No, no.

MR. WILCOX. I think Thomas's views and mine, as just articulated, are exactly in alignment about the role that the SOMA portfolio plays, through the size of the term premium effect, and how that wears away in the projection.

MR. FISCHER. Thanks.

CHAIR YELLEN. President Lacker.

MR. LACKER. Two things related to Governor Fischer's comments. First, if you do that and if you devote any effort to measures of uncertainty surrounding those projections, I'd urge you to take seriously uncertainty about the marginal effect of our balance sheet on the term premium. I think in the current circumstances, for the issues President Plosser and Governor Fischer discussed, if we're thinking about the effect of the balance sheet, it strikes me that the uncertainty about that is far larger than our uncertainty about other aspects of your policy framework on the effect of short-term interest rates on the economy.

MR. WILCOX. Yes. Let me venture a hypothesis, which is a bit risky. One limit on our ability to perform this kind of analysis is that our structure is maybe not literally linear, but is pretty close to linear, and, for example, in optimal control, the preferences are literally quadratic. The size of the portfolio and the funds rate—and I'm going to look around the room hoping for some confirmation or contradiction—are going to act as if they're policy substitutes in your portfolio. Because of this way in which we put the projection together, you could get roughly—I don't know whether this would be literally true down to the basis point—the same economic

outcome by having a smaller portfolio and a more accommodative trajectory for the funds rate path in a way that would be designed to generate, roughly speaking, the same trajectory for longer-term interest rates. Now, that won't be literally true, because I suspect there are some corners of the projection in which short-term interest rates matter separately, but those two instruments are going to be substitutes for policy tools. So it's been our view that, just for simplicity, we'd reduce a two-dimensional situation down to one and give you the choice laid out on the funds-rate dimension alone, given an approach that we thought featured a relatively passive stance with respect to the way that the portfolio would be run off.

MR. LACKER. Would the terms of trade in that substitution—

MR. WILCOX. Would be linear.

MR. LACKER. But it would depend critically on the marginal effect of a given balance sheet on the term premium, right?

MR. WILCOX. Correct.

MR. LACKER. If that was like an order of magnitude smaller than sort of your standard workforce estimate, that could change the terms of trade fairly dramatically.

MR. WILCOX. Yes.

MR. LACKER. I would suspect.

MR. WILCOX. I would suspect so, too.

MR. LACKER. Right. I'm saying if you undertake any efforts to provide estimates of uncertainty surrounding your estimates of the effect of policy on different simulations, include this source of uncertainty because it strikes me as consequential.

MR. WILCOX. Dave Reifschneider, I don't know if you want to add something.

MR. REIFSCHNEIDER. Thomas is gesturing to me. I'm not quite sure what he wants me to say here. [Laughter]

MR. PLOSSER. A plea for help.

MR. EVANS. Something supportive.

MR. REIFSCHNEIDER. I would say two things. First of all, the assumptions on the term-premium effects and, more generally, what will be done to the portfolio in the future are based on your actions. You released guidance about what you intend to do with the portfolio, and basically the forecast of its effects on term premiums is just taken from that statement from the Committee.

MR. LACKER. Wait, wait. Did we make a statement about the effects on term premiums?

MR. REIFSCHNEIDER. No. You made a statement about what the plan was for the portfolio.

MR. LACKER. Right.

MR. REIFSCHNEIDER. The analysis of the term premium effects that the staff has done is printed in the back of Tealbook B. As David said, that basically predetermined path of the effect on term premiums on the portfolio is rolled through the forecasting apparatus and treated as what I'll call it a passive policy lever to get the forecast. Now, if, as Governor Fischer was suggesting, the Committee wants to explore alternative paths, you can apply different term premiums to the portfolio, and then we would run the forecasting machinery again. In addition to that, which I think maybe is why Thomas was gesturing at me, there's a paper that he and I recently coauthored—

MR. LACKER. Why didn't he talk?

MR. REIFSCHNEIDER. I don't know. [Laughter] —with Eric Engen, in which we looked at the effectiveness of the Committee's forward guidance and the asset purchases taken together. One of the things we did in that paper was to explore a range of possibilities for the effectiveness of the policies, and it ranges from having moderate effects—that's our baseline estimate—to having more substantial effects and to having quite small effects. If the Committee wants, we could do different assumptions that show how much uncertainty they could have on the outlook.

MR. LACKER. Great.

MR. REIFSCHNEIDER. But I should say that we did the analysis looking back. To go ahead and do it in terms of what these alternative assumptions would mean for future conditions is starting the exercise up again, and it would not be a simple undertaking. To do what we did in the paper, we would need to decide what signal the market takes from your changes in the portfolio for your overall stance of policy, including the funds rate, as you go forward, and that decision would have a major effect on what the potential macroeconomic implications would be. In our study, we were able to use Blue Chip survey data and other things like that to get an estimate of what the market reaction actually was. With regard to future actions, assessing what the market reaction would be pure speculation—well, maybe not pure; I mean, the Desk would have opinions about how it might go. But we wouldn't know with any certainty whatsoever what those market expectations would be. Having to talk about what it might be in the future, as opposed to analyzing what it appears to have been over the past six years, makes it a much, much more difficult project.

MR. LACKER. Got it. The second thing, very briefly, about Sweden. I took the juxtaposition of what you described about Canada and Sweden to mean that the criticism you

raised about Sweden is that they continued to raise rates after they lifted off, not that they lifted off at all. Is that correct?

MR. KAMIN. Yes, that's right. If you take a look at various considerations that were present in Sweden around the time of their liftoff in 2010, GDP growth was picking up, and inflation was near the measure that they looked at. The Taylor rule was starting to move up. Reasonable people could differ, but it seemed like it wasn't a terrible time to lift off. I think the issue was that they kept on boosting the rate even as the euro crisis started to get worse and core inflation started to fall.

CHAIR YELLEN. Governor Brainard.

MS. BRAINARD. This is just an obvious "connect the dots," but it would be useful to see an analysis of the extent to which we think we actually do have two separate instruments, especially in view this potential conundrum that we might see out there in which we're talking about raising short-term rates but we're not seeing corresponding moves in the long end of the yield curve. I don't know where it would lead us, and I say this with some trepidation, but I think it's worth having some analysis of this question.

MR. WILCOX. We'll take a look at that. I fear that, due to the limits of our knowledge, we're not going to be able to give you an interesting answer because, for example, coming back to Jeff's question, if the size of the portfolio has a smaller effect on the term premium, and the policymaker recognizes that, the policymaker is going to say, "Gee, with a stronger portfolio effect, I need to run a more accommodative funds rate policy in order to get the kind of real economic outcomes and inflation outcomes that I have in mind." That's the sense in which we treat these two policy instruments as linearly substitutable.

VICE CHAIRMAN DUDLEY. But, David, it might be interesting to look at how a different shape of the yield curve affects the economy, because you could have the same stance with regard to financial-market conditions but with different yield curves under the two regimes. It would just be interesting to know what it would mean to have a lower funds rate and a steeper yield curve versus a higher funds rate a flatter yield curve. I think that would just be sort of interesting to look at.

MR. LACKER. If the marginal effect is much smaller, one must reinterpret history. You appreciate that, I'm sure.

MR. LAUBACH. Perhaps just one small point on this. As David highlighted, from the perspective of our models, these tools are very close substitutes. But you might look at, for example, the taper tantrum as an episode in which actually market participants may have not understood them to be that way, but in which they thought that they were complements to the extent that they thought that the communications about asset purchases actually also conveyed information about the path for the short-term interest rates. That's hard for us to do. I mean, we can make ad hoc illustrative assumptions, but that's basically all we can do.

CHAIR YELLEN. Okay. Let's begin the go-round. We have quite a bit of time pressure, so I think we should get started. Let me call on President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I expect conditions will make liftoff in 2015 appropriate. But, in that context, I have a strong preference for erring on the side of waiting a little longer rather than taking the risks of moving prematurely. I am assuming that the sequence of actions will be a signaling decision two, possibly one, meeting ahead of liftoff involving a change of statement language, an intervening meeting statement in the case of two meetings ahead that reinforces the high likelihood of a liftoff decision at the next meeting, and

then the decision. I'm comfortable with this approach. I do not have great confidence that the Committee can preserve a lot of flexibility once the signaling decision has been made and communicated, unless there is a development that is obvious justification for pushing the pause button. I view liftoff as close to a *fait accompli* once the signal is given. Therefore, from a timing standpoint, I think the right question is how to weigh the risks of signaling liftoff prematurely versus the risks of waiting. I think an earlier signal would entail significant risks if the context of that decision is one of little or no evidence of inflation moving back to target, accompanied by a mixed data picture and higher-than-normal uncertainty.

I would also adjust the second question to, what developments do I need to see in the data in order to be willing to signal that a liftoff decision is coming in, say, 90 days? I am prepared to take the first liftoff step in the absence of clearly affirmative evidence on inflation, as long as there is not a troubling accumulation of contrary evidence. While that is a minimalist take on data dependency, I am comfortable with this approach, in light of the current apparent strength of the real economy. But I can imagine a framework of affirmative evidence—call this my ideal framework. Ideally, I'd like to see core inflation readings moving above 1½ percent. I don't think a "run rate" of core inflation below 1½ percent is confidence-inspiring. Ideally, I'd like to see nominal wage growth increasing according to most measures of labor compensation. And, ideally, I'd like to see clearly anchored inflation expectations. I would characterize those criteria as affirmative evidence. As I said, I won't hold out for that degree of data dependency. At a minimum, I'd like to see evidence that the transitory effect of energy-related prices is dissipating. I'm concerned that it would be bad "optics" to signal rate increases in the midst of a string of headline inflation reports that are moving away from our longer-term objective. I'd like to see evidence of a reversal of the recent disinflation trend seen in core inflation and less ambiguous

readings on inflation expectations. Now, I can imagine real-economy developments that might substantially mitigate my concerns about incoming inflation data. Data that indicate significant overshoot of my baseline expectations for GDP and jobs growth would bolster my confidence that inflation is very likely to move in the desired direction. But I emphasize the word "significant" in that qualification.

As regards the evolution of statement language, I support the general approach suggested in the staff memo. However, I view the phrase "couple of meetings" as a bit clunky, because it's open to loose or strict interpretation when it's first used. Even if in casual usage the expression can mean an indefinite small number, I think it will be taken to mean two meetings. I think the bar for not following through once we make the language change should, and will, be very high. If we want the signaling statement to preserve flexibility and remain true to data dependence, I'd prefer something like "economic conditions might" or "could soon warrant" or "may" or "could warrant an increase in one of the coming meetings." If that's too coy, and the Committee wants to signal the next meeting or the following, I'd prefer saying, "Economic conditions are likely to warrant a target change at one of the next couple of meetings." In that case, keeping "couple of meetings" I would view is okay.

Finally, I do not favor dropping the "balanced approach" language in our statements. Concerns about the combination of high unemployment and high inflation have diminished, but that concern has been replaced, in my thinking, with a significant concern about a combination of unemployment below its full-employment rate and inflation well below target. I think it's quite possible we will still face some tension in our dual mandate, so I would keep the "balanced approach" language. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. My comments are quite consistent with President Lockhart's. I'm going to answer each of the three questions that was posed to us.

For question 1, the risks at liftoff remain asymmetric. We have the ability to raise short-term rates more quickly, but we do not have the ability to reduce short-term rates below the zero bound. Thus, as long as we are limited in our ability to offset negative shocks, and given my view that the risks of negative shocks from abroad are elevated, I would rather wait longer and, if needed, tighten faster should we have underestimated how quickly we would reach both elements of our dual mandate. The global disinflation in developed economies adds further to the risks of significantly undershooting our inflation goal—the one goal for which we set an explicit target.

In terms of question 2, I agree with the Chair's assessment that, before we lift off, we need to be reasonably confident that inflation will be moving up over time. Being reasonably confident would require that we have tangible evidence that wages and/or prices are moving in a way to ensure reaching our 2 percent goal for inflation within a reasonable horizon. Thus, I would be careful not to rely too much on forecasts based on models that have been consistently overly optimistic about our return to our inflation goal, nor am I comforted that inflation surveys are not falling when a wide variety of market indicators are signaling disinflationary concerns and have been doing so since October despite tightening labor markets. I would be uncomfortable removing accommodation before we see core inflation rising rather than falling, or strong evidence in disaggregated wage and price data that tighter labor markets are starting to move wages and prices in a way consistent with reaching our inflation goal within a two-year time frame.

In terms of question 3, given the uncertainty about both global markets and the uncertainty surrounding our inflation forecast, I would not constrain the Committee to provide a two-meeting warning prior to our liftoff. We have already telegraphed that liftoff is quite possible this year. My preference would be to drop the "patient" language the meeting before we expect to liftoff, and to say, "An increase in the federal funds target will likely be warranted soon, if economic conditions continue to improve." I agree with President Lockhart that we should not try to overcalibrate our communication strategy. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you. I guess, as *Monty Python* would say, "And now for something completely different." [Laughter] I'm going to address each of the questions posed to the Committee. Regarding how the FOMC should weigh the risk of lifting off too soon versus the risk of waiting too long, with economic growth strengthening, full employment approaching, inflation expected to move gradually back to target, and our policy rate at zero, I believe we may be underestimating the costs of moving too slowly. The analysis in one of the staff memos that uses the FRB/US model indicates that there are similar macroeconomic outcomes associated with following either an early gradual policy path or a later steep path. I'm a firm proponent of using models to inform our policy decisions. But while our typical models may give us a reasonably accurate sense of the costs of lifting off too soon, they may not accurately reflect all the costs of waiting too long.

If we lift off too soon, we'll encounter employment and inflation costs that standard models reasonably capture. Although the zero lower bound may exacerbate these costs, our models are sophisticated enough to provide some help in judging these costs. If we wait too long to lift off, there may be benefits from avoiding future episodes of the zero lower bound—benefits

that the model captures. But there are other potential costs, including the risks to financial stability of holding rates at zero for a long time. Our models aren't sophisticated enough to allow us to calibrate those costs and risks, yet we know from the crisis that the costs can be severe. In addition, there may be value in initially moving rates up gradually. Although we believe we have the tools, we have not yet raised rates from the zero lower bound with a large balance sheet. I would like to gain some experience when we are in a position to raise rates gradually rather than when we feel compelled to move rates up quickly.

Although the Committee has been appropriately cautious up to now, I'm less concerned, in view of the strength of the economy, that the start of liftoff will negatively affect the expansion. Monetary policy will still be highly accommodative after the first rate increase. That's not to say that after we start raising rates we will necessarily continue on a predetermined path up. The future is always uncertain; negative shocks can hit the economy at any time. If incoming economic information materially changes our outlook, we would change our policy. We may want to slow down the path of rate increases; we may want to reverse course. But that's what a data-dependent central banker is supposed to do. I don't see that as a problem.

Regarding what developments I would need to see to be more or less confident that inflation would move back to 2 percent over time, first, economic research shows that it is very difficult to forecast inflation. Even in normal times, our inflation forecasts aren't very precise. The confidence bands around the forecast are wide. Under today's unusual circumstances, I don't think it's appropriate to require a higher-than-normal degree of precision regarding the forecast. I am reasonably comfortable with the forecast that inflation will gradually move back up to 2 percent. Continued strong economic growth, and gains in the labor market, and longer-term inflation expectations remaining stable will buoy confidence in that forecast. Historically,

economic recoveries have been associated with gradual increases in underlying inflation. Should economic growth falter or survey measures of inflation expectations begin to trend downward, I'd be less confident in the forecast.

I want to note that I do not need to see wages accelerate to convince me that inflation will rise. Federal Reserve Bank of Cleveland staff analysis that examined several measures of wages and broader labor compensation found that the lead-lag relationship between nominal wage growth and price inflation is tenuous. The strongest correlations are contemporaneous ones, especially since the mid-1980s, and my staff found no evidence that wages and labor compensation help to predict price inflation out of sample.

Finally, regarding statement language, I do think the suggestions in the staff memo for how the language might evolve in advance of liftoff provide a useful approach. However, as I indicated in the memo I circulated to the FOMC last week, I believe we could take the opportunity to simplify the statement's organization in an effective way. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Plosser.

MR. PLOSSER. Thank you, Madam Chair. As I said earlier, I thought the memo regarding the risks associated with lifting off too soon versus too late is very helpful and useful. The risks highlighted in the comparison between an earlier, gradual liftoff as opposed to a later and steeper liftoff indicate that those risks are not particularly substantial and are of similar magnitudes in either case. The results depend, of course, on the types of shocks that affect the economy in the future, which, thus, makes it very difficult to rank these options with any certainty to speak of.

Given my view of the underlying strength of the U.S. economy and the greater stability of our financial system currently, I find the earlier and gradual policy more appealing. However, the memo on foreign experiences point out it is particularly important, as exhibited in Canada, that the policy be data driven, as President Mester was suggesting. Further, the models do not point to any serious economic consequences in the event that the policy rate needs to return to the zero bound. With a policy that is data driven, as indicated by the staff's consideration of both various rules and historical experience, we should be lifting off immediately, as has been pointed out earlier.

More immediate liftoff also indicates that there will be less of a need to raise the funds rate aggressively in the future. Indeed, an earlier liftoff does more to ensure that we can be patient after liftoff than does continued delay. The fly in the ointment, of course, is the rapid decline in oil prices and the subsequent effects they will have on headline and, to some extent, core inflation in the months to come. These effects will make policy deliberations unusually challenging for the Committee, and I think it increases the danger that we will fail to see an underlying firming in inflation, and in so doing delay normalization by more than would occur absent the oil price decline.

It is true that by waiting until the smoke clears, the Committee can offset nominal pressures by raising interest rates at a faster pace. That is easy for us to say now. When the time comes, doing so could be politically difficult and far from a certain outcome of policy deliberations. Governor Tarullo gave a great case for this in the financial-stability go-round yesterday. This risk, I fear, concerns me and is one that is not captured in the model exercises.

As to what conditions I would like to see at liftoff, my short answer is they are staring us in the face today. As I have argued many times, and as Governor Fischer noted yesterday, being

data dependent, according to most data rules and historical experience, the assessment is that the current low inflation and its expected gradual move up is not sufficient to justify or continue with zero rates. It only justifies more accommodative rates than usual. Unfortunately, the fall in oil prices is masking, to some extent, any potential increase in underlying inflationary price pressures. For that reason, I would place more weight, as I said yesterday, on things like trimmed means or medians, and they are not showing any appreciable declines in inflationary pressures. In particular, if falling oil prices were to have little appreciable effect on those data, I'd have greater confidence that the inflation would return to target once the oil prices stabilize. Witnessing consistent declines in those types of measures, however, would lead me to undermine that confidence.

As to statement language, I have been concerned for some time that our statement should concisely articulate the economic factors that are governing both the current setting and future path of policy. Policy should be data driven. Forward guidance directly relating the path of policy and its link to forecasts of relevant data should be made as explicit as possible. To indicate that data dependence and uncertainty surrounding the path, the Committee may also wish to contain relevant ranges of alternative paths that could occur if the economy were to evolve somewhat differently. That is, look for alternative robustness of some kind.

To that end, I believe paragraph 4 of the pre-liftoff statement—it becomes paragraph 3 of the liftoff statement—could actually be made more precise. It should indicate what the anticipated trajectory of the relevant variables are forecast to be and why those trajectories would call for a gradual approach to tightening. Or, if those variables would not call for a gradual approach, the specific economic factors that are leading to deviations from normal policy should

be stated. By doing this, financial market participants, firms, and households can better gauge when and how future policy will evolve.

I do like the general direction that the statement language is headed. It appears to be headed, in my view, to a more data-dependent reaction function. Having said that, the devil will be in the details. For example, I would caution the Committee to be careful about the formulation so as to be consistent with our longer-term strategies. We are fairly clear there that we do not have an explicit employment target, and we explain why. We don't want to have a statement that will corner us into creating an explicit employment target in order to define one of the metrics for policy. I think the language in alternative C and in the pre-liftoff statement that refers to "deviations of employment and inflation from its objectives" may trigger questions and pressure on the Committee about those objectives or goals, and perhaps calls for more specificity on employment than we might be comfortable providing. I think we have to be very careful about how we set that up.

I would also draw attention to the language in paragraph 4 regarding the funds rate being below some normal level for some period of time. I never liked this language. It remains confusing to the public, and they don't know what it means or what, indeed, we intend. I think different people on the Committee may interpret it differently. Some may view this as a lower neutral rate, others may view it as simply a slower adjustment to a neutral rate, and others may mean both. That's fine. But I think this paragraph needs to be rethought or allowed to disappear so that the infamous dot charts could provide more guidance. Perhaps even a better way would be to adopt a monetary policy report in which such discussions could be elaborated on and dealt with in a more fulsome and transparent manner. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS.[10] Thank you, Madam Chair. If I could build on President Mester's analogy, I feel a little bit like I got up to go to the kitchen, make a snack, and somebody changed the channel on me. I've got to do some more channel surfing back to where we were before.

For several meetings, I have already voiced my position regarding the first question on weighing the risks of lifting off prematurely versus waiting too long to raise rates. For me, prudent risk management dictates that we should remain patient for some time before initiating our policy liftoff. One of the biggest risks we face today is a premature policy tightening. If the Committee misjudges the strength of current conditions and then the economy is hit with a disinflationary shock soon after liftoff, we could find ourselves in the extremely uncomfortable position of being forced back to the zero lower bound. We would again have to turn to second-best unconventional policies, but this time it would be in the context of a policy reversal. The most powerful of these unconventional policies is our credible expression in support of policy actions that we will do what it takes to achieve maximum employment and price stability. Returning to the zero lower bound would be a large blow to our credibility. This would reduce our future ability to provide stimulus through such guidance.

In contrast, what if we wait too long and inflation picks up faster than we expect? I don't see a high cost to this scenario. We have far to go to reach our inflation target. Some greater-than-expected pickup in inflation would be welcomed to speed this policy achievement. Furthermore, there is no great cost if we end up, for a period of time, with inflation running moderately above 2 percent. If inflation did overshoot our target by an uncomfortable margin, we know how to address this problem with moderate increases in interest rates. Our tools are powerful instruments in that event. The alternative scenarios in the Tealbook showed that.

[10] The materials used by Mr. Evans are appended to this transcript (appendix 10).

Now let me turn to the economic conditions I would have to see to justify liftoff. I mentioned these in December, too. I have tried to capture these with some suggested language that I circulated earlier. I think if you look at that, it shows a great deal of data dependence, which is something that we all talk quite a lot about desiring. First, economic growth would have to continue to run at a solid pace. On the inflation side, I would need to have good confidence not only in a point forecast that inflation would get back up to 2 percent within two years, but also that once inflation rose to 2 percent, the odds of inflation running modestly above or modestly below 2 percent were equal. That is, I want to be confident that we have put a policy in place that is designed to achieve our target in a sustainable and symmetric fashion.

Notably, it seems to me much too timid if we adopt an assessment that is hoping to thread the needle and bring inflation up to 2 percent from below without ever risking crossing over 2 percent. In addition, at the time of liftoff, I would like to see clear signs that nominal wages are beginning to increase toward the 3 to 4 percent growth range that I associate with neutral cost pressures—that is, cost increases that would be more consistent with an underlying inflation rate of 2 percent. I would also expect to see at least the beginnings of an increase in year-over-year core inflation. I agree quite a lot with President Lockhart's suggestion that if we're below 1½ percent on core that is not encouraging. I know this is difficult for many, but as raw forecasting tools go, current core inflation is at the top of the list of useful inflation indicators. Regarding yield-curve data, I would have to see one of the following two developments: some upward movement in nominal 10-year Treasury rates and inflation breakevens and other market-based measures of inflation compensation, or I would need a lot more confidence than I have today that the declines in these measures over the past year are due to relatively innocuous

factors and are not reflecting lower inflation expectations, nor elevated risk premiums associated with unfavorable inflation outcomes. Those are key data that I'm monitoring.

Now, let me turn to the suggested language. I look at the "in a couple of meetings" wording in the proposed pre-liftoff statement and ask myself, is it plausible to have this language in place and then not raise rates in two meetings? As it stands, I think the answer is, "Not really." That would present a high hurdle for my agreement to adopt such language. I was disappointed that the suggested language didn't make more reference to these data issues directly. I find only small comfort in the language that allows for a delay in the rate hike if we see slower-than-currently-expected progress on inflation. This puts an ill-defined marker down today, and then, to trigger a delay, it assigns the task of proving that the outlook has turned worse than this marker. Instead, the onus should be on proving that we have enough growing confidence in our forecast of increasing inflation to justify the rate increase. I circulated suggested language that provides a more explicit conditional set of inflation indicators. It seems important for us to affirm the need for the policy tightening, not just to say we don't have enough evidence for a delay. Being confident that inflation is sustainably headed back to 2 percent just seems to be good policymaking under uncertainty. We are highly uncertain about the path for inflation, and we currently are well below our inflation target. Continuing a patient monitoring for signs that inflation will increase over the next two years still seems prudent.

Finally, with regard to the pace of firming after liftoff, I think the language in the proposed statement, in conjunction with the SEPs, will work adequately to convey the slow pace of rate increases just about all of us have in our assumptions regarding appropriate policy. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. Well, I thought long and hard about this issue of whether we should be earlier and gradual versus later and steeper. After careful consideration, I came to the conclusion that it would actually be best to be on time and on track. [Laughter] Now, I realize as soon as I say that, the Board staff is going to start working on a memo that discusses the pros and cons of that approach, and probably it's going to find some arguments why that's not the optimal approach to take. But, anyway, that's my view. Really, what we're talking about is the challenge of delivering on this on time and on track in the current circumstances. I've actually found the discussion already this morning to be really excellent in addressing a lot of these issues.

Now, as suggested by my own research earlier with Dave Reifschneider, there are conditions that warrant a lower-for-longer stance for policy. Indeed, given the evolution of the economy, it's clear that we have been more patient than suggested by many simple monetary policy rules, and even the optimal-control simulation reported in the Tealbook. That patience has been partly guided by several factors that are not directly taken into account by these approaches, especially the possible future downside risks associated with the zero lower bound. Yet I think it's important to remember that "lower for longer" does not mean forever. Even accounting for the reasons to be very patient, we are nearing conditions that would warrant the start of normalization of our policy, in my view.

In weighing when to lift off, obviously, the first task is to assess the distance from our goals. If we lift off later this year, which is what I currently view as appropriate, the full employment part of our mandate would essentially be fulfilled. But inflation would still be well below our 2 percent goal. Even after liftoff, we can manage the pace of normalization to make sure that inflation moves back to target. Our continuing extraordinarily accommodative policy

stance, coupled with a solid and strengthening labor market, overall stable longer-run inflation expectations, and the time-honored lags in monetary policy, make it likely that inflation will return to our 2 percent objective over the medium term. Of course, events may play out differently, but to lose confidence in that basic forecast, I would need to see a serious slowdown in economic growth or clear signs that underlying inflation is falling. Again, I think it's important in thinking about liftoff just to remind ourselves how extraordinarily accommodative the stance on monetary policy is today. I'm just basically going to repeat what President Kocherlakota said earlier this morning. Not only do we have very low interest rates, but also a balance sheet of more than $4 trillion that is providing substantial stimulus, at least based on the best estimates we have on the effects of LSAPs.

Before I turn to the evolution of our statement language, there have been a couple of comments on our inflation target, and President Evans made a comment about how overshooting inflation would not be that problematic. I agree with the point that we're under our target, and if we overshot the inflation target modestly or moderately, that wouldn't be a problem. I agree with that. I believe in the symmetry. I think we agree on all these issues.

However, I did go back and look at a past episode to show how quickly things actually can turn. Let me go through some data. Now, these are the current data I pulled off Haver, but I've done a research paper on this topic with Athanasios Orphanides using real-time data, and the point is the same. At this point in time—and I'll tell you what the point is in a moment—core PCE inflation on a four-quarter change basis was 1¼ percent. Unemployment was 0.6 percentage point above the prevailing view of natural rate. Unit labor costs were growing at about a 1 percent rate. Looks pretty good to me. Eighteen months later, core inflation is 3.1 percent; unemployment now is well below the natural rate, at 3.8 percent; unit labor costs are

rising at a 4½ percent rate. That's the difference between June 1965, when the debate about tightening in that cycle was really starting to happen, and December 1966. It's just a reminder that our ability to forecast is not that good. The second is that wages can lag the cycle, as President Mester said and I argued yesterday. Again, I think that the history on this is maybe not as reassuring about how quickly things can change when monetary policy is very accommodative.

Now I'll turn to the evolution of the statement language. It's obviously crucial that we communicate our intentions to the public as well as we can, especially given how low market expectations of future rates are right now. We need to provide clear guidance about liftoff and the pace of normalization to avoid adding noise to an already uncertain environment. At the same time, we don't want to tie ourselves to a particular liftoff date, as events may unfold differently than we anticipate. I want the best of both worlds. I want clarity, but also to recognize the uncertainty.

One possible evolution of our forward guidance is reflected in the handout, and in alternative C, and refers in paragraph 3 to a potential increase in the target rate in a couple of meetings. One advantage of this approach that I see is it clearly communicates our intentions. I actually think it's extremely clear in what we're going to do. We're going to raise rates in a couple meetings. The flip side of this clarity is, I think, that it's a negative—it makes a June rate hike seem like it's baked in the cake. Let me suggest a possible alternative approach that both signals that liftoff is approaching but leaves open options regarding the precise timing of liftoff. Specifically, we could say, "Based on its current assessment of economic conditions and the outlook, the Committee judges that in the months ahead the economy will likely be moving closer to conditions warranting an increase in the target range for the federal funds rate." Going

back to President Evans's comment earlier, it does have both "likely" and "moving closer," which leaves a lot of optionality—something that I think is appropriate, given where we are and where we are likely to be in the next few meetings. At least as a basis for thinking about future language, I think this language conveys the view that depending on the data, liftoff is possible two, three, or four meetings ahead. Such language also has the advantage of being applicable for multiple statements and could be modified relatively easy with minor adjustments. We'll also start the process of weaning financial markets and other Fed watchers off the belief that we will always be telling them exactly what we plan to do and when. Precision in our forward guidance was a very useful approach under the extraordinary conditions of recent years, but something that I hope we eliminate as part of the normalization process.

Finally, let me pick up on another theme that President Mester has raised both this morning and in her earlier memo on statement language. I do see this as a time of opportunity to review our FOMC statements. With QE and forward guidance, our statements necessarily became very long and complex. We had to describe novel and complicated policies, and that was appropriate. But we still carry much of this baggage in our statements today. As we contemplate the normalization of our policy stance, I think this is as good an opportunity as any we will get to take a fresh start, think about simplifying and restructuring our statements to make them more effective for a more normalized environment. We'll continue to emphasize, obviously, the data dependence of our policy choices. It's an issue I think we need to start discussing now, so that we can embark on the normalization process with an improved statement structure. It's actually rare that we have an opportunity to start with a clean slate, and I think this might be exactly the time for that. Thank you.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. Though the discussion about moving sooner or later is about balancing risk, I see it as somewhat neglecting that we have already built risk-management considerations into our decision about liftoff. As the Board memos discuss, nearly all of the standard rules we use to evaluate policy have already called for liftoff. In addition, the real federal funds rate has been below the Tealbook-consistent measure of r^* for about a year. Analysis by my staff also assesses to what extent the period in which policy was constrained from being sufficiently accommodative due to the zero lower bound has been offset during the recent period when the funds rate has been held below prescriptions from an estimated policy rule. They find the cumulative shortfall of accommodation earlier in the recovery has been more than offset by the subsequent cumulative excess accommodation. These factors suggest to me that the Committee has effectively already made a decision to move later and assume the associated risk rather than move in line with prescribed policy rules.

In terms of the specific questions, I see liftoff in the middle of this year, which is in line with current expectations, and at a gradual pace consistent with a data-dependent approach and one that balances risks. Waiting for liftoff until we reach full employment and inflation of 2 percent does not seem appropriate, particularly with an elevated balance sheet that continues to provide accommodation. The temptation to see one more data point will always be present. History shows this can lead central banks to move too late. Because of the lags we face in monetary policy, we likely will need to move before full attainment of our objectives. Alternatively, the risk of moving even later than in the middle of the year is that we may fall behind the curve and would need to move rates up more quickly.

Of course, a rapid increase in rates could surprise financial markets and pose risks to financial stability. Along these lines, I found the Board staff memo assessing the likelihood of

these various events useful, though as the memo itself points out, the scenarios do not take into account reputation risk or financial-stability concerns. Still, the combined likelihood of one of the adverse scenarios occurring was higher in the later and steep scenario than under the early and gradual scenario. Also according to the simulations, the early and gradual approach effectively takes off the table a scenario in which we would have to raise rates aggressively.

In terms of what developments I'd like to see, I'm a bit hesitant about drawing any bright lines regarding conditions that I'd have to see before liftoff, and I thought the Chair's set of criteria from the December press conference was reasonable in that regard. Further progress in labor market conditions along with confidence that inflation would be moving back to target are sufficient in my mind to consider liftoff. I'm also willing to look through some soft readings on near-term inflation rates. Of course, I'll also be listening to anecdotes received from business contacts to confirm or contradict issues of wage and price pressures and stability in the price of oil. Appreciation of the dollar and five-year, five-year-ahead inflation breakevens will also be important to that confidence.

Regarding statement language, I'm generally comfortable with the suggested language in the Board staff memo. It highlights that March is going to be an important decision point, and if I look at my current outlook, removing "patient" would be appropriate in March. Given the emphasis on data dependence, we will clearly calibrate those first paragraphs of the statement to reflect any change in the outlook. If the data soften, these paragraphs can convey a shift in the outlook, which will presumably cause expectations to adjust, but overall I see removing "patient" as giving us flexibility around the timing of liftoff. Alternatively, if we keep it in this March statement it will most like push expectations back and limit our flexibility. Finally, I support

President Mester's proposal for recalibrating our statement, and, as others have noted, would welcome further discussion of that.

CHAIR YELLEN. Thank you. President Fisher.

MR. FISHER. Thank you, Madam Chair. I'm just going to give some thoughts regarding the questions that were asked. I would say, generally, the Board memo on the timing and pace of policy firming demonstrates that it's possible to build a plausible case for unusual accommodation in current circumstances along the lines of the Tealbook baseline policy rate path. But "plausible" isn't the same thing as "convincing." You remember during the previous meeting I referred to the religious agnostic that wasn't sure he believe in D-O-G, and I'm similarly agnostic or I'm not convinced for several reasons that I'd like to lay out here.

The first is that it's possible that the Tealbook baseline inflation forecast is too pessimistic. It builds in 1.8 percent longer-run inflation expectations. Of great concern to me and my staff is that it doesn't include a speed effect, whereby inflation responds to the change in the unemployment rate as well as its level. With the higher inflation path, the optimal control and Taylor rule policy prescriptions shift upward.

The Tealbook policy prescriptions ignore what I think are very serious recession risks attached to any appreciable overshoot of full employment, and, as I've said, almost ad nauseam, they ignore the nonlinearity or convexity of the Phillips curve. Sooner or later, to ensure that inflation converges to target, you'll have to correct any employment overshoot, and that's just not something the FOMC has ever been able to pull off without triggering a recession. I'd like to see the staff convince you—because I won't be here—that these fears are overblown, and I think they should develop for you and show you in stochastic stimulations using a realistic policy rule what the risks are of this occurring.

I'm not a big fan of ad hoc inertia in policy rules, such as that built into the Tealbook baseline policy prescription. Post-liftoff, the baseline path is from the Taylor (1999) rule with inertia. Ad hoc inertia perpetuates past policy errors. If you'll forgive me for saying so, it's a very crude way of trying to capture effects that are more fundamental effects than genuine inertia effects—especially the potential disruption to financial markets from too-large unexpected movements in rates or possibly policymakers' desires to offset past inflation target misses. Policy may respond to a weighted average of expected future, current, and past inflation rates, not just current inflation. The burden of proof needs to be especially high when the course of action being advocated happens to be an easy or expedient road. It's tempting to say that we can clean up after ourselves later if policy turns out to be too accommodative. It's tempting to leave that hard work to a future Federal Open Market Committee. We save ourselves a lot of criticism and political grief in the short run if we downplay the risks attached to keeping policy exceptionally accommodative longer. My only advice—this is highly didactic and will probably be ignored—is we need to resist these temptations at this table. We need to be what Ken Rogoff calls conservative central bankers or at least lean in that direction.

As regards memo number seven on the stochastic implications of alternative strategies for the beginning of policy normalization, I'm very much concerned about the credibility problems attached to the later and steep policy strategy. It's possible—indeed, I would say it's even likely, on the basis of my background as a market operator—that the public will interpret a decision to defer a liftoff as a signal that the Committee is generally dovish and disinclined to raise rates quickly. In other words, I think there's a risk that the public and the markets might see the choice as between "earlier and gradual" and "later and gradual" rather than between "earlier and gradual" and "later and steep." If we lift off in March 2015, as I had suggested, or April 2015,

which is apparently not going to happen, people would be able to see as early as June 2015 that you're serious about "gradual" and "earlier and gradual." On the other hand, my gut tells me that if you are going to say you are going to defer liftoff, say, to September or January of the following year, but then plan to raise rates quickly thereafter, people will have to wait until January 2016 or March 2016 to know whether you're serious. Early and gradual is quickly verified. Later and steep requires a great deal of trust.

In the context of the Taylor (1999) rule with inertia, the public might interpret delayed liftoff as signaling an especially large amount of interest rate inertia stemming from concerns about having to reverse course should the economic outlook deteriorate, as President Evans articulated very well earlier. Alternatively, they might interpret delayed liftoff as signaling that the Committee believes that the equilibrium real short-term interest rate is unusually low and likely to remain so well beyond the end of 2015. Alternatively, they might believe that due to concerns about stability of longer-term inflation expectations or about the unreliability of standard measurements of slack, the Committee has decided to downweight the output gap in its deliberations relative to the inflation gap, or they might believe that the FOMC cares not just about the current inflation shortfall, but also shortfalls in previous years.

Every one of these arguments for patience, Madam Chair, has been cited by one or another FOMC participant in public communications or around the FOMC table, as I remember it. So it's no stretch to think that the public will not completely buy into later and steep. I would suggest the staff provide some simulation showing what happens to the economy if the public should misinterpret the Committee's decision to delay liftoff. What about the incentive to renege? Say that September 2015 or even January 2016 arrives. I wonder if we can be sure that the Committee will follow through on the steep half of the later and steep. Consider, especially,

the possibility that the public may have misinterpreted the reasons for the late liftoff and made financial bets and commitments accordingly. Might not future Committee members be tempted to then depart from the Taylor rule prescriptions?

With regard to the question as to what you would pay attention to in terms of information, personally, I would pay close to zero attention to realized headline inflation, and I'd give a very strong nod to the trimmed-mean indexes. We've heard a lot about that around the table. I would encourage, even though it's hard work, the staff to incorporate that and give more fulsome explanations of what they see as indicators. I would also pay nearly as little attention to TIPS spreads. What I would want to see is evidence that households and professional forecasters expect inflation to rise toward target fairly promptly over time. I'd like to see their 5-year inflation expectations reasonably consistent with the 2 percent inflation rate, and their 10-year expectations and 5-year, 5-year-forward expectations very much consistent with the 2 percent inflation rate. I would want to see evidence the economy is likely to continue to expand at a rate that implies further declines in the unemployment rate. I'm taking into account not only the momentum we see in the economy, but also the anecdotal evidence we pick up from our contacts.

I would be very mindful of the nonlinearity or convexity of the Phillips curve, and I would be mindful that, as President George reminded us just now, monetary policy acts with a lag. I've used the analogy of duck hunting. You aim ahead of the mallard in order to capture it. I notice that Larry Summers said: "I want to see the whites of the eyes before I act." If you wait until seeing the whites of the eyes, you're going to shoot someone in the back of the head, and I don't think that's a prudent way to conduct monetary policy. There's been a lot of discussion, and I think of Governor Brainard's remarks yesterday and your very good comments, Madam

Chair, about this issue of low nominal interest rates. I would bear in mind that there are many factors to consider.

I was grateful that Governor Fischer recalled the memory of Wassily Leontief, from whom I took a course in 1969. By the way, he was a charming teacher. He was wrong, but he was a charming, charming teacher. But he did have one rule, which is, "Keep things simple." Low interest rates mean that the price of fixed-income instruments are high. And one factor that I think we need to consider is that it just may be that there's too much liquidity chasing too few fixed-income options, and to me that's the simplest, most common-sense explanation. I think we need to bear that in mind. We're not the only source of liquidity. I have talked about this before, and I would assign a multiple of, say, 5 to the amount of liquidity floating around the system. That may be one explanation for these very low nominal rates, in addition to the money that comes here because of low nominal rates elsewhere.

With regard to the suggestions on the statement language, the statement language progression proposed in this memo is good, but I think less than ideal in that it provides minimal meaningful guidance on how liftoff plans will respond to economic developments. At this point, though, the Committee's time is probably better spent exploring and debating the post-liftoff conduct of policy than in trying to fine-tune its guidance on liftoff itself. Again, I want to repeat what I said yesterday. I would like very much always to see a decision-tree analysis. I referred to it yesterday with regard to the Desk, but I think it's important that we keep that kind of mentality and, in particular, think through what our steps will be as we go forward post-liftoff, not just liftoff itself.

I hope the Committee won't slip into the bad habit of locking itself into rolling, multimeeting time paths for the funds rate. We insist that our actions are data dependent, but in

practice, Madam Chair, I've noticed while I've sat around this table that we seem to be very resistant to changes in calendar guidance. That said, the basic progression proposed in the memo is acceptable. I'd make two qualifications. First, I like the admirably clear and precise organization language proposed by President Mester. I think it's an improvement on the draft language of this memo. You may recall, Madam Chair, that Evan Koenig and I have provided language to Chairman Bernanke during the transition as to how we might accomplish what President Mester has proposed, and President Williams just said this is a good time to clean things up. I endorse that, and I would suggest that we look carefully at what she suggested. As to President Evans's memo, building on the suggestion of Presidents Bullard, Williams, and Plosser, I do especially appreciate the reference to the trimmed-mean index. That's one more advocate for including that as an indicator.

Second, I wonder with regard to specific language in alternative C whether the phrase "economic conditions [may/could potentially] warrant an increase in the target range for the federal funds rate in a couple of meetings" will be appropriate in the meeting that precedes liftoff. Actually, given my biases, I like President Lockhart's "couple of," even though I lost the argument. You're indicating in two meetings, literally. But as we get to the meeting before, it's likely we would want to change that language to perhaps say "increase in the target range for the federal funds within the next couple of meetings." That gives you a little bit of leeway. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I have three remarks. First, I'll talk about premature normalization versus waiting too long, and I just want to say at the outset that I agree with President George's comments that we've already waited a long time. I think we're past the

stage of just discussing strategy on this. We're already in the phase of having waited a long time, at least according to ordinary characterizations of policy rules that the staff has outlined. Second, I'll talk about what developments will give me pause, and here I'm going to talk about expected inflation and respond to some remarks by Governor Fischer and Presidents Kocherlakota, Evans, and Rosengren. Third, I'll talk about language issues, and generally why I think the proposed language is okay. The spirit may be wrong, and here I'll echo some of the comments that President Fisher just made, and in that part of my remarks I have an exciting "lions and zebras" analogy that you can look forward to. [Laughter]

With that excitement in train here, let me talk about premature normalization or waiting too long, or "early and gradual" versus "later and steeper." I may be having a different take on this from some people around the table. I agree with the staff memo that there are many different funds rate paths that can deliver the same net reduction in accommodation. In that sense, I don't really think there is any issue to be discussed here. In some sense, it's a poorly posed question for the Committee. What the memo said, or the way I understood it, was that, despite the fact that two different paths are actually getting to the same point, might there be some regret taking one path versus the other path.

I think the main idea to keep in mind here is that we are tasked with developing a good monetary policy, and the path of that good policy will depend on the shocks that arrive during the normalization process. If the shocks drive you back to the zero interest rate policy, so be it. If the shocks lead you to raise rates somewhat faster than what would have been contemplated ex ante, well, so be it. Those are the shocks that arrived, and you have to run the good monetary policy in response to the shock. I don't think we should deviate from the good policy based on what that policy may or may not call for in the future based on the arrival of information. In fact,

doing so would be a deviation from what was otherwise judged to be good policy in the first place. Again, I think this is in some ways a poorly posed question.

Let me make just a few further remarks on this. If we lift off, there would always be some probability that we'd be forced to return to the zero interest rate policy. I don't think that that probability is any higher today than it will ever be. No matter when you lift off, you're going to face that as a probability. I don't see much evidence that it is particularly high right now. It's probably low. In fact, it might be at a minimum right about now.

The probability that we would be forced to raise rates quickly in the future is also not particularly high today. Of course, that's always a possibility that's out there. President Williams outlined some past data that would probably lead us to go in that direction. But, again, the chances that would happen require a certain arrival of information, and we would have to respond to that information.

Now, if we communicate poorly, or if we have low credibility with regard to raising rates abruptly, then that would surprise markets and lead to a lot of market volatility. Here I align myself with President Fisher's comments just now that maybe we don't have that much credibility on that particular dimension. Arguably, we already have this problem today as markets evidently do not believe our SEP forecasts. But this is a problem of market expectations on policy being somewhat misaligned with the intentions of the Committee as outlined in the SEP. What we should do, if we think that's a problem, is bolster the credibility of our SEP paths, either by reinforcing that this really is what the Committee thinks or, if it's not what the Committee thinks, then we should change what our SEP numbers are.

If we do not have a credibility problem where people don't believe we're going to raise rates, then, should shocks force us to raise rates abruptly, this would be well understood by

markets and would not cause unnaturally high levels of volatility. So we wouldn't have any special problem associated with that, as long as we didn't have any credibility problem. The bottom line is good policy has to be shaped by shocks as they arrive. There is always the possibility that these will lead us back to the zero interest rate policy or that they would lead us to abruptly raise rates in the future, but these branches of the tree do not have especially high probability right now. And I don't think they should necessarily be an argument figuring into current monetary policy decisionmaking.

The main issue for the Committee, I think, and really the elephant in the room is that regardless of how we approach normalization within current thinking, we have essentially already committed to a policy path that will be exceptionally easy over the next several years. Whether this is good or wise is a great question. Unemployment will now likely fall substantially below our estimates of the natural rate over the next two years. The past two times this happened in the U.S. economy, in the late 1990s and the mid-2000s, large, tangible, noticeable asset price bubbles developed. Both of those were hotly debated around this table. Both ultimately ended in recession. The second one ended in global macroeconomic disaster. Does the Committee wish to risk a replay of these bubble episodes?

What developments give me pause in the wisdom of normalization? Here I want to address a simmering argument around the table as to whether it is even a good idea to be thinking about normalization at this point. Governor Fischer said yesterday that he was uncomfortable with the zero interest rate policy. I'm very much aligned with that. I'm uncomfortable with the zero interest rate policy. If we can normalize, I think we should.

Presidents Kocherlakota, Rosengren, and Evans eloquently argued that low inflation and low inflation expectations have to get more attention, or even a decisive level of attention, on this

decision. I have, over the past five years, placed heavier emphasis than most on the Committee on inflation and inflation expectations as a key determinant of the direction of policy. In this sense, I am concerned and I have some sympathy, maybe some substantial sympathy, for the arguments of Presidents Kocherlakota, Rosengren, and Evans.

I take the ECB as a case in point. Some of you know that in the summer of 2013 I went to Frankfurt, and I gave a speech that QE was their best option. At that point, inflation was only somewhat below target and falling. I talked with policymakers, ECB staff, and financial market people about this. I got a cold reception. But 18 months later, the ECB has come to a decision and has adopted QE. I think it's probably late. They let inflation and inflation expectations drift a long way from their objectives. Now it's going to take quite a few years probably to get inflation back to target in Europe. That's a cautionary tale for us. We don't want to ignore this problem too long. We don't want to make excuses for too long of a time. I am sympathetic to the arguments on this.

I want to make two points. First, low inflation as it exists today cannot rationalize the zero interest rate policy. A gap in inflation of something on the order of ½ percentage point is simply not large enough to rationalize a policy rate of zero. It can rationalize a lower-than-normal policy rate, but not a zero policy rate. I understand that the natural rate of interest could also be low, but, in my mind, that also is not low enough to rationalize the zero interest rate policy. The bottom line is that the zero interest rate policy is an emergency measure that no longer fits the given data that we have. Even if we raise rates, it will be to a very low level, about 50 basis points or 75 basis points, and by conventional metrics we will still be putting upward pressure on inflation and inflation expectations. That's one point. I don't think that we can rationalize the current policy based on inflation alone.

Inflation expectations have declined precipitously in recent quarters. I am very concerned about this. I do not place much signal value on surveys, and I agree with President Rosengren's characterization of some of the drawbacks of looking at surveys. They are not, in my view, sufficiently sensitive to incoming information to give us real-time information on policy judgments. I would also, as others have, remind you of the Japanese experience, in which surveys continually said expectations were for normal levels of inflation, even though actual inflation continued to come in at low levels. They actually didn't have a target during that point.

However, despite all of these comments about how concerned I am about the decline in inflation expectations, I think that the oil shock is having special influence on the TIPS-based measures at this time. The oil dislocation is substantial. This is no ordinary oil price shock. This is a 50, 60 percent reduction, and it's causing a lot of volatility and a lot of repricing in markets; some of it that does not seem totally rational in the context of TIPS markets. The bottom line is, I want to wait and see for now. I think when the oil markets shake out and settle down, probably at a lower price than what was previously considered normal, then we'll see if the TIPS-based inflation measures move up. If they do, then that will give me confidence. If they don't, I'd be worried that the Committee's credibility really is eroding. I am anxious to see how that is going to develop in the coming months and quarters.

My final point is about language suggestions. I agree with others that the language is generally okay, but I would pose the following question to the Committee. Do we really want to telegraph as directly as we are sometimes suggesting here? I agree with President Lockhart's characterization at the beginning of this discussion that once we signal that we are on the road, we are turning a machine on and it's a fait accompli. Do we really want to be doing that? If

you’re on the Serengeti, and you’re a lion, and you’re hunting the zebra, you may not want to telegraph your intentions quite as precisely as we are talking about here.

My alternative vision for how to do this really involves a change in attitude, I think, around the table about how to do the tightening process. I agree with President Williams, who made comments in this direction. You want to eliminate the telegraphing during the normalization process. Sure, it has been valuable at the zero bound. There has been a lot of talk about forward guidance. But this is may not be the right way to approach the normalization process. What I want to do is just three things: one, keep options open; two, be able to move at any juncture—and, for this reason, I keep harping on the issue of the press conference, which I think remains critical in this regard; and, three, seize favorable data and move at that point. You don’t want to have to move when the data are going in the wrong direction. I think it will send very mixed signals, especially at the beginning of the normalization process.

Keep options open. Be able to move at any juncture. Seize favorable data. That’s how we want to do this normalization process. Further moves after that, I think, should also seize on relatively good data coming in, both on the real economy and on inflation and inflation expectations. I think if we do that, we’ll get a smooth ride. If we try to do it on what looks like more of a calendar basis, there is a risk that we will be moving at times when the data are not in synch with us, and then people will say, “Well, I don’t understand what the FOMC’s reaction function really is.” Those are my comments. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. As I have expressed, my thinking about policy is at a somewhat different place than the basic view that underlies the staff’s questions. I’m increasingly concerned about substantial downside risks to the credibility of our

inflation target. Others have expressed concerns about upside risks to the credibility of our inflation target and about the risks to the financial stability. I want to emphasize that the downside risks to the credibility of our inflation target are actually mirrored already in our FOMC statement, in the sense that for a long period of time running up until July of last year, we made reference to inflation expectations being well anchored. That reference has now disappeared from the opening paragraph of the FOMC statement because the data no longer are in a position to support that as definitively as before. I think my concerns are, as I say, reflected in the evolution of the statement itself. Given my concerns, I see our biggest policy problem as not how to tighten further, but, rather, how to bolster the credibility of our inflation target. My answers to the staff's questions will reflect that perspective.

On the first question, there are risks associated both with tightening prematurely and with tightening too late. On the tightening too late, I think that others have covered this ground well. We have a tool that we can use. It takes will, as President Plosser has emphasized in his comments, and President Williams emphasized in his, but I look around the table and I don't have any concerns on that dimension. I see that will around the table.

On the other hand, I think the risks associated with a premature liftoff seem considerably more challenging. I think the staff memo works through the simulations associated with this. But the risk that I am mainly concerned about is one that was not well addressed in the simulation, and it is one that we don't really understand that much about, as Governor Tarullo talked about, something that is so critical in our formulation of our policy and our thinking about policy: inflation expectations. It's not really that well modeled. The main risk that I'm concerned about, the downside risk to the credibility of our 2 percent target, is not well captured in those simulations. If we were to lift off against a backdrop of low and/or falling inflation and

inflation compensation—I'm afraid I actually heard a number of people basically expressing a willingness to do that around the table—I think we would be failing to show resolve to bring inflation back up to our target. However we think inflation issues are shaped, the messaging that we are willing to tighten policy, even though inflation is low or falling and inflation compensation measures also look like that, would surely worsen any existing credibility risk. I think the reason to be concerned about this unanchoring to the downside is that it just seems extremely challenging for central banks to address this situation. The recent experiences in Sweden, Japan, and the euro zone just show how difficult it can be for central banks to recover if inflation falls following premature tightening. That talks through some of my thinking about the first question.

In terms of the second question, what data would we need to see at liftoff, I see two necessary conditions for liftoff. I might want to see more than those. But the data need to be consistent with the economy meeting the 2 percent inflation objective over a one-to-two-year horizon. One key sign of that outlook would be a Board staff forecast that inflation will be greater than or equal to 2 percent within two years. It would be good for the Committee to be able to say in its statement, "We expect inflation to be greater than or equal to 2 percent within two years." If we felt comfortable doing that, I think that would be consistent with the kind of data flow that I'm looking for. Now, there is skepticism about point forecasts. For me, a point forecast is just a way to summarize a probability distribution. What I'm trying to say here is that actually the risk of inflation being above 2 percent is at least as large as the risk of inflation being below 2 percent. I'm just using that number as a summary of a mass of probabilities. The second piece of information I would need to see is that longer-term market-based inflation expectations have to have risen back to their historically normal ranges, and that would give me

confidence that longer-term inflation expectations are indeed well anchored on our 2 percent goal. I haven't specifically mentioned wage pressures. I think that would feed into my inflation outlook. There are reasons to think that wage pressures are going to lag as opposed to lead inflation, and there are reasons to think changes in productivity growth could influence the relationship between wages and inflation. But my two necessary conditions are confidence in the inflation outlook and that the longer-term market-based measures are again well anchored.

In terms of language, I echo President Williams and President Mester. I think any time is a good time to go back to the statement and try to reorganize or restructure it. My staff would be glad to be of help on that. My research director, Sam Schulhofer-Wohl, is a former journalist. I think that perspective would be helpful to the Committee in thinking about this issue. For myself, one thing I would emphasize is that there is a lot of backward-looking language in the statement—where we have been, how has it influenced policy decisionmaking. Monetary policy operates with a lag, as others have noted. I think our decisionmaking should be relentlessly forward looking, and our language should be relentlessly forward looking in the statement. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. I view the first question—how the Committee should weigh the risks of lifting off prematurely versus the risks of waiting too long—as an instance of the universal risk of monetary conditions being too accommodative or too restrictive. The former keeps the real rate below what the evolving needs of the economy would require and would generate excessively accommodative monetary conditions, and the opposite, too-restrictive policy, generates too little inflation and real activity. My sense is that a substantial increase in real economic growth is occurring now, and together with the continued

tightening of labor markets suggests rising nominal interest rates are warranted. The public generally expects us to wait until June or so, and inflation expectations remain stable—they aren't elevating. Those two facts suggest to me, although they don't guarantee this, that lifting off in June would not be too late or too early.

Regarding the second question, given the data we have on hand now, I am already reasonably confident that inflation will move back to 2 percent over time. I'm not certain, but I'm reasonably confident. I base that on the stability of virtually every indicator of inflation expectations we have and the fact that the decline in oil prices that seems to have been the major recent threat to the stability of inflation expectations appears to have bottomed out. If they resume falling, they could pose a threat to our credibility, but until then I think we should remain on track for a June liftoff. When we lift off I would need to see continued stability in a broad range of measures of inflation expectations, as opposed to breakevens, in order to remain reasonably confident that inflation would move back to 2 percent. I'd also like to see core inflation stable and then rising at that point.

Regarding the statement language, I like the idea of dropping the word "patient" in March. President Rosengren argued that we wait until one meeting before liftoff to drop the word "patient." I actually advocated that approach in December when I said that the word "patient" should mean just the next meeting. You took that off the table. Waiting until one meeting before and then moving—I don't way to say it would make you a liar—would undermine our communications—let's put it that way. Now a corollary to making "patient" mean the next two meetings is that we have to decide in March about June, but I think we need to be very clear about what we're deciding in March. I don't think we're deciding to raise rates if we take "patient" out in March. What we're deciding in March if we take "patient" out is to

leave June on the table. In terms of crafting language, that's important to me. The way I feel about policy and raising rates, I'm attracted to President Mester's language, which says "Based on its current assessment, the Committee anticipates that an increase in the target range will be appropriate in a couple of meetings." Now, I understand that's strong relative to the proposal that's on the table here, which is "could potentially warrant" or "may warrant" or "could cause us to think about," or whatever. I mean, it kind of strikes me as on the wishy-washy side. But, I don't think it's a choice in March. Let me emphasize this. We're not choosing between starting a countdown and not starting a countdown because that raises the bar too high. I think we should be finding language that's suitably contingent and suitably open-ended, if that's important to getting the Committee on board for dropping "patient" in March. I'm flexible enough to be able to endorse such more elastic language. But I'll tell you that if the data evolve the way it looks like it will evolve, my sentiments would be more closely aligned with President Mester's language.

I like other suggestions President Mester made. I like moving "reinvestments" to the beginning of the policy passage, because it's a key component of our policy stance. I like "realized and expected progress" better than "deviations," because the latter, as President Plosser points out, connotes excessive precision about our estimate of the maximum employment objective. I also prefer her version of conditionality. It strikes me as more direct and straightforward.

I think the choice in these simulations, "early and gradual" versus "late and steep," is really not a realistic set of options available to us. If we delayed an expected liftoff at a time when people were expecting us to lift off, I'm trying to think of what statement we would write that would preserve the average expected path of the funds rate. In the case in which we delay

liftoff, it's hard for me to think of something that doesn't at the same time cause market participants to lower their expected path of the funds rate. I just don't see how we can do that. I don't think it's a real choice available to us. I agree, in that regard, with Presidents Bullard and Fisher that counting on being able to make up for delay with a faster pace of tightening is really unrealistic. I'd also say I'm not favorably disposed to a laundry list of economic indicators in our statement along the lines President Evans suggests. There's something inevitably clunky and inevitably distracting about that, and I think we should keep our statement at a high level. Those are my remarks, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I'm going to take each of the questions in turn. I think the risks are asymmetric in terms of the timing, and the cost of lifting off too early and having to reverse course are higher than the cost of lifting off later and having to catch up. There are two reasons why I reached that conclusion. First, if you lift off too early, you increase the risk that you'll have to reverse course and then you end up back at the zero lower bound. That's bad because the zero lower bound is not a good place to be, as our tools are limited, and because reversal back to the zero lower bound could prove damaging to our credibility. Second, it strikes me in terms of risk diversification later and faster is preferable to early-and-slower because, in the former case, any regret about being late should at least be somewhat mitigated by the fact that the economy is stronger than expected and you are making more rapid progress back toward your objectives. I think of the outcome as a lose-win type of situation. In the case where you lift off too early, not only are you stuck with your policy mistake, but you also have an economy that is further away from your objectives. I think of that outcome as more of a lose–lose case. Now, that all being said, I think this debate doesn't really

get you that far because I have no idea about whether, when we lift off, we're early and gradual or we're late and fast. Because we don't have any certainty about that, I just don't think it gets us very far. This question doesn't really speak to me that much.

In terms of developments, I would need to be confident about inflation heading back toward our 2 percent objective. I think, just like everybody else, it's hard to characterize all the necessary conditions that you would have to see. Obviously, where you are, what you expect in the future, and the degree of confidence you have in that forecast are all very important. That said, I think there are several things that are important for me. First, what happens to labor compensation? I think this is important in several respects. I consider two alternative scenarios in terms of nominal wage growth over the next few months. First, trends in nominal wage growth stay flat or firm. In that case, there's two inferences from that. One is that real income trends will be quite solid because inflation will be falling relative to growth in compensation. That will support continued growth in the economy. The second is that the decline in actual inflation and market-based measures of inflation compensation will not be exerting significant restraint on the wage-setting process. That will suggest there's not feedback arising from that. The second scenario, of course, would be if both wage compensation trends and inflation weaken. That would be a negative development because it would mean not only less real income growth, which would have implications for the economic growth outlook, but it would also imply that there were knock-on effects due to lower inflation and lower inflation compensation into wages. If nominal wage growth were to decline in the period ahead, that really would reduce my confidence about inflation trending higher in the future.

The second thing that's important, obviously, is how far away we appear to be from our objectives. This includes what happens to the unemployment rate and other indicators of labor

market slack. Less slack, broadly defined, means I'd be more inclined to lift off. It also includes what's happening in terms of inflation. Here I'd look through the transitory factors pushing inflation down and focus more on aspects of inflation, such as services price inflation, that are less likely to be influenced by oil prices and the exchange value of the dollar.

A third factor that's important is how fast are we likely to close those gaps? On the economic growth side, this would include financial market variables, such as exchange rate value of the dollar and developments abroad. For example, is the foreign growth outlook improving or not? On the inflation side, as I said before, what's happening to wages and inflation expectations? Finally, what are the risks associated with the outlook? Right now there is considerable concern about the outlook for foreign economic growth. If that subsided, then I'd be more inclined to lift off.

With respect to the statement language, I think that what's been proposed is pretty good, but one problem with it is it doesn't really fit all the circumstances that we might find ourselves in in March. I can imagine a situation in March in which we think that the probability of moving in June is quite low, and if we thought the probability of moving in June was quite low, then we probably would want to stick with the "patient" language. I can imagine the second possibility, under which the probability of moving in June was moderate. We weren't really sure whether we wanted to move in June, and we wanted to keep our options open. I think in that case you'd instead want to have the kind of language that President Williams suggested, that is more open ended—putting it on the table without committing ourselves. But we could find ourselves in March in a situation in which the economy is doing really well and we're really sure, highly confident that we want to move in June. In that case, the language that was suggested might be appropriate, that is, "a couple of meetings." I would actually prefer to have language that was

crafted for the degree of confidence that we have in March, frankly, because I don't want to get into a situation in which we're saying, "Oh, well, we can't move to this language, because that's going to pre-commit us to June too strongly." It seems to me we need to craft language that gives us the degree of optionality that we actually want to have. I would actually suggest that the staff develop a couple of alternatives that map into highly likely we want to move in June, not so likely—I don't know, perhaps two or three alternatives. Then, I think that will be easier to get the Committee to a consensus if the language actually matches the probability of when we think we will actually move. This also should be a way of making sure we communicate more clearly to the market. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I would like to congratulate the staff on the quality of the memos we received, including some circulated in September that were also relevant to the discussions we're having today. They're very useful.

In the language we're using now, as Vice Chairman Dudley has just said, March would be our last opportunity to send a message that we might move in June. So if we don't send that message, I think we're saying we're going to not move before September, and I'll come back to that.

What would we want to see? Well, we'd obviously like to see continuing increases in employment and declines in unemployment. We'd like to see some signs of a return of either inflation or nominal wage growth or both, and the question is, what inflation? Well, we tend to say "core," because core leaves things out. But what core inflation doesn't leave out are the secondary effects of oil that operate through the prices of other goods. We also have commodity price declines affecting inflation. I don't think that looking through the effect of oil and looking

at core inflation are the same thing. We are likely to see a decline in core inflation, a decline that is likely to go away as the oil price stabilizes, wherever it stabilizes, and which could turn around rather quickly if, as some people think, we might see the oil price back in the range of $70 per barrel or so later in the year.

The question that I'd like to ask is if we relate to core inflation, when do we think we'll move? It's very unlikely we're going to see very much by September, unless the price of oil turns around, which seems to mean that we'd move in December if we're waiting to see core inflation, say, getting up to 1½ percent. We need to think about whether that's what we'd like to do or whether we want to craft language that will give us some possibility of changing our mind on having to have core inflation, let's say, above 1.4 percent. Now, there's a range of views about whether 1.5 percent is enough. I, deep down, believe that the Phillips curve exists and has a negative slope. I'm not certain that I believe that it's vertical in the long run, but I believe that it's a lot more vertical than it has been at rates of unemployment that, until recently, were high and inflation very low.

I think we'll need to weigh what happens to our credibility if we have to wait longer than we now think, and you can say a lot of things about that, but we have to remember that there are two sides to that issue. You remember that, in 1994, the FOMC waited. It added to its credibility because it turned out to be right, or at least the former Chairman turned out to be right. It's a question of whether we're going to be confident that what we do is correct, and I think there will be some questions about that.

I'd like to add a few comments on two issues about the question of early and gradual versus late and steep. The staff's stochastic simulations show outcomes are very similar. Well, I'm not absolutely sure of the reasons, but if we are looking at a fully rational set of expectations,

the similarity must come from the fact that they're looking to future interest rates and future interest rate paths because, within two years, the two paths of interest rates converge. Future interest rate paths will look very alike. I suppose that's one factor. The other factor, which is very important, I think relates to something President Lacker said or somebody down there said.

MR. LACKER. I'll take credit if it's a good thing. [Laughter]

MR. FISCHER. Somebody implied that the shocks are different in the two cases. But the shocks are the same. They run it in such a way that the two policies face the same set of shocks, and so that, as well as the fact that the expectations are the same, gives a certain similarity to the policies. I don't know which is more important. I suspect that the role of the shocks is, and what that means, and it's something that I think we need to bear in mind, is that we really can't confidently say "gradual." We are going to be driven by future shocks, as much as anything. The shocks in the stochastic simulations are not chosen to be particularly large; they're drawn from the history of past shocks. And I think—and I've heard it said by several people, and I think I've heard the Chair say it on some occasions—the argument that we need to try and get a bit away from forward guidance during this period, which was just made by somebody up there [laughter]—by President Williams—is particularly valid because we are going into a stochastic world and that means that forward guidance is going to be a problem, and we should forget about it.

Now, just building on that, with regard to the statements, I particularly value in the statement that it goes in the direction of making it clear that we will react to events as they happen and that we might—and there's an explicit statement to this effect—change direction at times if the data come in that way. I think that's very important because it is striking that, looking at the sequences of interest rate paths since 1994, there really is a tendency to keep going

for a long time in one direction and there are very few reversals. Maybe that reflects how deeply the business cycle is the driving force in this economy and that it's obvious to everybody. I suspect that we have a very high weight on not wanting to change direction, and we need to think about that as we move ahead from the decision that we make. I'm sure that my recommendation will be—I'm not allowed to talk about that, right?

CHAIR YELLEN. You can.

MR. TARULLO. You look discouraged.

MR. FISCHER. I am discouraged. Well, I'll tell you what my recommendation will be later.

CHAIR YELLEN. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. Let me begin by joining President Williams and Vice Chairman Dudley and, I think, Governor Fischer in suggesting that the question before us is not whether we want to wait too long or we want to go too early. The question is trying to select the best moment to go, and I, at least, read the staff memo not as posing that question to us, but instead trying to make us think about what the costs of going too early or too late would be if, ex post, we figured out that we had erred a bit.

In that spirit, I guess I would say that an important going-in position for me is that in the current circumstances, with inflation running as persistently below target as it has been, I actually see us having an opportunity to fulfill more the mandate of maximum employment by not prematurely removing accommodation, allowing what I believe to be continued substantial slack in the labor market to further dissipate, but as the dual mandate instructs us to do, making sure that we are doing that in that famous Federal Reserve phrase, "in the context of price stability." As I suggested yesterday, I think there is a good argument to be made for the

proposition that the natural rate of unemployment is actually lower and perhaps significantly lower than the current rates that many of us have been specifying. I forgot to mention yesterday that some of the staff in the pre-FOMC briefings had made the very good point that the part time for economic reasons statistic not only suggests that there are people who would like to be working full time and aren't, but if you push behind those numbers you'll see that the number of multiple job holders is lower than it has been historically, suggesting that there is yet another dimension of slack there.

But even with that predisposition, I have had to ask myself and the Kiley-Nelson-Reifschneider memo pushed me to ask myself, "Okay, what's the limiting principle here?" That is, what are the conditions under which we should be lifting off as opposed to why I should be inclined to delay to allow the further improvement in the labor market to take place? I don't think it's easy. I haven't really heard anything today that makes it any easier, although I think, as he often does, President Lockhart gave a very balanced and fair-minded set of conditions that we might look to, which I thought were helpfully supplemented by a number of you, most recently Bill and Stan. But, again, being honest with myself, I don't think there are going to be particular triggers that are going to be particularly convincing to me and probably to many of you, except for those of you who have wanted to raise rates for some time now, and so you're not going to need any additional trigger to think that it ought to go up. Under those circumstances, yes, I'll be looking for some of the things that many of you have indicated. However, I'm not sure how much guidance I'm giving myself or we're giving one another in talking about these things because I suspect, in the end, as with many of the decisions that we reach, they will be data dependent, but because the data are not all that predictable and the mix of

data and the conditions are not that predictable, it will end up being a kind of gestalt-like judgment.

Here I have been skeptical about a lot of predictions about where wages and other things were going to go based on past patterns just because so much has been different. When President Williams was alluding to the 1965 experience today what immediately leapt into my head was, "Oh, but this was the classic period of the Johnson Administration wanting guns and butter." It was a period of enormous increases in federal government expenditures, which, of course, did lead to a bunch of inflation and eventually led to the demise of the Bretton Woods system. There was an awful lot going on in the background. I don't think the risks of big fiscal stimulus are all that great right now.

All of that leads me, actually, to what is, in many respects, is the most important point for me, and this, again, is one that President Williams, Vice Chairman Dudley, and Governor Fischer, have all addressed, and that is the language. The reason, for me at least, that the language is important is that I had perhaps mistakenly understood the insertion and contemplated removal of the "patient" language not as flipping the kitchen timer and saying, "Okay, the egg is going to be done in three minutes," but instead as meaning that we would collectively have seen enough improvement in the economy that we were now close to the more normal circumstance in which federal funds rate actions are potentially on the table at any FOMC meeting, not that we are in some strongly presumptive mode of saying two meetings from now it goes up.

I fear that President Lockhart is right and that markets actually do believe that right now "patient" comes out and the clock starts and, two meetings later, rates go up. If that is, indeed, the case, then my threshold for agreeing to the removal of that language is essentially going to be, am I ready to raise rates—which obviously is a higher threshold. How do we avoid getting to

that point? I think there are two complementary ways of doing it. The first is through the Chair's statements—and Vice Chairman Dudley and Governor Fischer, perhaps, complementing the Chair's statements—that give more of a sense that I've just given of what "patient" would mean. I know there are already planned opportunities for the Chair in the month of February to do that and perhaps derivable opportunities for Vice Chairman Dudley and Governor Fischer to do the same thing in that period. It will be a lot of work because I think we're running against expectations that this is now going to be something like an automatic move, but I think we have to do that.

The second way, as a number of you have suggested, is to make changes in the language from what the staff suggested. I don't have language, but from my point of view, the desideratum would be basically language that said, "In light of improvements in the economy, the Committee anticipates that increases in the federal funds rate may be considered beginning in the relatively near future." But then there's no preset course, and there's data dependency and all the other things that we start to say, but basically we're trying to support this notion that we're now moving into a normal analytic mode, as opposed to the "considerable time" mode or the in-between "patient" mode.

I think that has a beneficial side effect for financial stability, and here's why. As I said, I think, at the previous meeting, or maybe it was the one before, my guess is that when I'm actually motivated to think it's time to begin liftoff, I'm as likely, and perhaps more likely, to be motivated by financial stability considerations than fears of price inflation getting substantially and persistently above target. On financial stability, I have now a very precise metric for thinking about financial stability considerations and when we should be worried about them. It basically builds on the observations of many market participants that—and these are their

terms—there's going to be turbulence when you guys move. That's what they say. My very precise metric is that it's definitely okay to have landing-in-Logan-type winds, and, as President Rosengren will tell you, there's always wind when you land at Logan. It may be okay to have a landing at O'Hare after a line of storms has passed through, which is a little bit more bracing, but it's still sort of okay. What we really don't want is, when you're over the North Atlantic and the pilot comes on and tells the flight attendants to take their seats because—and some of you, I'm sure, have been through that—that's when things can, in fact, get out of hand a bit.

I believe that if we change the language in a way that I suggested, it's basically saying to the world, it's now on the table: The possibility of federal funds rate increases is going to be actively debated at probably each succeeding meeting now that rates are in play—we may not do it, but it's going to be a real discussion at each succeeding meeting. If so, I think you're going to get a fair amount of movement in financial markets because people who have thought that things are more or less a one-way bet, which they had to turn around during the "taper tantrum" and slipped back there, are going to once again be rethinking. People are going to be making different calculations. Everybody is going to be a little bit more sensitive to "Gee, what do you think? Are they at the point of doing it now?" That will entail some measure of de facto tightening and a little less accommodation in financial markets. But I think that's a reasonable price to pay in order for us to be able, in a macroeconomic sense, to lift off at the right time as opposed to at a time when we still may have some uncertainty about the strength of the labor market, when, as Governor Brainard was alluding to yesterday, we may still be worried that further strengthening of the dollar will have a further disinflationary effect, or the like.

I realize that most of the early part is not as precise as it may be, but I really hope that we can come up with, not just different language, but a very clear and agreed-upon understanding of

what that different language means so that people like myself are not placed in a position of opposing the removal of "patient" on the grounds that it's a liftoff, but instead we can support the removal of "patient" on the grounds that it just gets things into play and actually will cause market participants, as us, to make different kinds of bets and have different kinds of expectations. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. On "too soon" versus "too late," I continue to think that the risks of going a meeting too soon are greater than the risks of going a meeting too late. I think as we get closer to the event—and we are really talking, for the most part, about differences of a meeting or two—that consideration weighs less and less for me. My simple model of this situation is as follows. First, the real economy is eliminating slack at a gallop, and on that path some slack remains, but essentially all of it will be gone by the end of this year, roughly speaking. Inflation and inflation expectations and interest rates, at a minimum, haven't gotten the memo on that—and it may in fact be that they are sending signals of possibilities of bad outcomes. Policy is in a position to be patient, to see whether these bad outcomes materialize, to see whether we start to see a shrinking deviation from our inflation goal rather than a growing one. But policy can't be indefinitely patient in this situation, in which slack is being eliminated so quickly. For me, what that means, ultimately, is that it will be appropriate to lift off in June or September.

Now, as others have remarked, putting June on the table would mean taking the "patient" language out of the statement at the March meeting, which is seven weeks away. It is, I would say, not more than 50 percent likely, and probably significantly less than 50 percent likely, that we will get incoming data that would provide confidence to do that in seven weeks. In fact, it is

probably equally likely that we will get data that suggests we are still moving further away on some measures, either in inflation expectations or in core inflation.

The other problem here is that making that language change in March could potentially trigger liftoff, because the opposite of "unlikely to lift off for at least two meetings" is "likely to lift off in the next two meetings"—specifically, two meetings out. I'll come back to that language change in a second. I actually think, if the January and February employment reports are really strong and global conditions settle down and that kind of thing, I could well be standing at the June meeting thinking it would be good to lift off now. I think it's a lot less likely that I would be in a position of feeling so confident as to do that at the time of the March meeting. As I said, fortunately, conditions are such that the Committee can be patient, and I would add to those, frankly, at least domestically and importantly, financial conditions. I have been concerned that there would be bubble conditions and things like that, which would suggest that we should move faster rather than sooner. I don't see that at all. Again, I come down on June or September.

Now, let me talk for a minute about what I would need to see on inflation. For me, the strength of economic growth and employment is an important indicator, potentially, in giving confidence that inflation will indeed trend back toward our goal. I can't really answer the question about inflation in the abstract. I would say, as a general matter, I'm concerned about low inflation, but perhaps less so than some, for two reasons. First, we've got transitory shocks in oil and with regard to the dollar that I don't see as a threat to the longer-term anchoring of expectations. I wouldn't personally be alarmed by small fluctuations in the Michigan survey during this unusual period. Of course, those things may or may not be transient, if the dollar and oil keep moving. Second, it would be one thing if these readings were coming in at a time when

the economy were weakening, instead of at a time when slack is disappearing very quickly. I feel differently about them because of that factor.

On wages, I would not make that a requirement. I don't think we know enough about the relationship between wages and price inflation to effectively make that a threshold. On core inflation, I would distinguish between what I'd like to see and what I would need to see. Of course, I'd like to see real evidence of it moving back up. Honestly, I think I'd need to see that the transitory lows that we've seen in the fourth quarter of last year and the first quarter of this year are in fact transitory. We need to have good reasons to think that those are transitory, and you certainly would need not to see it moving further away from the goal. In September, I would say that as time passes, the bar gets lower for what I would want to see, or need to see, on inflation. In other words, as slack disappears, that has to be increasing my confidence that inflation will, in fact, come up.

Turning quickly to the statement language: I think that folks have now put their finger on the issue, which is it would be great to have a technology for changing "patient" in a way that gives us a range of meetings—four or five meetings, a few meetings—rather than just the next couple of meetings. If we're lifting off in June, the time to do that would be at the March meeting. Unfortunately, that makes it even more difficult to lift off in June. If we don't lift off in June, I think we can work on language that would make it easier to do that in September. I'll save any other comments on the statement. I think the statement language that we have is quite good, and I think that this point is more important than the other small points I'll make later. Thank you, Madam Chair.

CHAIR YELLEN. President Bullard.

MR. BULLARD. I just have a quick question. You said you may not feel confident enough in March to remove "patient," but maybe you would, say, in June. What would be wrong with, for instance, removing "patient" in April and signaling action in August?

MR. POWELL. We're back to the quarterly press conference question, are we?

MR. BULLARD. That's why we have meetings.

MR. POWELL. No, I realize that. You're right. I am taking it as a given, for purposes of this comment, that we have four press conferences a year and that this is going to be a June event or a September event, President Bullard. If we had chosen some time ago to have press conferences at a bunch of these meetings, it would be a different situation, but we didn't make that choice.

MR. BULLARD. I think it's just thwarting decisionmaking around the Committee. Why are we doing this? We say it's data dependent.

CHAIR YELLEN. I am very willing to reconsider the issue of timing of press conferences. I think we need to take a serious look at it. There are not only pros, there are also some cons in terms of how that could affect the operation of the Committee and Committee dynamics. I would like to be careful and thoughtful, but I am open to doing it. I think it is something that we need to seriously discuss.

MR. POWELL. Madam Chair, before I do give up the floor, I would just add that, in my view, it is unlikely that seven weeks is going to make a big difference in terms of the right time to lift off or whether, in hindsight, we would look back and say, "Wow, I really wish we had lifted off seven weeks earlier or later." I don't think there is that much in question.

CHAIR YELLEN. Thank you.

MR. LACKER. Madam Chair. There is actually, in a sense, six months at stake, because in March, if you take June off the table by leaving "patient" in, it means—unless we have a press conference in August—waiting six months until September.

MR. POWELL. Sorry, Jeff, but liftoff would either be in June or September. It's three months.

MR. LACKER. Right, right. But if you decide in March you're not comfortable and you want to leave "patient" in, you take June off the table, and it means you're confident that you won't want to move before September.

MR. FISCHER. I think we are overlooking expectations in all this. When we send a sharp signal that we're going to do something, rates are going to move. We'll be seeing the effect of our decision spread over several months. It's not quite six months; it's spread out a bit more over the period.

CHAIR YELLEN. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I thought I'd say something now that I planned to say in the policy round, because it has been brought up by President Bullard, and then you responded. I just was going to suggest that you and the Committee consider a temporary policy of press conferences spanning a period conceivably starting March or April through September, with the statement that at that time we would review the need for that frequency of press conferences. But I continue to think that something has to be done about, effectively, the problem that Governor Powell has put on the table. I think, in this period, we want every combination of one or two meetings to be possible. That's what I was going to say in the policy round, so I'll say it now. Thank you, Madam Chair.

CHAIR YELLEN. I agree. We will think about that very carefully. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. My own thinking about the timing of liftoff and the pace of tightening thereafter hinges on four considerations: the underlying momentum in the real economy, and its likely ability to sustain that strength as monetary policy support is withdrawn; confidence that inflation will move back to our target in the next couple of years; recognition of the asymmetry in our ability to respond to the need for a policy correction; and vigilance about financial stability risks.

On the domestic activity front, at the time of liftoff I expect to see continued evidence that the underlying momentum is sufficiently robust to withstand a tightening of monetary policy on top of likely ongoing financial tightening associated with a strong dollar. The Tealbook forecast of household demand and business investment through the first half of this year, with employment continuing to grow at or above 200,000 per month; consumption increasing by around 4 percent, supported by the gain in real disposable income from lower prices at the pump; and business fixed investment continuing to advance despite a temporary drag from falling drilling and mining investment would meet those requirements.

We are much less likely to see convincing evidence by the time of liftoff to provide full confidence of the return of inflation to its 2 percent target. Because of the large influence of the recent decline in energy prices on inflation, it is highly unlikely we are going to see signs in the next few quarters of actual headline inflation moving back to 2 percent. So we are probably going to need to rely on a pattern of improvement across a variety of related indicators for some assurance that we are on track. Ideally, I think we would want to see monthly increases in core inflation moving up from the very low levels that have been reached, or, at minimum, to have some confidence that an inflection point has been reached. It is also critical to be sure that inflation expectations remain well anchored. In that regard, I think it will be, at least, necessary

that survey measures remain stable, but I think it would also be encouraging to see some correction in longer-run inflation compensation from current very low levels. I would also take reassurance from some stabilization or even a correction in the value of the dollar that the drag on inflation from declining import prices will begin to wane. It would, of course, be reassuring to see signs of increasing wage pressures, but for reasons that I think have already been discussed, I would not necessarily expect that to be in train at the time of liftoff.

Realistically, I think it's very unlikely we are going to have strong confidence in rising inflation by June, or possibly even by September of this year. We should, I think, anticipate that we are going to have to make a decision in a highly uncertain environment, and, therefore, to maintain some scope to adjust course as we learn about how the market is responding. This highlights the asymmetry in our toolkit. In this area, I would say my risk assessment is more animated by the episode of Japan in 2000 than it is by the United States in 2004. I would be very concerned to avoid a risk of returning to the zero lower bound shortly after liftoff, when the options for monetary policy will be limited. In addition, in the current economic environment in which fiscal support is extremely unlikely and the global economy is exerting very deflationary pressures, I think it will make it even more difficult for monetary policy to correct for adverse shocks.

I think the same risk-management considerations point toward a relatively gradual path of policy initially, in order to leave room for adjustment as we learn more about the underlying strength of activity and inflation, and about the reaction of markets to policy adjustments. We will also want to be attentive to the possible effects on risks to financial stability of both the timing of liftoff and the pace of our adjustment thereafter. I think this is, to a large degree, a

countervailing risk that requires a high degree of vigilance, especially in light of the puzzles that we talked about surrounding the decline in longer-term nominal Treasury yields.

It is extremely useful to have the opportunity at this meeting to deliberate now on the likely future path not just of monetary policy but also of communications surrounding the policy path. It's very clear from the memo that communications matter, in many respects, very consequentially, at moments of large inflections in the policy path. I think we have heard from several people around the table, and I strongly agree, that to the extent we want to keep both June and September on the table for possible liftoff, which I would want to do, providing too much precision in our forward guidance in March paradoxically might actually take June off the table. In particular, I would want to have the option to decide in June, based on data that are available at that time. But if we have to pre-commit in March to a couple of meetings in specific, I am guessing that the data we have available in March will preclude at least my comfort with making a commitment about June. I had in mind language that was quite similar to what President Williams put on the table, but I'd leave it to the staff to try to figure out how to introduce enough constructive ambiguity in the language while also putting June and September on the table.

Finally, I also resonated with a comment made by President Plosser. The description of the path of possible future policy I think is very difficult to capture in the statement at the timing of liftoff. Unfortunately, I don't think the proposed language achieves what you are setting out to do. It's not clear, as was stated earlier, whether we're talking about some plateau, whether we're talking about a lower neutral rate. In fact, I don't think we're actually giving much information about what will affect the path of policy. I think it's also an area in which I would recommend having the staff perhaps provide some additional options. Thank you, Madam Chair.

CHAIR YELLEN. Well, I'd like to thank everyone for a very thoughtful discussion and very useful suggestions pertaining to statement language. We do have difficult choices ahead of us, and I think today's exchange of views will facilitate our decisionmaking in the coming months and serve to improve our communications. I know we are running late, but if you don't mind, I'd like to add just a few thoughts of my own to this discussion. I'd like to start with conditions that, in my view, would warrant the start of normalization, mention some factors I think should influence the subsequent pace of adjustments, and say a bit about communications.

In my view, conditions in the labor market have improved sufficiently over the past year that taking the first step toward normalization could be warranted in the not-too-distant future. But I think we need to be careful not to jump the gun. First of all, while it's true that most of the policy benchmarks reported in the Tealbook prescribed lifting off today, the case for an immediate tightening becomes much less clear if one varies the assumptions used to calculate those benchmarks. For example, if the equilibrium real interest rate is currently near zero, as the Laubach-Williams model suggests, and if the natural rate of unemployment is 5 percent, which is my own personal point estimate, then the Taylor (1999) rule currently prescribes a zero federal funds rate.

In a similar vein, an interesting exercise, reported in Tealbook B, shows that optimal-control policy under a nearly pure inflation targeting approach, one that places essentially full weight in the loss function on deviations of inflation from 2 percent, and almost none on the unemployment gap, calls for a much more gradual path to the federal funds rate than the Tealbook baseline. I'm also wary of the prescriptions of the various policy rules, because these benchmarks don't take adequate account of the many special factors at work in today's unusual economic environment, including the risks posed by the zero lower bound, the highly

uncertain state of conditions abroad, and the many uncertainties pertaining to the likely path of inflation, particularly the continued decline in inflation compensation and the still-weak incoming wage data. I think, on balance, these various considerations call for proceeding cautiously.

That said, monetary policy operates with a substantial lag, and we have to act on where we judge the economy is headed, not where it has been. For that reason, I continue to anticipate that if events develop about in line with the Tealbook projection, with real GDP expanding at a moderate pace, labor conditions strengthening further, and incoming data that allows us to achieve a reasonable degree of confidence that inflation will move up to 2 percent over the next two or three years, then it will be appropriate to raise the target range for the federal funds rate later this year.

As I see it, liftoff could come as soon as the June meeting, even if backward-looking measures of core inflation are still running in the neighborhood of 1½ percent at that time, and headline inflation is running much lower. But I intend to be particularly alert for any incoming evidence that serves to cast doubt on our projection that inflation will return to 2 percent, in addition, of course, to evidence that might suggest that economic growth at home is faltering or that foreign or financial conditions are evolving in a manner that could cause growth to slow or stall. Such developments, in my view, would suggest the need to delay liftoff. We have said that we intend to be data dependent, and a failure to alter our plans in response to adverse incoming data pertaining to inflation or the labor market would call that promise into question and reduce our credibility.

I think we all agree that our actions after the first rate increase should also remain data dependent. Because there is such huge uncertainty about how real activity and inflation will

evolve, I also recognize that the trajectory we end up following could easily be steeper or flatter than our SEP paths and could even entail a reversal of direction if conditions turn out to be sufficiently weak. The staff papers document that several other countries that lifted off the zero lower bound had to reverse course, and that could happen to us, too. All that being said, based on our December SEP submissions, it looks like most of us anticipate a fairly gradual pace of normalization along our modal paths. The median funds rate projection in the SEP increases only 1¼ percentage points per year, on average, through 2017. I think it's worth reflecting on the reasons most of us have written down paths that largely entail only a gradual pace of tightening if economic conditions evolve in line with our forecasts.

As far as my own submission is concerned, I would mention four factors I took into account. First, I continue to believe that the headwinds that have restrained the expansion for so long have not yet fully abated. Although I'm optimistic they will continue to fade, I anticipate they will do so only gradually. In other words, I think r^* is currently well below its longer-run normal level and rising only gradually. Second, on account of my uncertainty about the response of the economy to tighter monetary policy, I see a rationale for proceeding cautiously, so as not to disrupt the expansion. Third, I recognize that the probability of returning to the zero lower bound after liftoff is quite significant. As the staff's analysis suggests, one way of mitigating this risk is to adjust policy gradually in response to changes in slack and inflation, and initially to tighten slowly. Finally, I see a modest transitory undershoot of the natural rate as entailing potential benefits. As the Tealbook simulation shows, it will permit a somewhat faster return of inflation to 2 percent, and there is also a chance that a strong labor market might draw discouraged workers back into the labor force, boosting potential output. Obviously, proceeding too slowly for too long could eventually have undesirable effects on inflation or financial

stability, but I believe careful monitoring of the relevant indicators and a quick and forceful response to credible early warning signs can contain these risks.

Finally, a couple of words on communications. The staff suggested in one of the background memos that it would be useful for us to highlight several aspects of our strategy in public communications: First, that we are not on a predetermined course of raising the funds rate 25 basis points per meeting; rather, all adjustments we make will be data dependent. Second, the data-dependent nature of our strategy, coupled with the uncertain outlook for real activity and inflation and other factors, means that the actual trajectory for the funds rate may turn out to be quite different than we or the market currently expect. Conceivably, we may have to reverse course and begin easing again. Such data driven adjustments to policy are not a policy error, but are instead a natural consequence of decisionmaking in real time. Finally, that there are special factors in the current unusual economic environment that argue for proceeding cautiously in normalizing policy, especially in the early stages. I've mentioned some that are important to me, and to the extent we can reach some consensus on what factors are important, I think it would be useful to explain those to the public.

Let me stop there, and I thank everyone for a very useful discussion. I am aware of the fact that we have a lunch for President Plosser. Let me turn things over to Thomas Laubach, who is going to brief us on our monetary policy alternatives.

> MR. LAUBACH.[11] Thank you, Madam Chair. I will be referring to the handout labeled "Material for FOMC Briefing on Monetary Policy Alternatives."
>
> For my maiden policy briefing, I wanted to be sure to choose a topic that would be of interest to you. I'm glad to report that I have been successful, because most of what I had wanted to say has already been discussed by several of you. So I shall be very brief.

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[11] The materials used by Mr. Laubach are appended to this transcript (appendix 11).

My choice of topic, of course, is the declines over the past year in longer-term government bond yields and especially long-horizon forward rates in the United States and a number of foreign economies. As noted in the upper-left of your first exhibit, a key policy question is whether a lower path for longer-term Treasury yields going forward would call for a higher or a lower future path of short-term rates to achieve the Committee's objectives. A box in Tealbook A, discussed several alternative factors that might have contributed to the decline in longer-term yields, and I briefly want to ponder the potential implications of two of these explanations for the appropriate stance of monetary policy.

Longer-term yields across several major economies, illustrated in the upper-right, stand now at or near record lows. The Committee's recent statements noted the decline in far-forward inflation compensation, shown by the black line in the middle-left, which is embedded in longer-term nominal yields. However, more than half of the decline in longer-horizon nominal forward rates over the past year is due to reductions in longer-horizon real forward rates, shown to the right, which also stand at historically low levels. Their decline could point to a sustained reduction in expectations for global equilibrium real rates—call it "global secular stagnation." Alternatively, or in addition, real risk premiums may have declined, perhaps because investors increasingly view episodes of low real interest rates as associated with poor economic performance.

Information from surveys and financial market prices related to inflation suggest that inflation risk premiums may also have declined, even to negative levels. Longer-horizon survey expectations, including the probability distribution of 5-to-10-year-forward CPI inflation from the Desk's survey of primary dealers (not shown), have remained stable over the past year. In contrast, risk-neutral probability distributions derived from inflation caps and floors, shown in the lower-left panel, have shifted down, pointing to an increased desire of investors to insure against low, rather than high, inflation outcomes. It is conceivable that investors increasingly view episodes of low inflation or deflation as associated with the risk of protracted economic weakness, perhaps reflecting the experience of recent years at the zero lower bound. As Governor Brainard pointed out yesterday, longer-term Treasury securities with payouts in nominal terms are excellent hedges against such risks, and hence their term premiums would decline. To the extent that policymakers share the view that such episodes are costlier or more likely than previously thought, they may want to be especially cautious in removing policy accommodation to mitigate those risks.

An alternative explanation could be that a weaker outlook for economic growth abroad or additional policy accommodation by foreign central banks are being transmitted to U.S. long-term yields via a "global portfolio balance channel." A piece of evidence in support of this possibility is the similarity in the responses of Treasuries and euro-area sovereign yields to the ECB's announcement of its expanded asset purchase program last Thursday, shown in the lower-right. Over the 60-minute window following the start of President Draghi's press conference, 10-year Treasury yields fell by almost the same amount as 10-year bund yields and by more than 10-year Italian government bond yields. Although the similar-size decline in

rates on 2017 and 2018 Eurodollar futures contracts might suggest a reduction in policy rate path expectations as far as the United States is concerned, as Simon discussed yesterday, the decline in yields probably reflected mostly a compression of term premiums on Treasuries. Reductions in term premiums resulting from a global search for yield associated with additional policy accommodation abroad, if passed through to private yields in the United States, might call for future short-term rates to be higher, all else being equal, to achieve the appropriate financial conditions; of course, less so, to the extent that is accompanied by a stronger dollar.

Turning to the policy alternatives for this meeting, you may view the U.S. economy as more or less on the track you expected at the time of your December meeting. If so, you may prefer alternative B on page 6, which makes no change to the current stance of monetary policy or the Committee's forward guidance.

In updating your assessment of economic conditions, paragraph 1 upgrades the description of the recent pace of the economic expansion from "moderate" to "solid" and adds the positive note that "recent declines in energy prices have boosted household purchasing power." Paragraph 1 notes the recent "strong" job gains and again reports that underutilization of labor resources continues to diminish. Paragraph 2 indicates little change in the Committee's assessment of the outlook for growth of economic activity or its expectation that labor market indicators will continue to move toward mandate-consistent levels. With regard to the risks to the outlook for economic activity, alternative B offers an option to point to increased uncertainty regarding the foreign economic outlook in recent months, but, in any case, states that the risks are nearly balanced.

On inflation, paragraph 1 of alternative B indicates that inflation has fallen further over the intermeeting period and attributes the larger shortfall from the Committee's 2 percent objective "largely" to the drop in energy prices. It characterizes the decline in market-based measures of inflation compensation in recent months as "substantial" while continuing to report that survey-based measures of inflation expectations have remained stable. Paragraph 2 provides a clearer statement of your expectations for inflation, first recognizing the likelihood that inflation will fall further in the near term, but then stating that you still anticipate that inflation will gradually rise toward 2 percent over the medium term as the labor market improves and the transitory effects of the drop in energy prices and other factors dissipate.

The remainder of the statement is the same as in December, with the exception of dropping the sentence that you used last month to emphasize that your revised forward-guidance language did not mark a change in the stance of policy. The retention of the "patient" language would probably be interpreted as signaling that the Committee is unlikely to begin removing accommodation at the March or April meetings.

Overall, alternative B appears in line with market expectations. Respondents to the Desk's surveys generally anticipated no significant change to the Committee's forward guidance. Most of the updates to paragraphs 1 and 2 would not surprise

market participants, although the reference to uncertainty about the global outlook, if included, would garner some attention, particularly given the ECB's recent announcement.

Alternative C, on page 8, may appeal to those of you who believe that the economic expansion has gained momentum and is likely to absorb any remaining economic slack fairly quickly. Paragraph 1 of alternative C takes a more upbeat tone, indicating that the "expansion has gained momentum" and suggesting less concern about further declines in market-based measures of inflation compensation over the intermeeting period. Paragraph 2 indicates that inflation will rise gradually "to"—rather than only "toward"—2 percent over the medium term; it also drops the cautionary note that "the Committee continues to monitor inflation developments closely." Paragraph 2 of alternative C omits any reference to the foreign economic outlook.

Reflecting this more positive assessment of the current situation and the outlook for achieving your objectives, paragraph 3 incorporates the suggestion that you discussed earlier for modifying the forward guidance in a way that would provide an interim step between "patience" and guidance that would indicate how the Committee anticipates conducting policy after liftoff.

As Simon indicated yesterday, market participants generally expect liftoff to come around midyear or later. Thus, a statement like alternative C would come as a surprise. Medium- and longer-term interest rates would likely rise, inflation compensation and equity prices would probably fall, and the dollar would likely appreciate.

Finally, turning to alternative A, on page 4, the information received over the intermeeting period may not have increased your confidence in the durability of the economic expansion; instead, incoming information may have left you concerned that a pernicious cycle of low inflation leading to lower inflation expectations may be getting under way. Paragraph 1 of alternative A does not upgrade the Committee's assessment of economic activity and adds the note that "wage increases remain subdued." Alternative A includes the reference to uncertainty about the foreign outlook but, as in alternative B, indicates that the Committee sees the risks to the U.S. outlook for economic activity and the labor market as balanced. In contrast to alternative B, alternative A signals heightened concerns that inflation could run "substantially below" 2 percent for "a protracted period."

Alternative A provides two options with regard to forward guidance. Paragraph 3 states that "persistently low wage and price inflation" indicate that—possibly appreciable—"slack remains in the labor market and thus that it is appropriate to be patient in beginning to normalize the stance of monetary policy." Or, you may prefer the option in paragraph 3′ of replacing the "patient" language with an inflation floor and of indicating that the Committee would take additional actions if projected inflation remained below 2 percent once energy prices stabilized.

Market participants do not anticipate an announcement like alternative A. Either version of the statement would cause investors to push out further their expectation of the date of the first increase in the target federal funds rate. Medium- and longer-term real interest rates would likely decline; inflation compensation and equity prices might rise; and the dollar could depreciate.

A draft directive for all three alternatives is shown on page 11 of your handout. Thank you, Madam Chair; that completes my prepared remarks.

CHAIR YELLEN. Thank you. Are there any questions for Thomas?

I just want to highlight one issue before we have the go-round. You'll notice that in alternative B there is bracketed language in paragraph 2 pertaining to the foreign economic outlook. A number of you have expressed concerns about this particular formulation, and clearly this is something that is on the table for discussion and is changeable. Governor Fischer.

MR. FISCHER. Thanks, Madam Chair. In light of the concerns that people have had about the bracketed statement in paragraph 2, which may be driven by the fact that in many senses the foreign economic outlook has become somewhat more certain, rather than uncertain, in recent months, there is an alternative which seems less likely to be objected to. Let me just say that I think we have to refer to foreign developments somewhere in here. We did talk about them a great deal yesterday, and so it's just a fact that that's what we've been looking at. The suggestion is to insert "financial and international developments" in paragraph 3, line 8, which starts, "and readings on financial developments," and to erase the bracketed material about the foreign economic outlook in paragraph 2. It's after "financial" on line 8 of paragraph 3 to add the words "and international." Thank you.

VICE CHAIRMAN DUDLEY. Can I ask a clarifying question? Would you continue to have the modifier "domestic economic activity" in paragraph 2 or not?

CHAIR YELLEN. I personally think that could go.

VICE CHAIRMAN DUDLEY. Well, putting it in is saying something, because it's not in now. Stan, do you view taking "domestic" out as part of the package?

MR. FISCHER. I didn't view it as a package. But now that you've raised the question, I think it could just as well leave it out.

VICE CHAIRMAN DUDLEY. Okay.

CHAIR YELLEN. Did everybody understand what the alternative proposal is? Okay. Then, let's begin our go-round with President Williams.

MR. WILLIAMS. Thank you, Madam Chair. I support alternative B, and I am going to comment briefly on the language regarding international developments in a moment. The expansion is on a solid track, job growth has been especially rapid, and I now expect the unemployment rate to reach my estimate of the natural rate of 5.2 percent shortly after the middle of this year. Indeed, in view of the momentum in the economy, and the highly accommodative stance of monetary policy, I see a very real possibility, or probability, that we will significantly overshoot full employment next year, even beyond what is already built into the Tealbook baseline.

Overall, I view the risk to the outlook as balanced, and so in that regard I am one of the people who is concerned about the introduction of the new language in the FOMC statement saying that the foreign economic outlook has become somewhat more uncertain. Since that draft was initially circulated, the ECB has announced a very aggressive asset purchase program that, if anything, reduces uncertainty about the European growth outlook. To my mind, it was a worry that the ECB would not take such a dramatic action that was one of the greatest risks to the foreign outlook. To me, it would be ill-timed for us to introduce new language highlighting uncertainty about foreign developments on the heels of the ECB's announcement. Some might

misconstrue this statement as implicitly criticizing the ECB's actions. Therefore, I do favor deleting the bracketed terms, both "domestic" and the "although" phrase, and I'm fully in support of Governor Fischer's suggestion to put in "and international" between "financial" and "developments" in paragraph 3. Thank you.

CHAIR YELLEN. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Madam Chair. With your indulgence and despite the pressure of time, I'm not going to be as brief as some of you would like, in view of what I think is the importance of the issue before us.

There is a building desire within the FOMC to lift the federal funds rate off the effective lower bound within the next few meetings, and in some sense this desire is quite understandable. Liftoff would be a clear signal to the world that the FOMC has, at long last, been successful in restoring the country to normal economic times. What better indicator of that normality than the strong, improving labor markets of 2014? We have a compelling narrative before us. Labor markets improve a lot, economic activity looks strong, and the FOMC is finally able to lift the federal funds rate off the effective lower bound. But there is a big hole in this narrative that focuses exclusively on real activity and ignores inflation and the developing significant risks to the credibility of our nominal anchor.

As you will recall, Madam Chair, I dissented from the FOMC's decisions at the past two meetings because of my concerns about the downside risk to inflation expectations, and the evolution of the data in the intermeeting period, especially the decline in market-based measures of longer-term inflation compensation, have served to increase my concerns. All told, the evidence points to financial market participants putting significant weight on a scenario in which inflation runs persistently below 2 percent for the next decade. And the charts that Thomas

showed us, I think, are consistent with this description. This implicitly means that they believe that the FOMC is unwilling or unable to keep inflation at the 2 percent target over the coming decade.

This slide in inflation expectations is not an accident that has happened in a vacuum. Since May 2013, through our actions and communications, we have gradually but systematically reduced the level of monetary accommodation. This firming of policy has taken place against a backdrop of persistently low inflation and a subdued outlook for inflation. Our actions have sent a clear, however inadvertent, message about our lack of willingness to defend our inflation target from below, and I believe that the recent behavior of financial market prices show that market participants have, indeed, received this message.

Now, what is to be done? One possibility is to continue on our current path toward a June or September liftoff unless we have even more evidence that inflation expectations have currently shifted downwards. Again, this desire to wait, to continue on our path and wait for more evidence is entirely understandable. It allows us to continue with a very comforting back-to-normal narrative that I described earlier. Unfortunately, history tells us we do not have that luxury of waiting for more information. The experiences of Japan, Europe, and Sweden all suggest that if we wait for clear evidence, incontrovertible evidence, we will have waited too long. The whole point is that we need to avoid a trap of low inflation, low inflation expectations, and low interest rates that other countries have not been able to escape. We can't wait to make sure that we're actually stuck in this low inflation trap before deciding to act to try to escape it. We have to be proactive with this risk. We cannot be reactive. In my assessment, the next three or four meetings are likely to be critical ones. We need to send strong signals through actions

and communications that we are determined to move inflation back to 2 percent in a timely fashion.

In terms of particulars, at a minimum I recommend that we commit to keeping the federal funds rate in its current range until the one-to-two-year-ahead outlook for inflation has returned to 2 percent and market-based measures of inflation compensation have normalized. The problem with this minimalist approach is that it may well be too passive. We should immediately begin exploring additional actions that we could take to deal with the risks that I've described. Now, putting the language in paragraph 3′ of alternative A into the FOMC statement would be a good starting point for the aggressive, proactive approach that I see as necessary. I've been emphasizing the benefits of a proactive approach. What are the costs of a proactive approach? There are two that I see. First, we could create too many jobs relative to what is actually sustainable over the longer run so that U falls below U^* and stays below U^* for possibly a long time. We have debated whether such an outcome is actually costly, but I would like to think that whatever our view is about the size of these costs, we can agree that they are ones that we should be willing to bear if we're to fulfill job one of a central bank, which is to keep inflation expectations well anchored. Second, there is the possibility that such accommodative policy could create macroeconomic risks through financial instability. The good news is that the QS report suggests there are few signs of such risk at this time. The one thing I don't think we emphasize enough during our discussions is—that I think deserves attention—a permanently low inflation rate will create a permanently low level of nominal interest rates. If we get stuck at 1.2 percent, that will translate into lower nominal interest rates forever. That is not good for financial stability.

Madam Chair, I spent my Christmas vacation in a way I thought I should, reading FOMC transcripts. [Laughter] I went back to the late 1960s and actually read some of what President Williams was making reference to earlier. The transcripts are in some ways quite poignant. The Chairman at the time was William McChesney Martin, one of the great figures in the history of this institution. But as he reached the end of his time as Chairman, he was painfully aware that future Committees would have to deal with, and I quote him, "an inflationary psychology that has resulted from the cumulative heritage of past failures of public policy." As we look around the world in 2015, we see Martin's accumulated heritage in country after country, but of course, it's a low inflation psychology rather than the high inflation psychology to which he referred. We need to do all that we can to avoid creating that same kind of legacy for our own successors. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you very much, Madam Chair. I support alternative B. The real policy discussion of this meeting is whether we should drop the "patient" language in March in preparation for a June liftoff. Though I cannot rule out that wage and price data could support such a move in March, it seems rather unlikely from this vantage point. We certainly have not seen the data to date that would make me comfortable with that decision. I am not at all confident that data on wages and prices are yet moving in a way that is consistent with attaining our 2 percent goal within two years.

Just related to some previous conversation, I would also say that I am not confident that what we say is what the markets hear, and I do expect that when we drop the word "patient," markets will be impatient and the tightening will have occurred. I don't think we should fool

ourselves that by changing the language we're going to avoid a financial tightening at the time when the word "patient" is taken away.

In terms of the language related to the foreign economic outlook, I think we have to keep in mind why the ECB felt like they had to engage in quantitative easing. They didn't do it early. They didn't do it with alacrity. They did it late, and they did it because conditions forced them to do so. I think we should keep that in mind, as well as that we've had a Greek election. That Greek election is likely to create a lot of instability over the next month and a half. I think it's going to come to the fore exactly when this meeting's minutes come out. In the context of oil prices low, inflation low, and a possible Greek exit, I think it is actually appropriate to say that there's a great deal of foreign uncertainty at this time. I would leave the language as written. Thank you, Madam Chair.

CHAIR YELLEN. President Rosengren, could you support the alternative if others prefer that?

MR. ROSENGREN. I would actually prefer what we have here.

CHAIR YELLEN. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I support the policy decision in alternative B. I also support removing the bracketed language in paragraph 2 and inserting "international" per Governor Fischer's suggestion in paragraph 3. Otherwise I support the statement as written. Thank you.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. I support alternative B today. If the economy evolves as I anticipate, I believe it will be appropriate for us to life off relatively soon. The language in alternative B is fine for today. I appreciate the changes that were made to the first

draft. I, personally, would prefer not to make reference to the foreign economic outlook in paragraph 2 as it may be read as a comment on recent foreign central bank policy actions. I'm not actually sure how adding "international" to paragraph 3 will be read. That gives me some pause, too. Will it be read as a response to criticism of how U.S. policy affects emerging market economies? I don't know. My preference would have been to add something about foreign economic developments to paragraph 1 as a statement of fact, but that's just my personal preference.

The staff memo provided a workable approach for how a statement could evolve as we approach and reach liftoff. The memo I circulated tried to simplify the statement organization within the context of the staff's suggested approach. It did not presuppose when that language might be appropriate.

I do think the Committee is going to face a communications challenge whenever it decides it's appropriate to leave the zero lower bound in the current environment of strong output growth and labor market momentum, but near-term measured inflation below goal. But once we determine liftoff is appropriate, the challenge should not deter us. As many have said, policy must be forward looking. We will need to point to the forecast, explain why the forecast is reasonable, and explain why, conditional on the forecast, it's appropriate to begin to reduce the extraordinary level of policy accommodation. That said, that gives another reason that you may want to do this in a meeting for which you have SEPs, which is a press conference meeting as opposed to another meeting. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Plosser.

MR. PLOSSER. Thank you, Madam Chair. Before I give my remarks on policy, I just want to indicate what a tremendous privilege it has been to be a part of this group and to serve on

this Committee. The seriousness and openness and high degree of professionalism exhibited by everyone that I've served with over the past eight and a half years has been both rewarding and enlightening. I view this service as the highlight of my professional career, and I will forever value both the experience and the friendships that I've made in the process. Thank you.

Let me turn now to my policy observations. I'd like to reiterate my belief that in view of the strength of economic activity, policy is overly accommodative at present and likely to remain so going forward. I think that accommodation will probably require a fairly aggressive policy rate path in the future, although I draw some comfort from the staff's memo indicating the results of that kind of tightening are not expected to be severe. But, as I indicated in my earlier comments, such a policy is not without some significant risks, and I weigh those risks as being somewhat more significant than some do.

Although I remain concerned about the stance of policy, I find the apparent misinterpretation of our statement language by markets that some people referred to a couple of times today as very highly problematic and fraught with potential risks of heightened volatility, and perhaps destructive consequences. Communications problems seemed especially true in our previous statement. Our own interpretation and the market's interpretation of that statement appear to be different. On the basis of comments in our go-round at previous meetings, I interpreted various members as viewing the change in language of our December statement as inconsequential or status quo, and even some who thought it might be a bit more hawkish stressed the fact that there was no change in the message. Market participants, as reflected in the futures path, moved out their expectations of liftoff from June toward September. That is, the forward curve flattened. In light of the way language has evolved in our statement, the market's interpretation appears to have been a reasonable one, but inconsistent with our SEP.

President Mester has pointed out that the statement has taken on the attributes of Hotel California, where words check in, but they have a very hard time checking out. And I think that's a very accurate description. As market participants read our December statement as ruling out a first-quarter move and, in effect, ruling out any action before June, this, in effect, increased the probability that liftoff could easily be delayed even further to September or beyond. To have our intentions misread in this way, I think, should concern us all, and we should think more critically and carefully about rewriting our statement in a more systematic and data-dependent way. I've argued this for some time.

President Williams, President Kocherlakota, and I, back in 2012, went through an exercise in which we proposed a different way of structuring and writing our statements, and we went so far as over a period of three meetings, I think, to actually rewrite the statement ex post to try to convey that. Our timing and circumstances turned out not to be very conducive to that exercise, but I think—with liftoff approaching—we have an opportunity to start afresh, and I would urge the Committee to seize that occasion to revamp the statement. That is, it's time to check out of Hotel California.

Now, given the continued consistent strength in labor markets as well as broad-based growth of the economy, alternative C aligns better with my assessment of appropriate policy. Alternative B appears to indicate that June is the earliest possible date at which normalization would start, but I see it highly likely that the shift in the forward curve after our statement will be to push liftoff even further out. More weight on September and less weight on June is likely to be the outcome of this statement.

Finally, in the spirit of Hotel California, and in agreement with President Mester, I would caution us about adding the words "international concerns." I actually agree with her that if you

put something about international activity, putting it in in paragraph 1, in which we're just stating facts about the state of the economy, rather than in paragraphs that refer to policy developments would be more appropriate. After all, international developments are not always uniform, and once we put "international" in, we're going to have a hard time getting it out. I would caution us in that regard. Those are my comments. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I can support the alternative B for today. I think we should be prepared to remove "patient" in March if necessary or in April if not in March. I don't think right now we have much of a strategy for the April case. I think this quarterly system that we're on is putting heavy pressure on, say, the March meeting, the June meeting. I think all "factions" on the Committee want to get something done at that meeting. They feel like if they can't get it done they can't trade it off against the next meeting. I think that inhibits normal decisionmaking on the part of the Committee. What we normally would do is trade off and say, "Well, we're not going to do it today, but we'll consider it more significantly next time when we have more data." So I think that's distorting decisionmaking, and I'd be a champion of any efforts to get out of that dynamic.

I do not think we should include the bracketed phrases referring to overseas conditions in the wake of a largely successful launch of ECB quantitative easing and sovereign debt. I think this is generally good news for the international economy. I do not wish the Committee to cast doubt on that. I also do not think that we should put in this "international developments" in paragraph 3. Because that's the policy paragraph, I think it might be interpreted as a reference to the dollar. Historically, we have not wanted to do that. I know we're operating on the fly here, but I would just recommend that for today we probably shouldn't do that.

I agree with Presidents Plosser and Mester. I'm happy in future statements to put something in paragraph 1 that's of a factual nature. The thing about the dollar is we wanted to defer to Treasury policy, and it gets very sticky. I'm just not sure about that. I would recommend against it for this meeting. Thank you, Madam Chair.

CHAIR YELLEN. President George.

MS. GEORGE. Thank you, Madam Chair. I can support alternative B today. I agree with those that would like to drop the language in paragraph 2 around the foreign economic outlook, and I am indifferent, at this point, about the consequence of adding "international." I'll leave that to others to decide. Thank you.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. As I discussed earlier, I believe that continued patience is called for. We should continue to monitor developments, inflation developments, core inflation, wages, and market measures of inflation compensation. I share President Kocherlakota's concerns about financial market prices regarding inflation compensation. Because alternative B continues the level of monetary accommodation while we monitor developments like these, I can support alternative B.

I'm quite sympathetic to the suggested change in the bracketed language that Governor Fischer suggested. I kind of think the sentence in paragraph 3 in which we've chosen to place it is a "holding pattern" sentence. I take the point that it's hard to get those things out, but that sentence is going to change radically once we finally start to move. That one doesn't worry me as much as President Bullard's comment about the dollar. It does seem that, in this context, it's talking about inflation pressures and financial developments, and then we insert "international

developments." Gosh, that does sound like it might be inferred as meaning the dollar. I just raise that as a cautionary note in line with President Bullard. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. My views on the most likely path of appropriate policy over coming meetings have not changed much since 11:00 a.m. I had December in there in my original draft. I think April might not be too soon for liftoff in the sense that if I had to put a probability on appropriate liftoff, it wouldn't be zero for April, but I understand the argument of many that the difference between April and June isn't as important as the path after liftoff. As much as I'd enjoy seeing you conduct an additional press conference, Madam Chair, and I do support President Bullard's suggestion, I don't see one meeting as a reason to dissent. I can support removing "patient" from the statement right now.

But, absent convincing evidence that inflation expectations have become dislodged or that the real growth outlook is at heightened risk of deteriorating, I doubt very much that in March I'll see any reason for assigning a zero probability to an appropriate liftoff in June. I doubt I'll find it appropriate not to drop "patient" in March. Data could come in differently, but that's how I feel. It would constitute essentially pushing everything back until September, and I wouldn't see a rationale for that unless data are very surprising.

Regarding foreign economic outlook, I agree with Presidents Williams, Mester, Plosser, and Bullard, and I don't support adding it to paragraph 2. Paragraph 3 is the wrong place for it for reasons that others have said. It's about our policy assessment. I'd support adding it somehow in paragraph 1, but given the hour, I'd suggest we defer it.

CHAIR YELLEN. Okay. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I support the statement as written, except for moving the reference to international developments to paragraph 3. I've given a lecture on what we do about foreign developments, and I've told everybody we actually follow them closely and take them into account as they affect the domestic economy—always emphasized—and as relevant to our mandate. I think it's kind of ridiculous not to put it in on the grounds that the Treasury makes decisions on the exchange rate. Well, good for them, but we look at what they do, and that's all that this says. I don't see what the problem is in putting it in here.

The problem with putting it in paragraph 1, which is where I also tried, is we make a judgment on everything in paragraph 1. We say it's either good or bad, it's developing this way, it's developing that way, and what would we have said on Europe? Taking note of recent decisions in Europe, we take heart from the situation. Well, we don't comment on what other central banks do, and so that was what the problem was with putting it in paragraph 1. We can't make a purely factual statement in paragraph 1. At least I couldn't find one, and I'm sure a lot of other people tried. We couldn't find one that would be purely factual and didn't seem to be making a judgment—it would be a favorable judgment, but once you start making judgments, you're going to end up making judgments in the future. I didn't find a way of doing it, and I think it's very difficult to do it.

With this change, I support alternative B. I will not fall on my sword if we lose, but I think it belongs in there and I think it's relevant. As I listen to the morning news, the dollar and its effect on the United States is getting a lot of attention. I opened a newspaper that I happened to read, and it's all over the front page. We were the people, apparently, who didn't notice any of this, because we don't comment on these things. Well, I don't think that makes a lot of sense. I think we've got to put it in somewhere.

Let me make one point of interest. I find it ironic that the dual-mandate central bank finds the most useful description of its current behavior, which many people appear to want, to be that of an inflation targeter. If you look at those simulations that people like, they're ones which put all the weight on inflation in the utility function. It's interesting that it turns out to be that way today just because we always thought of inflation targeting as coming from the top and not from the bottom. Anyway, I support alternative B, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. I support alternative B as well. With respect to the language, I supported putting in something on foreign economic conditions a couple of meetings ago. I think it would have been a good idea then. I don't think it's a good idea now, for the reasons that John and Loretta have identified. There's too high a risk that it's going to be read as a commentary on what the ECB did. I think they also make a good point about the insertion of "international" in paragraph 3. I don't feel nearly as strongly about that as the paragraph 2 language. I affirmatively support removing the paragraph 2 language. I'm indifferent as to whether "international" should be inserted into paragraph 3. Thank you.

CHAIR YELLEN. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I support alternative B. On the international language, I would just point out that this sentence in paragraph 3 says that we "will take into account a wide range of information, including measures of labor market conditions," which are real economy, and therefore, I think international developments fits in there without being obvious to me that there's a link to the dollar there at all. I do think it kind of fits there and doesn't do any harm, and it does add something. I would be happy to support it.

In terms of March, there is some probability, for me, that we will choose to go ahead in March and withdraw "patient." If we don't, then I think there are two things worth doing. The first is we should consider this idea of having regular press conferences—temporarily and on a nondiscretionary basis. I think the idea of calling a discretionary press conference at the last minute just doesn't work, so I think that's worth talking about. I think there's less in that for me than for others because I do think it would be ideal to link it to an SEP publication. And it's unlikely that the difference in timing is going to make much difference in the end.

The second thing I would say is, if we don't lift off in March, in the next couple of meetings we ought to be thinking of ways to change, in the market's mind, to something that gives the Committee more optionality over a period of time and, therefore, converts a certainty of liftoff in June into something far less than a certainty. That would be a great contribution to our path, again assuming we don't lift off in March. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. I support alternative B. I think it is appropriate to acknowledge that the recent data on real activity have been favorable, and so I think it's appropriate to see the stronger description of the labor market and real activity. I think the language on inflation compensation is very important, so I'm glad to see that it's in there.

On this question of how to capture developments in the global economy, I think we have been following a very puzzling pattern of not talking about it in the statement and having the minutes do all the work. I think that's the wrong approach to be taking. If you look at the forecasts, the amount of dollar appreciation and weakening of foreign economic growth that we have already seen have materially influenced our forecasts, both through core import prices and through net export channels. It's substantial, it's material, it's persistent, and that's even after

this adjustment was made to reduce the multiplier. I think, as Governor Fischer said, it does affect our assessment of conditions in the U.S. economy. I think we should try to capture it from that perspective. I also agree that we don't want to suggest that uncertainty has increased somehow. I think we could find a way of doing it in paragraph 2. Let me make a suggestion. We could say, "While recognizing continued headwinds from the global economy." That doesn't say anything about the ECB's action. It just recognizes the reality that we are facing continued headwinds from the global economy.

I also think the Governor Fischer's suggestion of a modification to the subsequent paragraph is appropriate. Again, I think it does affect our monetary policy deliberations, and I think I have as high sensitivities as anyone in this room as to how we work on international diplomacy surrounding exchange rates. I think both modifications are very appropriately cautious and do not directly address the exchange rate, as I think we should not do. Thank you.

CHAIR YELLEN. Thank you. President Fisher.

MR. FISHER. Thank you, Madam Chair. People know where I stand on policy, and I'm not going to comment very much except for say that I, probably longer than anybody at this table, have been advocating that we take into account the effects of globalization on monetary policy. In fact, we established, at the Federal Reserve Bank of Dallas, the Globalization and Monetary Policy Institute. Ben Bernanke announced it at a speech at Stanford University. Unfortunately, he got the wording wrong. Called it Globalization Institute on Monetary Policy, which gives us the acronym GIMPY, which I really don't like.

I'm quite sympathetic to Governor Fischer's point. I would not have the bracketed language in paragraph 2. I would consider, or ask you to consider, his recommendation for paragraph 3, if it's qualified by global circumstances as they affect the domestic economy. Yet,

having said that, I think injecting it now might lead to some of the concerns that were raised by President Williams and others. I would just suggest you consider it. I don't think it fits into paragraph 1. The only place in which to put it is paragraph 3, if you put it there at all. That's my comment on alternative B.

I want to say that I got here early today. I sat in this room by myself. This is my last meeting. I took a selfie. [Laughter]

MR. TARULLO. On a Fed BlackBerry?

MR. FISHER. Yes, on a Fed—well, these are the carrier pigeons of the modern age. But they can take pictures, so I took a selfie.

MS. BRAINARD. Can we find it on Twitter?

MR. FISHER. No. I did share it with my children, however. I sent it to my children just simply to say what a great privilege it has been for a decade to sit at this table in this room with some of the most brilliant, earnest, devoted, articulate people I have had the pleasure of serving with in Washington. I have served in two Administrations before this. This is the most civil and dignified forum in this city. I just wanted to thank you all. Thank you, Madam Chair.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I support alternative B. With inflation running well below our objective and the outlook abroad still very uncertain, it's not time to signal that liftoff is likely at one of the next two meetings. In terms of timing, I'm still inclined toward June rather than later, but my probabilities attached to June have slipped a bit, as the declines in both actual inflation and market-based measures of inflation compensation have become more significant.

In our public comments, though, I still would very much like to keep June on the table, because the gap between our own views and what is priced into markets is already quite large, and I don't want that gap to grow any larger. I'm worried, basically, that there's this very large gap and we'll say, "Oh, we can't move because the markets will react very, very violently." That's not a good situation to be in—one in which monetary policy is constrained because of our fears that financial market conditions will react too violently to what we do. I think we very much want to keep June on the table in terms of market expectations. In terms of the language, I'm happy to accept the suggested changes to paragraphs 2 and 3 on the international side.

Finally, let me just, as the Vice Chairman, say a few things about Richard Fisher and Charlie Plosser's contributions to this Committee. I think it's fair to say, speaking for myself, we didn't always agree on everything. But when we agreed, you were very worthy allies. When we disagreed, you were very worthy opponents. I very much appreciate your contributions, as everyone else around this table does, to the Federal Reserve and your commitment to public service. I think that your willingness to test and challenge the conventional wisdom was very valuable, and I think it shows the value—this is something that Chairman Bernanke used to talk about a lot—of having a monetary policy set by a Committee, with individuals of diverse backgrounds and views. I know that even when I didn't agree with you at times, what you had to say made me think much harder, and very much contributed greatly to the quality and debate of this Committee. Thank you both for your service.

CHAIR YELLEN. Okay. I think the issue we need to decide is how to deal with "international," and we have two suggestions on the table. I'll start with Governor Brainard's; she suggests replacing the bracketed "although" with "while recognizing continued headwinds from the global economy." Let me ask if there is any support for that change as opposed to

adding “international.” Okay. I’m not seeing a broad range of support. I know it’s late in the day to be doing this.

Okay. Then, I think I’ve heard widespread support to get rid of the bracketed language in paragraph 2—so I propose doing that—and a diversity of views on whether to add “international” in paragraph 3. I think my own view on this is that foreign developments are playing a major role in our assessment of the economy. It will be noticed. I’m not quite sure how it will be interpreted, but adding that word doesn’t involve taking a view on whether things are more or less uncertain. There are a range of things we’re taking account of—oil prices, the dollar, the global economic outlook in different parts of the world, geopolitical developments. It’s in a sentence that says our assessment of our progress takes into account a lot of different things. To me, it’s relatively innocent and could stay there for a long time. It’s not the kind of addition that puts us in a position of asking, “What do we do next time we have to modify it in some way?” At least to my own mind, Governor Fischer’s suggestion is well within the acceptable range, but I certainly did hear concerns about adding anything at this point that would focus on international developments or be a change that we would be forced to live with. I guess what I’m going to do is ask for a show of hands. Who would be in favor of adding “international”?

MR. TARULLO. Madam Chair, you are in favor of it?

CHAIR YELLEN. I certainly would be supportive.

MR. TARULLO. Okay. Then, I will.

MR. EVANS. I’m willing to follow your advice.

MR. TARULLO. Yes. I feel the same way.

CHAIR YELLEN. Okay. Can I see who would be opposed?

MR. LACKER. I wouldn't dissent on it. In case you're wondering. [Laughter]

CHAIR YELLEN. Thank you for that.

MR. KOCHERLAKOTA. Thanks for clarifying. [Laughter]

CHAIR YELLEN. Let me propose, then, that we vote on alternative B with the bracketed language in paragraph 2 removed, and in 3, the words "and international" inserted before "developments." It would be "and readings on financial and international developments." Matt?

MR. LUECKE. All right. This vote will be on alternative B, which is on pages 6 and 7 of Thomas's handout, with the changes indicated by the Chair: the addition in paragraph 3, and without the language in brackets in paragraph 2. It would also be on the directive for alternative B, as depicted on page 11 of Thomas's briefing.

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. I guess all I need to tell you at this point is that we will meet next on Tuesday and Wednesday, March 17 and 18.

MR. TARULLO. St. Patrick's Day.

CHAIR YELLEN. I did know that.

VICE CHAIRMAN DUDLEY. Wear green.

CHAIR YELLEN. Okay. I'll do that. We're going to have a farewell luncheon for President Plosser in Dining Room E of the Martin Building. Everybody is invited, so we look forward to seeing you across the street.

END OF MEETING