

**Meeting of the Federal Open Market Committee on
January 29–30, 2013**

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 29, 2013, at 2:00 p.m., and continued on Wednesday, January 30, 2013, at 9:00 a.m. Those present were the following:

Ben Bernanke, Chairman
William C. Dudley, Vice Chairman
James Bullard
Elizabeth Duke
Charles L. Evans
Esther L. George
Jerome H. Powell
Sarah Bloom Raskin
Eric Rosengren
Jeremy C. Stein
Daniel K. Tarullo
Janet L. Yellen

Christine Cumming, Richard W. Fisher, Narayana Kocherlakota, Sandra Pianalto, and Charles I. Plosser, Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams, Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

William B. English, Secretary and Economist
Deborah J. Danker, Deputy Secretary
Matthew M. Luecke, Assistant Secretary
David W. Skidmore, Assistant Secretary
Michelle A. Smith, Assistant Secretary
Scott G. Alvarez, General Counsel
Thomas C. Baxter, Deputy General Counsel
Steven B. Kamin, Economist
David W. Wilcox, Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, James J. McAndrews, Stephen A. Meyer, David Reifschneider, Daniel G. Sullivan, Christopher J. Waller, and William Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

Nellie Liang,¹ Director, Office of Financial Stability Policy and Research, Board of Governors

¹ Attended Tuesday's session only.

Jon W. Faust, Special Adviser to the Board, Office of Board Members, Board of Governors

James A. Clouse and William Nelson, Deputy Directors, Division of Monetary Affairs, Board of Governors; Mark E. Van Der Weide, Deputy Director, Division of Banking Supervision and Regulation, Board of Governors

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

Joyce K. Zickler, Senior Adviser, Division of Monetary Affairs, Board of Governors

Eric M. Engen, Thomas Laubach, and David E. Lebow, Associate Directors, Division of Research and Statistics, Board of Governors

Beth Anne Wilson, Deputy Associate Director, Division of International Finance, Board of Governors

Karen M. Pence and Stacey Tevlin, Assistant Directors, Division of Research and Statistics, Board of Governors

Jeremy B. Rudd, Adviser, Division of Research and Statistics, Board of Governors

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

Andrew Figura, Group Manager, Division of Research and Statistics, Board of Governors

John C. Driscoll and Jennifer E. Roush, Senior Economists, Division of Monetary Affairs, Board of Governors; Ruth Judson, Senior Economist, Division of International Finance, Board of Governors

Jonathan D. Rose, Economist, Division of Monetary Affairs, Board of Governors

Sarah G. Green, First Vice President, Federal Reserve Bank of Richmond

David Altig, Jeff Fuhrer, Loretta J. Mester, Glenn D. Rudebusch, and Mark S. Sniderman, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Boston, Philadelphia, San Francisco, and Cleveland, respectively

Ron Feldman and Lorie K. Logan, Senior Vice Presidents, Federal Reserve Banks of Minneapolis and New York, respectively

Evan F. Koenig and Steven M. Friedman, Vice Presidents, Federal Reserve Banks of Dallas and New York, respectively

Matthew D. Raskin, Markets Officer, Federal Reserve Bank of New York

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

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January 29 Session

CHAIRMAN BERNANKE. Good afternoon, everybody. This being January, this is our annual organizational meeting. So let me be the first to welcome Presidents Bullard, Evans, George, and Rosengren to the Committee. The first item on the agenda is the election of Committee officers. I need a nomination for Chairman.

MS. YELLEN. I would like to move the nomination of Ben Bernanke as Chairman.

CHAIRMAN BERNANKE. Thank you. Other nominations for discussion? [No response] Without objection. Thank you. Vice Chairman?

MS. YELLEN. I would like to move the nomination of Bill Dudley as Vice Chairman.

CHAIRMAN BERNANKE. Other nominations or discussion? [No response] Without objection. Thank you very much. For agenda item 1.C, “Staff Officers,” the names were distributed with the agenda. Debbie, do you have them?

MS. DANKER. Yes, I do. Secretary and Economist, Bill English; Deputy Secretary, Debbie Danker; Assistant Secretaries, Matt Luecke, Dave Skidmore, and Michelle Smith; General Counsel, Scott Alvarez; Deputy General Counsel, Tom Baxter; Assistant General Counsel, Rich Ashton; Economists, Steve Kamin and David Wilcox; Associate Economists from the Board, Tom Connors, Mike Leahy, Steve Meyer, Dave Reifschneider, and Bill Wascher; Associate Economists from the Banks, Jamie McAndrews, Geoff Tootell, Dan Sullivan, Chris Waller, and Troy Davig.

CHAIRMAN BERNANKE. Comments? [No response] Without objection. Thank you. Item 2 is “Selection of a Federal Reserve Bank to Execute Transactions for the System Open Market Account.” New York is, fortunately, willing to serve. Comments? [No response]

Without objection. Thank you. Item 3 is the selection of a Manager for the SOMA. Simon Potter has indicated he's willing to serve. Questions? [No response] Without objection. Thank you. The Federal Reserve Bank of New York will have to formally approve that as well. What are the odds there, Bill?

VICE CHAIRMAN DUDLEY. Pretty good.

CHAIRMAN BERNANKE. Item 4, "Proposed Revisions to the Authorization for Domestic Open Market Operations." These were circulated in a January 23 memo from Simon Potter. A couple of revisions are proposed. Simon, would you like to briefly describe them?

MR. POTTER. Thank you, Mr. Chairman. At its first meeting each year, the Committee reviews the Authorization for Foreign Currency Operations, the Foreign Currency Directive and related procedural instructions, and the Authorization for Domestic Open Market Operations. With regard to the domestic open market operations, I recommend that the authorization be renewed with two changes.

The first proposed change entails a broadening of the authority under paragraph 6. As currently drafted, the Domestic Authorization authorizes and directs the Desk, on instruction of the Chairman, "to adjust . . . the degree of pressure on reserve positions and hence the intended federal funds rate." This authority enables the Chairman to take action during an intermeeting period, when it is not feasible to consult with the full Committee before action is needed. With the current high level of excess reserves, it is possible that U.S. dollar funding markets may be disrupted in a manner that does not directly affect reserve positions or the federal funds rate. Given that this is the case, I am requesting that the authorization be altered in order to allow the Chairman to instruct the Desk to undertake open market operations to address such market disruptions in exceptional circumstances. For example, if, as a result of a natural disaster, secured funding rates increased to high levels while the federal funds rate remained within the target range, there could be a risk of a broader, more systemic disruption to the functioning of asset markets. In this case, conducting repurchase operations with dealers could potentially alleviate such market strains and warrant immediate action.

The second proposed change is to address an inconsistency in the language describing the Committee's long-run objectives as stated in the Domestic Authorization relative to those stated in the FOMC statement, the Committee's public statement of its longer-run goals, and section 2A of the Federal Reserve Act. As is, the Domestic Authorization refers to "the Committee's long-run objectives for price stability and sustainable economic growth" rather than "to foster maximum employment and price stability." I recommend a change to the language of the Domestic Authorization to the latter clause to be consistent with these statements.

In addition to these changes, I would also like to update the Committee on two items related to the Domestic Authorization. First, as you know, the System Open Market Account contains a significant amount of agency debt and agency MBS, and it continues to conduct transactions in MBS securities as part of the ongoing purchase program as well as the reinvestment policy adopted by the Committee. As such, I recommend a continued suspension of the Guidelines for the Conduct of System Operations in Federal Agency Issues. Second, the current authorization allows the Desk to utilize third-party agents, such as asset managers and custodian banks, in its agency MBS operations. Although the Desk conducts all agency MBS trading internally, we continue to require services for a variety of clearing, settlement, custodial, and analytical activities, and thus the language about the use of agents in the authorization remains necessary at this time. No Committee vote is needed related to these two actions.

Turning to foreign currency operations, the Desk conducts such operations under the terms of the Authorization for Foreign Currency Operations, the Foreign Currency Directive, and the Procedural Instructions with Respect to Foreign Currency Operations. I recommend that the Committee approve the Foreign Currency Directive as it currently stands. However, I recommend that the Committee approve the Authorization for Foreign Currency Operations and the Procedural Instructions with Respect to Foreign Currency Operations with one amendment to each. Please note that the vote to reaffirm these documents will include approval of the System's warehousing agreement with the Treasury.

The proposed amendments to the Authorization for Foreign Currency Operations and the Procedural Instructions with Respect to Foreign Currency Operations would allow the Desk to undertake small-value operations against the full range of foreign transactions that the Desk is authorized to conduct. This change would be made for the purpose of allowing for prudent testing of operational readiness and is similar in purpose to the amendment that the Committee approved to the FRBNY's Authorization for Domestic Open Market Operations in June 2012. The change would cover small-value currency swap operations with foreign central banks, including those to facilitate provision of U.S. dollar liquidity to central counterparties abroad, as described in an October 2012 note to the FOMC. Small-value transactions of this type would help ensure that no technical obstacles exist should such facilities need to be activated. The proposal also establishes that the Desk will provide notice to the Committee prior to conducting such transactions and limits the total amount of these transactions to \$2.5 billion per year. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Let's break these up. Item 4 is the Authorization for Domestic Open Market Operations. As Simon mentioned, there are two proposed revisions: One is to give the Chairman the ability to respond to extraordinary circumstances in funding markets, and the second is really just a language change to harmonize

the language in the authorization with our statement of longer-run goals. Are there questions?
President Fisher.

MR. FISHER. I support these recommendations. I'm just curious: If the Chairman is indisposed, is it the Vice Chairman of the Board of Governors or the Vice Chairman of the Committee who would substitute for the Chairman? Those are exceptional circumstances, but does anybody know the answer?

MR. ALVAREZ. Yes, the Vice Chairman of the Committee.

MR. FISHER. So the head of the New York Federal Reserve.

MR. ALVAREZ. Correct.

CHAIRMAN BERNANKE. Other questions on this issue? President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. In the circumstances that you describe, you cited a natural disaster. If we had the situation of financial instability similar to the fall of 2008, what distinguishes this authority from 13(3) authority?

MR. POTTER. First, because it's an open market operation, it doesn't require the Board's involvement; it's an FOMC authority. I think this would be very rare; it has to be an unanticipated event. There was an unanticipated nature to the situation in August 2007. At that time, the fed funds rate moved well above its target, and the existing directive worked fine for the intervention that Bill took at that point. Here we're thinking of something more like the blackout that happened in 2003. In the current situation, what might happen is that the blackout could produce big operational problems in the repo market. We might not observe that in the fed funds market, and this revision would make it easier at that point for us to ease pressures that might occur. But our estimate is that this is very unlikely to happen; it's just a contingency we put in place. If you look at what happened during Hurricane Sandy, there was a lot of pricing

pressure; however, everyone could fund themselves. When we assessed what was happening, even though the repo rate averaged at a high level, there was one funder who was paying a very high price. That was their issue, and it wouldn't have been appropriate for us to intervene in that circumstance.

CHAIRMAN BERNANKE. There are no extraordinary powers involved here. This is just the directions of the FOMC on open market operations to the Desk. Other questions? [No response] Okay. Are there any objections to the Domestic Authorization? [No response] Seeing none, okay. Thank you.

Now we turn to the Foreign Currency Operations. The only revision there—correct me if I'm wrong, Simon—is to amend the authorization and procedural instructions to allow small-value testing in foreign currencies. Any questions? [No response] Seeing none, any objections? [No response] Okay. Thank you very much.

Let's turn, then, to item 6. We'll break this up. There are a number of different documents. Let's start with the Statement on Longer-Run Goals and Monetary Policy Strategy. The revisions to this that were circulated are entirely about the fact that this is now the second year rather than the first year. There was no change to any wording or anything that bears on the substantive aspects of the statement. We did not get any comments on the circulated statement. Are there any questions or comments at this point? President Kocherlakota.

MR. KOCHERLAKOTA. Mr. Chairman, my comments are not about the specific changes, but rather about the statement in its entirety. I supported the statement, what I'll be calling the "principles statement," a year ago. Today I'd like to reaffirm my support, but even more enthusiastically. By design, the principles statement encompasses a wide number of approaches to the making of monetary policy. Nonetheless, over the past year, I have found it to

be sufficiently specific to provide valuable guidance when thinking about the appropriate stance of policy. To explain my thinking, Mr. Chairman, I think it's helpful for me to refer back to a speech that you gave in December 2004 called "The Logic of Monetary Policy." In that speech, you contrasted two approaches to monetary policy. Under what you called the "simple feedback" approach, the central bank responds in a relatively automatic fashion to the evolution of current and past variables. The Taylor rule is one example of this approach. In contrast, under the second, the "forecast-based" approach, the central bank chooses the action that it forecasts will produce the best overall results, taking account of the risks to the economy. Thus, if the central bank judges its results relative to targets for inflation and unemployment, it chooses the policy that is forecast to bring the economy closest to those targets. Lars Svensson has been a particularly vocal proponent of this approach.

As I'll describe, my reading of what will now be the penultimate paragraph of the principles statement is that it is firmly grounded in the forecast-based approach. Correspondingly, that paragraph has led me to put considerably more weight on the forecast-based approach in my own thinking about policy. The opening sentence of that key operational paragraph says that we should begin by asking, will the current path of monetary policy result in deviations between inflation and the longer-run goal of 2 percent? Equally, will it result in deviations between employment and its maximum level? The current policy path does imply such deviations. Then that same first sentence prescribes that we should adopt monetary policy actions to mitigate them. Suppose, for example, that given the current policy path, inflation is expected to run below its longer-run target over the next year or two and employment is expected to run below its maximum level. Then that first sentence implies that we should seek to mitigate those deviations by adding accommodation. Of course, decisions are more difficult when only

one of the two variables is expected to be below its desired level. For example, suppose the current policy path is expected to lead to inflation of exactly 2 percent over the next few years, but also to lead to employment being below its maximum level. Here the second part of the paragraph provides the needed guidance. It espouses a balanced approach in the situation, and this means, I think, that we should add accommodation to mitigate the employment deviation. So I posited that inflation was exactly 2 percent. Adding accommodation would end up resulting in inflation running somewhat above target. But this is, I think, what a balanced approach has to mean: that monetary policymakers are willing to follow policies that give rise to slightly positive inflation deviations in order to mitigate negative employment deviations. The Committee has, of course, explicitly evinced that kind of willingness in the December 2012 FOMC statement.

To sum up, Mr. Chairman, I have now lived with the principles statement for the past year. During that time, I have found the forecast-based approach that I read into the key operational paragraph to be a powerful and valuable tool in my thinking about policy, and I'm delighted to have this opportunity to reaffirm my support for the overall statement.

CHAIRMAN BERNANKE. Thank you. Other discussion? [No response] Hearing none, okay. Formally, this is a vote of the Committee, but given the nature of this statement, I would like to take a straw vote of all participants. Let me first ask those in favor of reaffirming this to raise your hands. [Show of hands] Any opposed? Abstentions? [Show of hands] One abstention noted. Thank you.

All right. Moving on, the next four items are the Policy on External Communications of Committee Participants, the Policy on External Communications of Federal Reserve System Staff, and the Rules of Procedure, and the Program for Security of FOMC Information. The first

three items each have an amendment. Please correct me, Scott or Debbie, if I misstate this. For the External Communications, both of them, I think the only amendment is to clarify the exact timing of the blackout period. Scott is nodding his head “yes.” On the Rules of Procedure, I believe that the only change is to amend the quorum rule so that a quorum of the FOMC requires at least one Reserve Bank president. Without this rule, the seven-member Board would be a quorum of the FOMC. Finally, for the Program for Security of FOMC Information, no amendment is being proposed at this time, though, of course, our discussion of this is ongoing, and it’s not something that has to wait till January to be amended. Are there any questions or discussion on any of these items? [No response] Is there anyone who would like to break out any of the particular items? [No response] Seeing none and hearing no objection, these items pass unanimously. Thank you.

On the topic of communications and FOMC security, as you know, Scott Alvarez and Bill English have been conducting their ongoing investigation of the information leaks that occurred last fall. It has been a very extensive effort on their part. They’ve been very thorough, but I thought I would call on Bill at this point just to give us an update.

MR. ENGLISH. Thank you, Mr. Chairman. As you know, Scott and I are conducting a review of the possible leaks of FOMC information related to the September 28 *Wall Street Journal* article by Jon Hilsenrath and the October 3 Medley Global Advisors piece by Regina Schleiger. In conducting our review, we’ve collected information from the questionnaire that we sent to all of you, as well as to a broad range of staff with access to FOMC information. We followed up by interviewing all FOMC participants, as well as most senior staff who got our questionnaire. We’re also interviewing a large number of other Board and Reserve Bank staff, including all staff members who had access to FOMC Class I information and had interactions

with Hilsenrath or Schleiger that could have informed their articles. Our interviews with staff aren't yet completed, but we hope to wrap them up soon, and we will then provide a report to the Chairman and consult with the Chairman, as indicated in the Program for Security of FOMC Information, regarding next steps. We expect that we will complete our review and report prior to the next meeting. Scott and I would be happy to say more if you'd like.

CHAIRMAN BERNANKE. Questions for Bill? [No response] I'm sorry that this has taken some time. It has been, obviously, a very extensive effort, and I hope that it will be more than just a narrow determination of the facts, and that perhaps it will be useful to understand the whole process as a way of informing our thinking about possible amendments or changes to our current program. Okay. We are organized, insofar as it is possible. We turn now to item 7 in the agenda, "Financial Developments and Open Market Operations," and I'll call on Simon Potter.

MR. POTTER.¹ Thank you, Mr. Chairman. Investor sentiment improved markedly over the intermeeting period, especially following the deal to avoid the full "fiscal cliff," with prices of risk assets in many advanced economies reaching multiyear highs. Market participants also continued to turn their attention from tail risks in the euro area to policy developments in Japan. In the United States, long-term real rates continued to increase from record low levels following the fiscal deal and amid the improvement in risk assets, but also partly in response to Federal Reserve communication.

Exhibit 1 begins with a review of trends in risk assets. As shown in the upper-left panel, global equity markets extended gains seen in recent months. The S&P 500 reached its highest level since 2007, and the VIX fell to 2007 levels. Domestic equities rose notably as the Congress acted to avoid the full fiscal cliff. Recent progress toward suspending the debt ceiling until mid-May further supported equities. More broadly, global equities benefited from continued accommodative monetary policy in a number of advanced economies and firming expectations for some pickup in global growth.

These same factors continue to support demand for credit instruments. As seen in the upper-right panel, investment-grade and high-yield spreads to Treasuries

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

narrowed over the period, and a range of other credit instruments also outperformed Treasuries.

As shown in the middle-left panel, shares of financial institutions outperformed the broader market over the period, supported by a number of sector-specific developments. In the United States, these include increased expectations for capital distributions following completion of the 2013 stress-test exercise, continued strength in mortgage originations, and rising expectations for increased net interest income. Meanwhile, the Basel Committee's decision to ease liquidity standards had an outsized impact on the shares of European financial institutions, which are generally viewed as having a weaker liquidity position relative to their U.S. peers.

Policy developments abroad also garnered significant attention over the intermeeting period. In the euro area, market participants sharply reduced expectations for a cut in the ECB's main policy rate in coming months, following comments by President Draghi at the postmeeting press conference. As shown in the middle-right panel, two-year German sovereign yields rose to their highest level since last March following the ECB meeting, and the euro appreciated against a range of currencies, including the Swiss franc, which moved up notably from the SNB's floor of SF 1.20 per euro. The continued decline in perceived euro-area tail risks also contributed to euro appreciation, a rise in core sovereign yields, and a decline in peripheral yields. Further evidencing this improved sentiment, recent Spanish sovereign bond auctions have met with strong investor demand, and Portugal issued debt for the first time since requesting EU and IMF aid in early 2011.

Market access also improved for peripheral financial institutions, prompting increased focus on the prospects for these banks to begin early repayment of funds borrowed from the ECB's LTRO facility. As seen in the bottom-left panel, LTRO funding terms remain extremely favorable for peripheral banks, though many large core banks can fund more cheaply in the market. Last week, the ECB announced initial repayment would total €137 billion, somewhat higher than anticipated. As a result, market participants now appear to expect that repayments in the first half of this year could total as much as 30 percent of the €1 trillion borrowed under the LTROs.

Following the LDP's return to power in Japan, investors remain focused on the evolution of monetary and fiscal policy. The new government is set to engage in additional fiscal expansion and has encouraged the Bank of Japan to pursue more-accommodative monetary policy. At its most recent policy meeting, the Bank of Japan introduced a 2 percent inflation target and committed to an open-ended asset purchase program starting in 2014. However, the asset purchase program should result in little balance sheet expansion, as it would mostly replace the Bank of Japan's maturing assets. The Bank of Japan also refrained from more-aggressive measures, such as lengthening the maturity of its purchases. The yen extended recent declines over the period and is about 15 to 20 percent weaker against other major currencies and those of its export competitors since investors began to price in the prospects of easier monetary and fiscal policy in November.

Your second exhibit focuses on U.S. interest rates and policy expectations. As shown in the upper-left panel, Treasury yields have risen since the December meeting. Virtually all of the increase occurred in the real component of the yield, with longer-dated breakeven inflation rates moving up only slightly. On balance, the 10-year nominal Treasury yield ended the period 30 basis points higher. Key drivers of the increase appear to be the short-term fiscal deal, improved sentiment regarding the global growth outlook, and a reduced perception of risks related to the euro area.

Fed actions and communications regarding the balance sheet also impacted interest rates over the period. Both real and nominal 10-year yields rose following the fully-anticipated December FOMC decision to continue Treasury purchases, as the maturity distribution of the purchases implied less duration extraction than some market participants expected. In addition, many market participants interpreted the December meeting minutes as suggesting somewhat less support for asset purchases to continue through year-end than had been previously assessed. Nonetheless, the Desk's most recent Survey of Primary Dealers indicates only a very modest reduction in point expectations for the size of total asset purchases. In addition, the median dealer still anticipates that purchases will continue into the first quarter of next year. Overall, as seen in the upper-right panel, expectations for the size of the SOMA portfolio at the end of this year have become somewhat more firmly centered on a level of \$3.75 trillion to \$4 trillion—consistent with about \$1 trillion of expected asset purchases in 2013. However, dealers remain very uncertain about the total size of purchases, with an average standard deviation of \$500 billion around their year-end 2014 point estimates.

The primary dealer survey also provides insight into how dealer economists expect the Committee to adjust the pace of asset purchases going forward. None of the dealers expect a change in pace for this meeting or the next two meetings. Sixteen of the dealers predict the Committee will adjust downward the monthly pace of purchases at some point. Interestingly, these dealers do not envision a smaller total amount of purchases relative to those who expect no adjustment to the pace of purchases. Additionally, none of these 16 dealers expect a reduction in the pace of purchases until the third quarter.

The middle-left panel also contains dealer responses to a question on whether the end of the program would be driven primarily by an improvement in the labor market outlook or by considerations related to program efficacy or costs. Most dealers currently believe that the program would end primarily as a result of an improvement in the labor market outlook, while very few believe that efficacy or cost considerations will be the primary factor.

As seen in the middle-right panel, expectations for the path of the federal funds rate steepened since the last meeting, due in part to reduced concerns over adverse fiscal outcomes. Following the December meeting, investors viewed the thresholds as maintaining about the same degree of policy accommodation as the calendar-based guidance. As seen in the bottom-left panel, the average dealer probability distribution for the timing of liftoff changed little. However, with thresholds-based guidance,

market participants anticipate greater volatility in the expected path of the fed funds rate as the outlook evolves, relative to the perceived quasi-time-commitment of calendar-based guidance.

Some market participants have also suggested that the switch to thresholds-based guidance could increase uncertainty about balance sheet policy as well. Primary dealers' expectations on the time between the end of asset purchases and liftoff have become less centered around six quarters, as shown in the bottom-right panel.

Your final exhibit focuses on money markets and Desk operations. As seen in the first panel, GCF repo rates declined notably, averaging 14 basis points over the first few weeks of the year compared with an average rate of 25 basis points over the fourth quarter. While there had been some expectation for repo rates to decline in the new year, the decline has been larger than anticipated. With the end of maturity extension program sales and in line with typical year-end patterns, primary dealer inventories of short-dated Treasury securities, which are typically financed in repo markets, declined somewhat. Additionally, some have cited an increase in reserve levels and the expiry of the FDIC's TAG program as factors moving money market rates lower. However, to date, there appears to be limited evidence of such a reallocation to repo or other money market products related to the TAG expiry.

Turning to Desk operations, the \$667 billion MEP was completed in late December. The purchases and sales (as well as redemptions) under the program had a combined average net duration of about nine years, consistent with our expectation heading into the program. As shown in the upper-right panel, the average duration of the SOMA Treasury portfolio extended from about five to eight years over the course of the program. The average duration of SOMA is now more than twice that of the rest of the Treasury market.

Also during the intermeeting period, the Desk began the new Treasury purchases. The Treasury operations continue to receive solid demand, with healthy bid-to-cover ratios across sectors. As shown in the middle-left panel, liquidity conditions in the Treasury market declined in line with typical year-end patterns, with volumes down and bid-asked spreads slightly wider; however, conditions have since returned to normal levels.

In the MBS market, the monthly purchases continue to proceed smoothly. As shown in the middle-right panel, the Desk is purchasing roughly 80 percent of issuance in the TBA market. Were purchases to continue at their current pace, the Desk's latest projections suggest that we would continue to purchase around this share of TBA issuance through the middle of the year. At that point, we anticipate the share increasing as issuance falls such that, toward the end of the year, purchases at the current pace would begin to draw down existing stock. As you see in the green bars on the left side of the chart, despite the recent backup in rates, we continue to purchase in the 3 percent coupon.

The main reason for this, as shown in the bottom-left panel, is that the primary rate has not risen materially since the last FOMC meeting, even though the 10-year Treasury rate has risen about 30 basis points. This has resulted in a decline in the primary–secondary spread, which is now about 60 basis points lower than its peak after the September FOMC meeting. Increasing capacity in the primary mortgage market could put some downward pressure on this spread going forward. In particular, Bank of America may increase its origination activity in the wake of its settlement with Fannie Mae over outstanding and potential repurchase claims. However, this effect might be offset by agency guarantee-fee increases that are expected to be on the order of 20 basis points to 30 basis points this year.

Overall, MBS trading activity remains orderly, with bid–asked spreads and trading volumes within recent ranges. That said, there are some market functioning indicators that suggest an increase in the scarcity of production coupon MBS. As shown in the bottom-right panel, implied financing rates for the production coupons became more negative over the intermeeting period, likely as a result of the year-end dip in issuance. Such indicators of scarcity drive our decision to postpone the settlement of securities by selling dollar rolls. Indeed, the Desk rolled about 16 percent of expected settlements from January to February, a level that remains within the range of dollar roll activity seen in recent months. Overall, settlement fails in the MBS market remain relatively low. Thank you, Mr. Chairman. That completes my prepared remarks.

CHAIRMAN BERNANKE. Thank you. Questions? Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you. Simon, I had one question on reconciling charts 10 and 11. Chart 10 seems to show that the forward fed funds rate has gone up, but if you look at the dealer probability distribution, the latter seems like it's extended. How do you reconcile those two? Is it because the volatility is expected to increase and, therefore, the risk premium imbedded in the forward fed funds rate has gone up? I'm not really sure how to reconcile those two.

MR. POTTER. That would be the easiest reconciliation. Implied vols, I think, have marginally increased—is that fair, Bill?—but I don't think they have increased enough to explain some of this. If you look at the modal path that's in the Tealbook, where they use flows and caps, I don't think it has changed as much as this. So it could be something about how we translate from the Eurodollar market, although I believe that OIS shows something similar to

this. Again, we don't have good control of matching these two, which is another way of saying we don't have a good explanation.

VICE CHAIRMAN DUDLEY. Okay.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. First, just an observation from looking at your chart 1 of what's happened with equity markets for 3.8 years in. The average duration of a bull market since 1932 is more than 4.7 years. And we've had longer ones, so, so far so good. However, last year, just for entertainment value, was an interesting year, because in only one year before this have we seen the first trading day of the year be up more than 1 percent than the last trading day, and that year was 1929. Just to cheer people up on this sunny day.

My question is about figure 7 and figure 9. I hope this is the right time to raise it because I think it would be very helpful, Simon, in terms of getting to the Chairman's question of how we prepare for March. I believe that we pretty much know where we're going, but let's assume we maintain the current course as indicated in alternative B, which we'll talk about tomorrow. It would be interesting to see what happens with our portfolio under different time frames as rates go to 3 percent, 4 percent, 5 percent, and 6 percent. By my calculation, when the 10-year goes to 4 percent, the price will drop to 81—this is rough because it depends on which minute you look at it. That would be roughly a 16 percent depreciation; that's one-sixth of value or something. I'm just trying to get a sense, as we talk about costs, of what the tradeoffs are if rates reach certain levels. We broached this at the last meeting, but I think it would be especially helpful coming from the Desk, which can do these numbers. And I'd say take rates up to 6 percent, just so we get a sense of this whole issue of remittances or deferred assets for the Treasury. And I would like to formally request, unless the Chairman of the Committee disagrees, that the Desk

give us a little bit of analysis because I think you're the place to do it and where it's most easily done. It would just help frame the argument.

We spent a great deal of time at the last meeting on efficacy, which the Chairman particularly stressed in the paper that was handed out. So what surprised me in your presentation, in chart 9, was the way the dealers look at efficacy in terms of what might motivate us and how they expect us to be driven by efficacy or costs. Obviously they view us as being driven by the employment numbers; I believe that's what that table says. I just wonder, for the Committee to consider, whether or not we should be concerned about that; I don't know. Mr. Chairman, you made a very good presentation at the last meeting with that handout. We talk a lot about efficacy, and we are assessing costs always. Again, this is a population group that may be driven by its own concerns, but it doesn't look like the benefit–cost tradeoff is really yet something that we have been able to communicate relative to being driven by the employment target. Am I misreading that?

MR. POTTER. Well, you are reading the table in the right way. It shows the number of dealers that think that the purchases would end because of the efficacy. In the written comments and dealer commentary, you see more nuance in that. “Efficacy” could mean a lot of things for them, and it is a little bit hard to unbundle that from how much the labor market does improve. But I would say that I wasn't particularly surprised by this, given the way that we asked the question. We could ask the question a slightly different way, which would be more leading perhaps, and then you might see a different answer. But we are just asking for, really, one point here.

MR. FISHER. The reason I raised the question is simply because if this is something that we do take into serious consideration, might this be telling us—and, again, it's the way you ask

the question—that we need to communicate this in a different way or perhaps even more effectively than I think it has been communicated so far? It’s fairly effective.

CHAIRMAN BERNANKE. Governor Duke.

MS. DUKE. I just want to make sure I understand your answer a little bit, Simon. It seems to me that somebody could answer, “I think that the purchases will end because of the labor outlook,” because they think the labor outlook will get better before you hit a cost or efficacy issue, or they could say that because they think you are more serious about the labor outlook and less serious about costs and efficacy. So was there anything in the comments to distinguish the two?

MR. POTTER. There are some dealers who think that the labor market outlook improvement will be hit before the efficacy declines. I think people are reasonably humble on the efficacy. There is more feeling, from reading the written comments, that the mortgage purchases might be more efficacious. But they are, most of the time, trying to answer what they think you will do. And that can be hard for them because they have their own strong views as well.

CHAIRMAN BERNANKE. Governor Tarullo.

MR. TARULLO. I had the same question as Betsy. Thank you.

CHAIRMAN BERNANKE. President Pianalto.

MS. PIANALTO. Simon, I have a question about the expectations for the path of the 10-year Treasury rate over the next few years. It appears from the 10-year Treasury forecast on page 95 of Tealbook, Book A, that the Board staff is predicting a distinctly steeper yield curve than the Blue Chip consensus over the forecast horizon. For example, at the end of 2014, the Tealbook has the 10-year Treasury a bit below 3½ percent, while the Blue Chip has it slightly

above 2½ percent, which leaves a difference of about 75 basis points at the end of 2014. Does the Desk have any insights as to whether market participants are more in the Blue Chip forecast camp? And, if the yield curve does steepen more along the lines that the Board's staff is forecasting, do you see any financial stability issues arising from such a sharp and unanticipated climb in that 10-year Treasury?

MR. POTTER. The Blue Chip economists and the Blue Chip financial are a little bit more sanguine on the future path of the 10-year compared with where the Tealbook is. I won't speak for the Tealbook, but I believe they are taking into account the term premium and where short rates will be; and that is a rigorous modeling exercise. I am not quite sure how the people who contribute to the panel derive theirs; they might have lots of different considerations. In talking to market participants who are not forecasters, you do see rising concerns, as we have for the last four years, that rates will be moving up and will lead to financial stability issues. I would say it is a little bit more intense this year—I don't know if Bill would probably agree with me?

However, this year there is some feeling that money will be moving into the stock market and that the kinds of risks that are out there don't seem as salient as they have more recently, which seems a more positive story. We haven't heard any compelling financial stability issues or problems that would come right now from a mild increase in interest rates. However, for a sharp one, I think there is a lot of uncertainty out there because we have had low rates for such a long time, so just the fear from that might cause some disruptions.

MS. PIANALTO. Again, we will talk more about it, obviously, when we talk about some of the costs and risks. But from your comments, I am concerned that financial firms may not be as well prepared to weather the kind of increases that we are forecasting in the Tealbook.

MR. POTTER. I believe the stress tests will look at this a little bit in one part of the sector. I don't know if someone else from the Board staff wants to talk because I know there is a lot of work going on.

MR. ENGLISH. We are going to be looking into this for the March meeting and plan to report on what we think in terms of institutions' sensitivity to increases in long-term rates and to think a little bit about the odds of a big increase in long-term rates.

MS. PIANALTO. That would be very helpful.

CHAIRMAN BERNANKE. Vice Chairman, a two-hander?

VICE CHAIRMAN DUDLEY. Yes. My view would be that the market doesn't have a huge vulnerability to an increase in long-term rates, but the risk of a big increase in long-term rates is probably considerably higher than normal. It's more a fear about the big increase as opposed to the fact that people have particular vulnerabilities to long-term rates going up.

CHAIRMAN BERNANKE. Fear is a good thing. President Plosser.

MR. PLOSSER. I have a question. At the last meeting in December, we switched our forward guidance from dates to economic-state-contingent policies. And it seems to me that we ought to try to think hard—and I am going to talk a little bit about this in the SEP discussion tomorrow—about not using questions or data that focus on the dates and try to move our presentations of both data and questions toward what we want them to focus on, which is economic conditions. With that in mind, it seems like question 11 on the dealer survey focuses on when they think liftoff is going to be. So it gets the dealers thinking about dates instead of economic conditions. My question for the folks on the Desk would be, as you form these questions, does it make sense to reconsider how we are asking them and what questions we are asking in order to get things aligned with the way we are trying to conduct policy?

MR. POTTER. That is a really crucial issue that we think through, and we don't want to ever signal anything with the survey. We did ask an extensive question on the economic thresholds, and we learned there that the most likely economic situation when the fed funds liftoff happens is around 2 percent for the PCE inflation rate and around 6½ percent for unemployment. We investigated a little bit whether people interpret it as a threshold or a trigger. They definitely, on average, seem to interpret it as a threshold. However, you get some dealers who have quite different views about how we will react. One dealer, despite being questioned many times, really thought the first liftoff would occur at 5 percent for the unemployment rate, basically independent from inflation, and thought that the participation rate was a driver there. What is in chart 11, I think, captures some of that nuance. So as an unconditional distribution, in that sense, I think it is useful for us. Plus, we can use it as a metric to compare with previous meetings. But when it comes to the asset purchases, I think one thing we could do is ask a probability distribution question that doesn't have the end of the year in it. Using the end of the year, we thought, was reasonably neutral, but one could try to redo that. Most of the questions do not have specific dates in them.

MR. PLOSSER. Right. I actually thought that chart 8, where you asked about asset holdings, was a better way to ask that question—not asking, “So when will they end?” but “What do you believe the size of the balance sheet will be at some date?” I was just wondering whether we could do something similar to this other question, keeping with the same spirit.

MR. POTTER. We will definitely look into it, subject to the disclaimer that policymaker input is not used in this survey.

CHAIRMAN BERNANKE. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I want to ask a question about exhibit 2, chart 8, which President Plosser was just referring to. You characterized this, Simon, as saying that there is a lot of uncertainty about the ultimate size of the asset purchase program. But would you say that that's sort of consistent with the amount of uncertainty about the outlook for the economy, so that's why you get a dispersion? It's just because different dealers have different views about the evolution of the economy; therefore, they have different views about the eventual size of the balance sheet.

MR. POTTER. So, remember, the decomposition that we do calculates disagreement. And the disagreement would have different point views regarding where the economy is going to go. And then you take the uncertainty around each of those points. And for this one, I think it's around \$300 billion because this is the end of 2013. So I believe that it is a combination: The main driver is economic uncertainty, and then there is some uncertainty about what the reaction function of the FOMC is.

MR. BULLARD. Thank you.

MR. POTTER. It is still substantial: A \$300 billion standard deviation is, if you multiply by two, a big plus or minus.

CHAIRMAN BERNANKE. I'm sorry. Which graph was that?

MR. POTTER. That's figure 8. And then, it's hard to see because we do some analytics to get each dealer's average uncertainty out.

CHAIRMAN BERNANKE. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. I will be brief because I think I am just going to follow along with what President Bullard and President Plosser have just been emphasizing. With thresholds, you would expect the univariate measures of uncertainty to expand. If people thought that the

date was relatively a commitment, and now they think that the date will be moving with economic conditions, there will be more variance. What we are actually hoping for is that there will be the right kind of covariance—that they are thinking that the date will be further out when conditions worsen and closer in when conditions get better. So I will just echo what President Plosser was saying, knowing that you are bound not to take my input on the survey. I would, nonetheless, say that anything you can do to try to get at the covariance as opposed to simply the variance, I think, would be helpful.

MR. POTTER. Okay. We will try, subject to human capacity to write down a covariance.

CHAIRMAN BERNANKE. Doesn't the question about what the conditions will be at the time of liftoff address that?

MR. POTTER. It partly does, but it doesn't get at the covariance unless you can somehow use the distribution of dealer responses for that.

CHAIRMAN BERNANKE. I see. President Evans.

MR. EVANS. There is a lot of commentary about the way they'd like this chart to be displayed. I just want to indicate that I am not so bothered by this bar chart around dates. I interpret it as giving me some information about the threshold that they think is going to be the appropriate margin for liftoff—although I take President Kocherlakota's point that, is that really in line with the distribution that is underlying their forecast? I don't know, so clarifying that would be useful, but I wouldn't necessarily go away from this. These are the dealer economists. I assume that somewhere else they probably have an unemployment rate forecast—which they may or may not live and die by—that you can correlate with this to see if it's informative.

MR. POTTER. I think Bill showed that in his last briefing. And I'm not sure if he's showing it this time. I think you are—is that right?

MR. ENGLISH. I am showing the unemployment rates at the expected end of the purchases. You will see that either later today or tomorrow.

CHAIRMAN BERNANKE. Other questions? [No response] Okay. Well, thank you very much. Now we need a vote to ratify domestic open market operations since the December meeting. Without objection? [No response] Thank you. Are we ready? Excellent. We turn now to item 8, “Economic Situation,” and I will call on Eric Engen to lead it off.

MR. ENGEN.² Thank you, Mr. Chairman. We will be referring to the materials that were distributed entitled “Staff Presentation on the Economic Outlook.” The first exhibit highlights some of the recent data that informed our near-term outlook. As shown in the inset box of the upper-left panel, the real PCE-relevant component of retail sales increased solidly in November and December, following a decline in October that was probably hurricane related. Light motor vehicle sales also were higher in the last two months of the fourth quarter. As indicated by the middle blue bar, we still estimate that total real PCE rose at an annual rate a little above 2 percent in the fourth quarter. In the first quarter, we now anticipate that real PCE growth will only slow to a 1¾ percent pace, about 1 percentage point above our December forecast, reflecting the effects of the unexpected—at least to us—extension of EUC benefits through this year, which was part of the recent fiscal cliff deal.

As shown to the right, the recent increases in household spending occurred even though consumer sentiment declined sharply in December, and sentiment edged down further in early January. We had expected sentiment to decrease in the face of fiscal policy uncertainty and the prospect of higher taxes, and these declines appear consistent with that expectation.

In the business sector, orders and shipments of nondefense capital goods excluding aircraft (shown in the middle-left panel) have been better than expected, with new orders rebounding in recent months after their earlier sharp declines and shipments moving higher.

As shown to the right, although the ISM nonmanufacturing index of business conditions (the red line) has improved, both the national manufacturing index (the black line) and the average of the more recent available regional indexes (the green

² The materials used by Mr. Engen and Ms. Wilson are appended to this transcript (appendix 2).

line) remain subdued. These indicators are broadly consistent with the moderate pace of E&S spending that we project in the near term.

Recent news on residential construction was largely in line with our expectations. As shown in the bottom left, single-family housing starts and permits continued to trend higher through December, though the level of activity remains low.

Although these spending indicators were consistent with, or somewhat better than, what we had anticipated, surprisingly weak readings for several other volatile spending categories—in particular, inventory investment, defense purchases, and net exports—led us to mark down our estimate of fourth-quarter GDP. As indicated in line 1 of the bottom-right table, we now estimate that real GDP growth was negligible in the fourth quarter, $\frac{3}{4}$ percentage point lower than our December estimate. However, we judge that this downward surprise provides little signal about the strength of the recovery. As shown on line 3, private domestic final purchases, or PDFP—a category of real GDP that excludes the volatile components I just mentioned and often gives a better reading on the pace of demand going forward—appears to have risen at a solid rate of $3\frac{1}{2}$ percent last quarter. In the current quarter, we expect real GDP to increase at an annual rate of $2\frac{3}{4}$ percent, about 1 percentage point higher than our December forecast, largely because of the upward revision to PCE growth.

The next exhibit summarizes our medium-term outlook. As noted in the upper left, the fiscal deal enacted early this month was mostly in line with our expectations, though, as I mentioned previously, it unexpectedly extended the EUC program through this year. The deal postponed the impending spending sequestration until March 1, and we have continued to assume that the sequestration will be replaced by a package of more-gradual deficit-reduction policies, although the resolution of this issue is highly uncertain. Recent legislative developments point to the federal debt limit probably being pushed off, effectively, until early this summer, but with the issues associated with both the sequestration and the soon-to-expire continuing resolution still unresolved, considerable fiscal policy risk remains in the coming months.

As shown by the blue bars in the top right, given the EUC extension and our sequestration-related assumptions, the staff's fiscal impetus measure is estimated to be a little less negative this year relative to our December projection, and slightly more negative in 2014 when the EUC program expires. If the full spending sequestration was allowed to permanently take hold, our fiscal impetus measure would be about $\frac{1}{2}$ percentage point more negative this year.

As shown in the middle left, we continue to monitor measures that might capture household and business views of government policies, such as the Baker, Bloom, and Davis index of policy uncertainty (the blue line) and the diffusion index of respondents' opinions of government policy from the Reuters/Michigan survey (the red line). Recently, the policy uncertainty index has moved higher, while the Michigan-based policy opinion measure has edged down as more respondents

reported having an unfavorable view of government policy. However, the movements in both measures have not been nearly as dramatic as during the debt-ceiling debate in 2011.

With regard to our monetary policy assumptions, as noted to the right, in this projection we implemented an interpretation of the Committee's threshold-based guidance for the federal funds rate, but with little quantitative effect on our baseline assumption. In addition, we left in place our assumption that the Federal Reserve's asset purchases will total \$500 billion this year and that market participants continue to expect around \$1 trillion.

As noted in the bottom-left box, we also made some small changes to our supply-side assumptions. The unemployment rate has declined by more than we expected in recent months given estimated GDP growth, and after considering a number of plausible explanations, we chose to partly resolve this puzzle by making two small adjustments. First, productivity has been somewhat lower than expected, and, in response, we edged down our estimate of trend multifactor productivity growth—and thus potential GDP—in recent history and in 2013. Second, it appears possible that disruptions to labor market functioning that we think were associated with the last recession have started to dissipate earlier and more gradually than we previously assumed, although as Jeremy Rudd discussed in his pre-FOMC briefing, the evidence here is mixed. Nevertheless, we have nodded toward this interpretation and now assume that the natural rate declines gradually starting in 2012, reaching 5¾ percent at the end of 2015. In previous forecasts, the natural rate was flat at 6 percent through 2014 and then moved down to 5¾ percent by the end of 2015.

All told, with revisions to other conditioning factors in our forecast, such as financial conditions, also being small, our medium-term projection for real GDP growth—shown in the bottom-right panel—is very similar to our December forecast.

The next exhibit summarizes some key features of our labor market outlook. As shown in the upper left, total employment as measured in the establishment survey increased in the fourth quarter at an average pace of around 150,000 per month, which was close to our expectations, as downward surprises to government employment were offset by better-than-anticipated gains in private employment. As shown to the right, we expect average employment growth will remain at around that pace in the first half of this year and then pick up slowly as GDP accelerates, with average job gains of about 225,000 per month over the second half of next year. The projected pace of employment increases in the second half of this year and beyond is similar to our December forecast (the dark gray bars) and is only slightly lower than the forecast we made in September (the light gray bars), when the Committee first announced that its asset purchase decisions would be linked, at least in part, to an improvement in the labor market outlook.

If our forecast for the pace of job growth is to come about, we think that we will have to see a substantial pickup in the pace of hiring. As shown in the middle left, the gross private-sector hiring rate measured in the JOLTS survey (the black line) has

risen only modestly since the recovery began and has shown no net improvement in the past year, while the layoff rate (the red line) has been running at about its pre-recession level for a couple of years.

As part of the Beige Book process, we asked the staffs at the Reserve Banks to make inquiries on several questions related to firms' hiring plans for this year. Some key results are summarized in the middle-right panel, and they appear roughly consistent with the moderate pace of job gains that we expect for this year. As shown on the first line, 38 percent of respondents in this most recent inquiry indicated that they plan to increase employment over the next 12 months, a little less than the corresponding share a year ago. Among all respondents, 40 percent indicated that low expected sales growth was an important factor restraining their hiring, while 32 percent pointed to uncertainty about government policies.

As shown in the bottom-left panel, with the recent downward surprises in the unemployment rate and our revised supply-side assumptions, we now expect the unemployment rate to be just over 7 percent at the end of next year, $\frac{1}{4}$ percentage point lower than our December forecast and $\frac{1}{2}$ percentage point below our September projection. We currently expect that the unemployment rate will reach the Committee's $6\frac{1}{2}$ percent threshold in the third quarter of 2015, one quarter earlier than in our last forecast.

Finishing up this labor market overview, as shown to the right, the labor force participation rate last quarter was one-tenth of a percentage point below our December forecast, and we have lowered it by a similar amount over the projection period.

The next exhibit reviews our inflation outlook. As shown in the top-left panel, the recent price data leave our estimates of the 12-month change in both total and core PCE prices in December at $1\frac{1}{2}$ percent. As shown to the right, we continue to expect energy prices to fall over the next few years as declines in oil prices (the black line) put downward pressure on consumer energy prices, such as the retail price of gasoline (the red line). In contrast, as shown in the middle left, food-price inflation (the red line) is expected to slightly boost headline inflation this year as the higher crop prices caused by last summer's drought continue to pass into consumer food prices.

Survey measures of long-term inflation expectations, shown to the right, have remained relatively stable. With long-term inflation expectations assumed to continue to be well anchored and with resource slack decreasing slowly over the projection period, we expect core PCE inflation—shown in the bottom left—to only edge up to 1.6 percent this year and to 1.7 percent in 2014. Total PCE inflation, shown to the right, is projected to run just a bit below core inflation, reflecting our anticipated downward trend in energy prices. Beth Anne will now continue our presentation.

MS. WILSON. Thank you. At the time of your last chart show, six months ago, the international atmosphere was dark and stormy, with the crisis in Europe posing a

great risk to global growth and a possible Chinese hard landing clouding the horizon. Today, the financial and economic climate, if not sunny, feels a bit more pleasant. European sovereign spreads for peripheral countries have fallen sharply, global equity prices are up, and volatility has dropped.

A number of by-now-familiar policy actions—listed in the top-left panel of exhibit 5—served to lighten the gloom in Europe, including ECB president Draghi’s “whatever it takes to save the euro” speech in July and the resulting Outright Monetary Transactions program; Spain’s steps to bolster its fiscal and banking sector health; additional aid for Greece; and progress on establishing a single supervisory mechanism for European banks.

As for China, economic growth, shown in the top-right panel, did slow in the first half of last year as domestic measures to cool the economy and reduced export demand from the advanced economies took their toll. However, output accelerated in the second half of last year, with growth estimated at 9.5 percent in the fourth quarter—a figure that should send the China bears into hibernation, at least for now.

Although risks have since diminished, the dicey economic and financial environment of six months ago left its mark. Total foreign output, shown by the solid black line in the middle-left panel, decelerated sharply in the second half of last year—a step-down that was deeper and broader based than we had anticipated. This step-down primarily originated from domestic weakness in the three largest economies—the United States, the euro area, and China—that was transmitted around the world, in part, through trade. As depicted to the right, after rising in previous years, real imports of these economies flattened out or declined in 2012. This weakness in import demand contributed to a self-reinforcing cycle, halting the rise in global industrial production (the blue line in lower-left panel) and leading to a drawdown of inventories (the red line), in a much milder version of the collapse in trade and manufacturing that occurred in 2008 and 2009. However, recent data point to a pickup, including the forward-looking indicators of industrial production and trade shown to the right, supported by expectations of improvement in global demand.

I discuss this strengthening in our foreign outlook in exhibit 6. As seen in line 1 of the table, after last year’s slump in the second and third quarters, when foreign output rose at only a meager 1.8 percent pace, we anticipate that growth will strengthen gradually over the forecast period. We expect the euro area (line 4) will limp out of its recession by mid-year, with economic growth climbing modestly thereafter, as financial conditions improve further and the drag from fiscal consolidation slowly wanes. As shown by the black bars in the middle-left panel, we have revised up Japanese growth $\frac{3}{4}$ percentage point to $1\frac{3}{4}$ percent this year in light of the incoming Abe government’s more-aggressive macroeconomic policy. We attribute more than half of this revision to the new administration’s fiscal stimulus package, with the remainder primarily reflecting the recent depreciation of the yen. We anticipate that the additional fiscal stimulus will be concentrated in the next four quarters and have revised down growth nearer to zero in 2014 and 2015 as the

positive fiscal impetus is reversed. In China (line 7 of the table), economic growth has been robust, with growth in industrial production (the blue line in the middle-right panel) picking up and exports (the red line) rebounding. In view of the greater momentum we see in the fourth-quarter data, we boosted our forecast for Chinese growth some this year. Elsewhere, the improvements in external demand discussed earlier are expected to support solid economic growth in the rest of emerging Asia (line 8) and in Latin America (line 9). Our forecast for foreign growth is slightly firmer than in December, reflecting improved financial market conditions, especially in the euro area, a stronger U.S. and Chinese outlook this year, and expectations for greater near-term policy-related strength in Japan.

That said, the recovery in global economic growth—both what we have seen so far and our expectations—is not one to make a mother proud. While in the emerging market economies (the red line in the bottom-left panel) the recovery has been strong enough to return output to potential in relatively short order, large output gaps remain for the advanced foreign economies (the black line). This gap would have been even larger had potential output growth not fallen significantly since before the Great Recession. By our estimates, as seen in the inset box, potential growth has fallen from 2.2 percent in 2007 to only 1.3 percent last year. Indeed, our estimate of the level of potential at the end of 2012 is now almost 5 percentage points below what it would have been had potential growth held steady. As discussed in the bottom-right panel, this decline in potential output is consistent with recent work done at the Board and elsewhere that finds that the level of potential is persistently reduced after severe recessions, in part because of significantly lower capital accumulation and sectoral shifts (for example, out of finance and construction industries) that increase structural unemployment and reduce labor force participation. This decline in the level of potential also helps explain why inflation in the advanced foreign economies has not fallen sharply over this period.

The severity of the Great Recession and the resultant decline in potential output play a big role in explaining the poor output performance of the AFEs since 2008, but are there other factors behind the weak foreign recovery? To examine this question, I use results from research I have done with colleagues in the International Finance Division, shown in your next exhibit. As described in the top bullets, in this work, we look at the experience of a large number of countries over the past 40 years during recessions and recoveries. Using regression analysis, we find that deeper recessions are typically associated with faster recoveries and longer recessions tend to be associated with slower recoveries. Using these relationships, we can compare a predicted recovery path, based on the depth and duration of the recessions following the global financial crisis, with what actually occurred. The middle-left panel presents the results of this exercise for the emerging market economies. The black line traces the average level of GDP for the EMEs, indexed to 100 at the trough of the Great Recession. The blue line provides our prediction, with the shaded area representing the 95 percent confidence band. As seen in the panel, we find that the rebound in output in the emerging market economies since the Great Recession has tracked what might be expected given the depth and duration of this recession. In

contrast, the advanced economies (in the middle panel) have underperformed, including, of course, the recovery in United States (shown to the right).

The knock-on effect of the euro-area crisis obviously plays a key role in explaining the poor performance of these recoveries. However, it is not solely to blame. As shown in the bottom panels, even before the intensification of the European fiscal crisis in July 2011, indicated by the dashed vertical line, output was underperforming in the euro area, the United Kingdom, and Japan.

What other factors might be contributing to this weakness? A recent memo by Eric Engen and Hess Chung to the FOMC goes into some of the reasons behind the surprising softness of the U.S. recovery—and many of those also apply to performance in the advanced foreign economies, as discussed in your next exhibit. In particular, the drag from fiscal consolidation has been unusual during this recovery. Average real government consumption for the advanced economies (the red line in the top-left panel) flattened abruptly after the trough of the Great Recession, in contrast to further rises in spending evidenced during the typical post-recession experience (the black line). In addition, as shown to the right, for countries such as the United Kingdom, Ireland, and Spain, the housing sector has also been a tremendous drag—with house prices still well below pre-crisis levels and construction spending (not shown) having collapsed. More generally, as illustrated in the lower-left panel, recoveries of GDP from recessions with sharp housing-price declines (the red line) have historically been slower than recoveries from other recessions (the black line).

Going forward, we expect these factors to continue to weigh on our outlook, keeping the recovery underwhelming and output gaps yawning. Specifically, fiscal consolidation is expected to hold back economic growth in the advanced foreign economies throughout the forecast (as seen in the lower-right panel), though the slowly diminishing drag does support a pickup of growth. Housing markets and construction spending are also likely to remain very weak in the United Kingdom and the peripheral euro-area countries. Finally, there may be other headwinds, such as deleveraging, bank credit constraints, or macroeconomic uncertainty, which are weighing on growth and could be slow to lift.

Turning to your last exhibit, helping to support the continued foreign recovery will be accommodative monetary policy—policy rates in the advanced foreign economies, shown in the upper-left panel, should stay low throughout the forecast period. That said, we judge that the likelihood of substantial further policy easing is limited, with one exception. Last week the BOJ introduced new easing measures, including the adoption of a 2 percent inflation target and a commitment to open-ended asset purchases beginning next year. These measures will likely not be adequate to jump-start Japan's economy, but it is possible that more forceful actions may be in the offing after Prime Minister Abe appoints new central bank leadership in April. Notwithstanding the accommodative stance of monetary policy globally, we expect that consumer price inflation (shown in the upper-right panel) will be well

contained, given continued economic slack in some countries and stable or falling commodity prices (shown in the middle left).

Our forecast for a moderate acceleration in foreign and U.S. output supports our projection of an increase in export and import growth over the forecast period, with a gradual depreciation of the dollar (seen to the right) providing an additional boost to exports and a slight drag to imports. Incoming trade data over the second half of last year show a slump in both exports (line 1 of the table) and imports (line 3), with growth well shy of what we had projected in June and below what our models would suggest, even given the lackluster pace of global growth. However, we do not think this exceptional weakness will persist. In fact, we are already seeing signs of a turnaround in the most recent trade data, which show that both exports and imports picked up in November. The glorious conclusion of all this forecasting effort is that, on balance, we expect the net export contribution to GDP growth (line 5) to be about neutral over the next few years. Thank you.

CHAIRMAN BERNANKE. Thank you. Questions for our colleagues? President Lacker.

MR. LACKER. Yes, thank you very much. I want to question Beth Anne about exhibits 7 and 8. This is based on work of yours that I'm familiar with and have cited in speeches; I very much appreciate it, and so, first, compliments. Although you didn't emphasize this, your work is a great rebuttal to the widely cited Rogoff–Reinhart stylized facts that are based on setting everybody equal to 100 at the peak rather than the trough. And on that basis, it's a very good contribution. One little technical question, and then a follow-up on that: You have 95 percent confidence intervals here. So you have a regression framework, and I take it that there are sampling errors in the regression coefficients. In addition, you have, of course, shocks on the right-hand side. So am I right that the 95 percent confidence interval includes both the coefficient sampling error and the error that would be attributed to the shocks for the equation?

MS. WILSON. Right. It is a measure that looks at the variance around the prediction, so it includes the variance of the coefficients. It also includes the deviation of the observation from its actual mean. So it takes into account both the behavior of the independent variables and where that falls and the variance of the regression prediction.

MR. LACKER. All right. So my follow-up is that, in the United States figure on exhibit 7, we fall woefully short, but on exhibit 8 in the lower-left side, the benchmark is different if you restrict attention to housing-slump recessions.

MS. WILSON. Right. As you know from the work, we have done it a couple of ways. One is to include depth and duration and whether or not you have a housing slump. If you include housing slump and the regression for predictions, the weakness in the United States is more explained but still falls on the low end of the range of experience.

MR. LACKER. In terms of the confidence band, do you have that off the top of your head? My impression was that it was pretty close.

MS. WILSON. It is on the bottom end of the confidence band so you are in the lower range of what would be expected, given depth and duration of the recession and the fact that we have had a housing slump.

MR. LACKER. Okay, all right. Thanks.

CHAIRMAN BERNANKE. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. I want to echo Jeff's remarks about how interesting I think this is, and I want to compliment the staff. I want to take off on the staff memo about the weakness in general and explaining the weakness. As most of you know, I have long been a skeptic about our ability to estimate potential output in real time. I worry about basing policy decisions on our ability to do that without understanding the importance of the uncertainty surrounding those estimates for the output gap, and we should think about that. So I think the staff memo does a good job of looking at the implications of the revisions in the potential output for the forecast going forward. Exhibit 2 of the staff memo shows that cumulative since January 2010, the revisions both in the level and the growth rate of potential

output have been pretty sizable. Now, you have made them in gradual steps over a period of time, but cumulatively they have been quite big. I think in January 2011, for example, we thought the output gap in 2011 was going to be about 5 percent; now it's 3½ or 3.7, something like that. So it has been pretty big, and the whole level of the path is lower.

My question is, have we gone back and done an exercise in how our optimal policy calculations that we do for Tealbook, Book B would have looked had we used the current supply-side estimates that you have of potential output? How different would they have looked had we known what the policy path would be? Have we done that kind of experiment? Or could you, even in those policy experiments, sort of bootstrap yourself up to produce some sort of confidence bands about those optimal paths that we look at? While we tend to look at these paths as if they are lines, there is a lot of uncertainty about them. So I'm wondering whether there is a way for us to get more information about how these revisions would have affected the policy paths that we were looking at before and then help us get a handle on uncertainty. That's my question.

MR. ENGEN. We did not do that. That is a very interesting suggestion. We could, I think, go back and look at how at different time periods, starting, say, in January 2010, when our forensic analysis started, would change from a policy perspective. I would mention that you are right that these changes to potential took place over time. A big point in time when things really changed was in the summer of 2010, when we got the BEA's revisions for GDP that showed both that the recession was deeper and that the recovery up to that point was a lot shallower. That was really a trigger point for kicking this off. We have then continued to make adjustments as information has become available and has made us rethink our supply-side assumption, as we did in this Tealbook. But we could go back and look at the question you raised.

MR. PLOSSER. That's why I brought it back to, let's say, January 2011. That is when the revisions had already kicked in; so what happens after that? I think it would be an interesting experiment. It would be interesting to understand how that would have shaped our policy perspectives going forward under these different circumstances.

MR. ENGEN. Yes. And within the experiment, it is the case that when we impose the staff's reestimate of potential on the model and then see how the FRB/US model would then explain any other errors—say in consumption or investment, for example—we do impose a monetary policy rule as well as the zero lower bound, as has been the case over this time period. So there is a feedback effect in calculating where errors do pop up—say, in consumption or investment or housing—once we have controlled for the supply-side effects. And that policy response to the different supply-side conditions is part of the process for figuring this decomposition out. But we could maybe break it out a little bit more to focus a little more directly on your question.

MR. PLOSSER. I think it would be interesting to see. And wouldn't it be true, for example, if you were in, let's say, January 2011, and you calculated from FRB/US what the unconstrained interest rate rule would be, having changed the supply-side assumptions to what they are now, that those numbers would look different?

MR. WILCOX. There is no question there is a huge amount of uncertainty here. I do also want to just point out that there is one aspect of the analytical situation that I think tempers the effect of these revisions on our optimal policy prescriptions. And I'm going to see if I can get this right before a live audience. When real GDP comes in weaker than we have projected, and particularly when it is weaker over a sustained period of time—and labor market conditions, of course, by definition have not been revised because they are measured in a separately

conducted household survey to derive an unemployment rate—one of the ways that we respond is we infer that the latent variable, potential GDP, must have been weaker in order to generate that constellation of outcomes. So the GDP gap revises by much less than one would infer from the downward revision to actual GDP. Dave Reifschneider is going to elaborate.

MR. REIFSCHNEIDER. I want to add that this is an experiment that we have talked about, and we could send something to the Committee about it. Following on the point that David just made, the optimal control exercise has as its inputs inflation relative to 2 percent and the unemployment rate relative to the staff estimate of the natural rate. Although we did raise our estimate of the natural rate, the unemployment gap did not narrow a lot because what has happened over time is that we have been continually surprised at how persistently slow the recovery has been and how slowly the unemployment rate has come down. If you went back to 2010, you would find that the optimal control's viewpoint in 2010 was: "Oh, you don't have as much of a problem as you think you have because we are going to get out of this. The unemployment rate is going to come down, albeit at a gradual pace." But in hindsight, things turned out worse than anticipated. It illustrates your point about uncertainty: In real time, the optimal control exercise would have said, "We've got a bad problem, but it's not that bad." And then, going forward month by month, the problem looked worse and worse, in terms of the continuing weakness in the data. So you have to take into account, as Eric and Hess did in the memo, the implications of commingling revised estimates of potential output with the data on real GDP and the unemployment rate.

MR. PLOSSER. I will have to think about that some more. [Laughter]

CHAIRMAN BERNANKE. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I have a couple of questions, probably for Eric. During the briefings I had in Chicago about the economy, I was reminded that the outlook for nondurables and services consumption has been somewhat weak recently. In the Tealbook and in our own forecast, consumption is a big part of the private domestic final purchases that we have been pointing to as a stronger indicator of where things are going. And the rise in nondurables and services consumption has been well under 2 percent in 2012, and the outlook is for about the same in 2013. We know that, given the downturn and the recovery, there is a good bit of pent-up demand for durable goods consumption, so the headline consumption numbers are somewhat stronger. But nondurables and services consumption is more likely to be the part that is governed by the permanent income hypothesis, so it gives a feeling about the way things are playing out. It seems to be a little more of a negative counter to some of the more glad tidings I read about in the Tealbook, which pointed to rising household wealth, rising consumer confidence, and an improving labor market. I wonder if you have any thoughts about whether that is indicative of something more underlying.

MR. ENGEN. Certainly it is the case, as you pointed out, that particularly the services component of PCE has been weak. Big components of that weakness are the BEA's calculation of housing service flows, which has been affected directly by housing market developments; another weak component has been financial services. Certainly we have been following that and are aware that services has been a component of the weakness in household spending, unlike, say, the more typical recession where durables is the big cyclical component and the rest, as you described, probably is more governed by permanent income. Certainly, in order to get the pickup in GDP over our projection, PCE is obviously going to have to contribute to the pickup, and, if our projection is right, we are going to have to see not just a durables-led increase in

spending but a broad-based increase in spending that is going to reflect several factors: increasing wealth, increased expectations of what households' permanent income is going to be, diminished uncertainty, and increased confidence. We are certainly going to have to see a pickup in those weak components of PCE in order to get our forecast.

MR. EVANS. Okay. Thank you. One other question. This picks up a little bit on some of the questions to Simon about the dealer survey and what they are pointing to in terms of the markers for ending asset purchases. In the Tealbook, you have again made the assumption that the open-ended purchase program ends in June, and I'm wondering how the Tealbook reconciles this with the language in the statement that talks about a substantial improvement in the labor market outlook, price stability, and efficacy. Looking at the Tealbook forecast, payroll employment is increasing about 165,000 a month for six months. Maybe it's the reduced variance in that. Six solid labor market reports could be one indication of more solid labor improvement, yet the unemployment rate is at 7.7 percent in the Tealbook. On the other hand, perhaps there are other margins that you are looking at regarding the efficacy. After all, President Pinalto did point to the 10-year Treasury rate increase being steeper in the Tealbook. Of course, that is incorporated into your analysis already, so that is not a surprise there. I'm assuming you don't have financial stability issues at work there either. I wonder if you could help me out with how you reconciled that.

MR. WILCOX. I will do the best that I can. I don't have a lot to say beyond what I have said in prior meetings. We are doing the best we can to, I think, emulate scriptural scholars. We are taking the printed word very seriously. The printed word is a substantial improvement in labor market outlook and something about efficacy and costs. The first concept that we tried to incorporate is, well, substantial improvement relative to what? So we needed a benchmark. I

think it is arguable as to what the best benchmark is, because that wasn't specified in the Committee statement. The case can be made for September because that was, as we noted, the first time that this was laid out in the Committee statement. I am going to very deliberately and overtly leave it to you all to determine what constitutes a substantial improvement. A memo by a number of Board staff authors before the last meeting provided our best counsel about some indicators that you could use. And we laid those out in a new exhibit in the Tealbook, and many of those are repeated here in Eric's exhibit 3. I think first among those, we highlighted the unemployment rate; if you were going to the proverbial desert island, it would be the single indicator that we would suggest that you take. But if your luggage can be a little heavier, by all means, we would recommend packing a variety of other items in your bag, including payroll employment and labor force participation. We are also doing some preliminary work with a factor model that takes a first principal component of a number of different labor market indicators and attempts to extract a signal from those.

Now, in terms of what meets the standard of substantial labor market improvement, I think that a reasonable case can be made for a pretty wide range of different stopping points. I would advance the argument that a reasonable case can be made for the assumption that we have put forward. What will be the case by the middle of this year? Well, a couple of developments will have happened. One is—if there is any mercy in the world—a substantial portion of the domestic fiscal agenda will have been put behind us. So not only will we have the fiscal cliff done, but we should have government operations for the rest of this fiscal year appropriated, and maybe even a start on budgeting for 2014. The sequestration should have been resolved and, perhaps as part of that, some disposition of the debt ceiling. So some reduction of downside risk from domestic fiscal policy issues in our baseline forecast, and continued improvement in the

European situation—those two great big sources of downside risk—should have been removed. The tilt in the unemployment rate trajectory over the remainder of this year is very gradual in our baseline projection. But more substantial improvements will be coming into view, and here is where we leaned a lot on the scriptural word being labor market “outlook,” so that by the June meeting, a more substantial reduction in the unemployment rate should be in closer view. And I would want to aggressively assert, of course, the uncertainty surrounding our projection. We’ve gotten a bigger reduction in the unemployment rate over the past year than we had projected, and something along those lines could very possibly occur again. The pickup in payroll employment by that point will be modest, but, once again, as Eric’s upper-right panel shows, there will be some modest acceleration in payroll employment gains that should be in prospect on our baseline projection. Now, whether that meets your standard, I don’t think that’s within my power to divine. But that will be up to you to ascertain whether that meets the definition of a substantial improvement in labor market conditions.

The last thing I would observe is that, from my point of view, a really important criterion in setting these kinds of assumptions is that I obviously want to be in the realm of reasonableness; I don’t want to put a projection in front of you that is distracting because of its irrelevance in terms of the assumptions. In my view, there is a considerable attraction to putting a fixed, rigid yardstick in front of you. I don’t know what I’m going to do for the March meeting, but for this meeting, there was considerable attraction in simply maintaining \$500 billion, just like we did last time. Next time, I reserve the right to change my mind, but I will factor into that decisionmaking process the virtue of trying not to put chatter into the picture, so that I can give you as clear a basis as possible for making the policy determination that you need to make.

MR. POTTER. In terms of the dealers, I believe a Federal Reserve Bank president was very influential in the statements of those 18 who think it's about 200,000 over six months. But they have a much lower unemployment rate, so mapping the Tealbook forecast is more like the end of 2014 in their viewpoint.

MR. EVANS. Okay. I appreciate greatly that very detailed and careful response.

MR. WILCOX. We have given it a considerable amount of thought.

MR. EVANS. I had no doubt.

CHAIRMAN BERNANKE. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. My question is on exhibit 4, the last two charts: "Core PCE Price Forecast" and "PCE Price Forecast." These charts have confidence bounds around them that are calculated from the FRB/US model—and these are 70 percent confidence intervals, not 90 percent confidence intervals. So my question is, if I look at something like the end of 2013, how much of the probability mass lies above 2 percent, and how much of the probability mass lies below 2 percent? Another way to state it would be, are these forecasts statistically different from our inflation target?

MR. ENGEN. I don't know—roughly 40 percent, maybe, would be above, something like that.

MR. BULLARD. And for PCE as a whole?

MR. ENGEN. Probably pretty close to that. I don't have the exact decomposition of forecast errors.

MR. BULLARD. Okay. Thanks. And on exhibit 6, the "Foreign Potential Output Gaps"—I'm just curious—it says that advanced foreign economies' potential output growth in 2012 is estimated to be 1.3 percent. The United States is higher than that, I guess. So how low

are they for, say, Europe and Japan and other countries? I mean, what kind of numbers are we talking about?

MS. WILSON. Well, Japan is really low.

MR. BULLARD. Like zero?

MS. WILSON. It's like half a percent.

MR. BULLARD. Half a percent. And, this 1.3 percent is GDP weighted, I guess.

MS. WILSON. Yes.

MR. BULLARD. Okay. And Europe is also—

MS. WILSON. On the low end, 1 percent or around 1 percent, so pretty low. What is holding it up a bit is Canada.

MR. BULLARD. The United Kingdom?

MS. WILSON. The United Kingdom is also low.

MR. BULLARD. Everything is low.

MS. WILSON. Some of that is cyclical. In other words, we don't expect that to last; going forward, we expect that to improve somewhat. In recessions, especially severe recessions, you see some decline in potential output related to capital deepening and a big pullback in investment. That has lasted a lot longer and been a lot deeper than we had anticipated.

MR. BULLARD. I thought part of the hypothesis here was that countries for which the financial crisis was more severe are going to have a longer period of subdued potential output growth. So are you saying that the financial crisis had differential effects across those countries?

MS. WILSON. The severity of the individual countries' recessions varied.

MR. BULLARD. I see. But you didn't have an independent measure of financial crisis entered into this. It's just the severity of the recession.

MS. WILSON. If I include a financial-crisis variable, it shows up as insignificant, and in some cases with a positive coefficient—that is, both with the wrong sign and insignificant. Even if I just run a regression in which I have recovery level, and I just put a financial-crisis dummy in, it doesn't show up as significant.

MR. BULLARD. I see. Thanks very much.

CHAIRMAN BERNANKE. President Kocherlakota.

MR. KOCHERLAKOTA. Thanks, Mr. Chairman. I have a quick question on the United Kingdom. You know, as I referred to earlier, in our own statement, we have evinced a willingness to have our outlook for inflation to rise above 2 percent. One of the concerns associated with that is that longer-term inflation expectations could become unanchored. In the United Kingdom—you can correct me if I'm wrong on this—my recollection is that inflation has been running above target for quite some time. I was wondering what has happened to longer-term inflation expectations in the United Kingdom.

MS. WILSON. They have been fairly well-anchored. They are higher, but they have been fairly well-anchored. And one of the reasons that they keep missing are special factors: taxes, increases in tuition, oil pass-through, the depreciation of the exchange rate. So it looks like people are looking through some of that.

MR. KOCHERLAKOTA. I have to say that the cynical audiences I speak to would discount those special factors. But thanks, that's helpful.

MR. POTTER. They haven't been as well-anchored as U.S. inflation.

MR. KOCHERLAKOTA. They have not been as well-anchored.

MR. POTTER. Definitely.

MR. KAMIN. I would add that when 12-month inflation comes in above 3 percent, the Bank of England Governor has to write a letter to the U.K. Treasury explaining this. And they have had to write quite a few of these letters. And frankly, inflation has been quite high, really, for a number of years. And to be honest, it is straining my belief that it could be a sequence of special factors year after year that is producing it. Not just the analysts in our division, but most analysts do seem to attribute the persistently high inflation to the combination of the fall in sterling; a continual series of utility price hikes; and, most recently—and we mention this in the Tealbook—an increase in university fees.

MR. KOCHERLAKOTA. Right. I saw them.

MR. KAMIN. You know, bringing to mind the question at our conference tables, “Geez, is an education really that important there?” But as I say, the Bank of England anticipates that the U.K. inflation rate will fall back to target; that’s in our forecast, too. They do have rather poor economic performance and a reasonable amount of slack, so we do think that eventually it will come down.

MR. KOCHERLAKOTA. Thank you.

CHAIRMAN BERNANKE. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. On the consumer sentiment piece, can you disaggregate for us the recent slippage and explain what could be going on here—whether the nonextension of the payroll tax cut had something to do with it, or what actual story we might hold on to for understanding the slippage?

MR. ENGEN. Yes. The biggest part of the deterioration was in the expectations component. That would be consistent with, in particular, concern about the prospect of taxes and that those would be affecting them more permanently, as compared with, say, just the ugliness of

the political wrangling and the uncertainty. It's difficult to make a one-for-one connection to what they are responding to when they do give their answers to these questions; but it was in the expectations component.

MS. RASKIN. It was.

MR. ENGEN. Yes.

CHAIRMAN BERNANKE. Okay, thank you very much. We're going to try to fix the audio buzz, so let's take a coffee break and come back at 4:10 p.m. Thank you.

[Coffee break]

CHAIRMAN BERNANKE. Okay, why don't we recommence. We are ready now for our economic go-round, and I'll start with President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. Despite some temporary setbacks, the recovery appears to be gaining a little bit of traction. Also, since the last meeting, the risks to the outlook, especially the risks from abroad, appear less skewed to the downside. European financial markets have improved, and economic growth in Asia appears fairly strong. Indeed, the latest Chinese economic numbers show that GDP rebounded in the second half of last year, as Beth Anne reported. Of course, there are longstanding concerns about the reliability of these data. Therefore, my staff extended the analysis that we saw in the October Tealbook on this issue. They found the reported Chinese GDP numbers remain consistent with other Chinese indicators of activity that are less susceptible to misreporting. In addition, they looked at non-Chinese indicators of Chinese activity, such as exports to and imports from China, as measured by external trading partners, such as the United States and the United Kingdom. These external indicators point to the same conclusion, namely, that the Chinese economy is still exhibiting solid growth. Although global risks have diminished, some notable domestic downside risks

remain. At least half of the fiscal cliff remains, and I'm concerned about the potential for further brinksmanship in the Congress. Moreover, there is a chance that the BEA's initial GDP release tomorrow will show that the economy contracted in the fourth quarter despite continued growth in domestic final sales. Headline reports of miniscule, or even negative, GDP growth could rattle already fragile consumer and business confidence.

As for the U.S. recovery, my business contacts tell a fairly consistent story. They see little evidence of sustained economic acceleration. The recent signs are a bit better than 6 to 12 months ago. We did see a spike in clothing sales, especially in the orange and black clothing in October. [Laughter] We have recently seen a spike in the red and gold attire sales too; however, we don't expect these to persist. My contacts also see consistent improvement in credit conditions. I am worried that low interest rates are helping less than usual. For example, borrowers with solid credit ratings have long been able to get easy financing, while many with weaker ratings can't borrow on any terms. Still, overall, my contacts see a large swath of borrowers being helped by low rates. Indeed, they highlight several sectors in which lower rates have clearly helped stimulate the economy. Historically low auto-financing rates have jump-started consumer and business demand for motor vehicles. Similarly, historically low mortgage rates have propped up the housing sector. Residential construction and house prices have risen, and, even more importantly, the repair of household and bank balance sheets has accelerated.

Low interest rates have also buttressed the commercial real estate sector, whose improvements are perhaps less well appreciated. The recession hit retail office and other commercial investments hard, but low interest rates have provided crucial support for commercial property valuations, which have risen from the extreme lows reached back in early 2010. As in the residential sector, my contacts tell me of a virtuous feedback loop that is now

under way, as higher CRE valuations help fix the battered balance sheets of investors, developers, and other market participants. And as problem CRE bank loans decline, property market lending conditions are generally improving, as seen in the SLOOS results and greater CMBS issuance. The improvement in the CRE market is uneven, in terms of both geography and the types of buildings. My contacts report that attractive credit terms are available for high-occupancy prime properties, while more marginal properties face much less favorable financing terms. But they also note that the improved valuations and the attractive financing for transactions involving prime properties are having spillovers to second-tier properties as well. One contact, for example, gave a number of examples in which, with improved valuations and greater liquidity in the CRE markets, sales of prime properties provided funding for redevelopment of existing so-called edgy properties without heavy reliance on high-cost debt financing. Once the improvements were completed and the properties leased, the projects were refinanced at lower rates and with higher leverage.

While lower rates are supporting growth, there is still a long way to go to reach potential. Of course, the challenge of defining potential requires us to disentangle demand-driven shifts from the more permanent supply-side changes. In this regard, I can report some new evidence that will be published next month in a San Francisco Fed Economic Letter that is authored by two visiting scholars at the San Francisco Fed, Atif Mian and Amir Sufi. Their analysis correlates state-level employment performance during the recession and the recovery with state-level survey data from the National Federation of Independent Businesses. The NFIB survey asks small business owners about the single most important problem facing their enterprises. Answers include taxes, poor sales, cost of labor, government regulation, insurance costs, and so on. This research finds that state employment growth is highly correlated with the percentage of

respondents in the state citing lack of demand as their most important business problem. Also, there is no correlation between changes in employment and changes in business concerns about taxes and government regulation. In sum, their evidence supports the view that lower aggregate demand—not increased taxes and regulation per se—has been the most important factor holding back employment.

The importance of demand and supply factors in determining the unemployment rate is obviously another vital issue. And as we have discussed in past meetings, the U.S. Beveridge curve has appeared to shift to the right since the start of the recession, so that there are now more unemployed workers for a given level of vacancies. Clearly, a legitimate concern is that this shift could signal permanent changes in the labor market that would be consistent with a higher long-run natural rate of unemployment. However, based on considerable empirical evidence, I have previously argued that the bulk of the rightward shift in the Beveridge curve reflects transitory, rather than permanent, changes. More recently, a member of my staff, working with a colleague at the New York Fed, examined movements in the Beveridge curves of a variety of industrialized countries. They find that past rightward shifts in Beveridge curves following deep recessions are typically not permanent unless there is also a permanent structural change in the generosity of unemployment benefits or related programs. Although U.S. unemployment benefits have been temporarily extended in response to the recession, we have seen no permanent changes in benefit levels. Consequently, based on this international evidence, I would expect the U.S. Beveridge curve to shift back over time as the labor market recovers and temporary extensions of unemployment insurance benefits expire. Likewise, the natural rate of unemployment should also return to near pre-recession levels.

Finally, turning to inflation, the recent data have been coming in softer than expected. And, like the Tealbook, I continue to expect that both headline and core PCE inflation will remain around 1½ percent, below our 2 percent target, for the next few years. Thank you.

CHAIRMAN BERNANKE. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. Since the last meeting, the market's assessment of tail risk appears to have declined here and abroad, as global stock markets have continued to rise and credit default swap rates for many troubled sovereigns and banks have fallen. While there can still be significant reversals on fiscal discussions here and abroad, the abating of some of the headwinds is welcome news and a cause for somewhat more optimism. My own forecast is very similar to that of the Tealbook, with economic growth in the first half of 2013 a bit above potential and gradually rising to 3 percent in the second half of this year, though I assume more asset purchases than in the Tealbook. We may finally get the positive self-reinforcing cycle we have been hoping for, and there may, at long last, be some upside risk to my forecast.

I would highlight that some of the improvements are the result of actions taken by central banks. In Japan, the markets seem to believe that the new government finally possesses the will to do what it takes to break out of the deflationary problems. In Europe, the announcement by the ECB of a willingness to engage in outright monetary transactions helped to improve financial market conditions to the point that now Spain and Portugal have been able to issue long-term securities, and European peripheral stock markets are up sharply. In the United States, the positive financial impact around asset-purchase announcements supports the view that these purchases have a meaningful impact on asset prices and the economic recovery. That the components of GDP growing most quickly are those categories you would expect to be sensitive

to our actions supports this interpretation. While real GDP over the previous four quarters has grown by 2.6 percent, motor vehicle spending has grown by 9.6 percent, and residential investment has grown by 13.6 percent. These are the two sectors that I would expect to be most affected by lower credit costs and improvements in net worth.

Some have argued that pushing down longer term interest rates will not speed up the recovery. I disagree. An economist on my staff recently purchased a new car and, when asked why, immediately responded she wanted to take advantage of low rates offered on auto loans. The rate she received was equal to the current PCE inflation rate, which, as we all know, is well below 2 percent. Similarly, my wife has noted that with these low financing costs, we could replace my 1997 Ford Escort with roll-down windows with a car that might even have air conditioning. [Laughter] While these are only two examples, it seems fair to assume that people respond to lower financing costs like they respond to lower prices: They buy more of the good. This seems consistent with the University of Michigan consumer sentiment responses regarding the economic conditions for buying a car, with the number of respondents citing low interest rates increasing through the second half of 2012. That auto sales are currently above 15 million units is in part due to our pushing down rates, which is also responsible for part of the improvement in employment we are seeing in motor vehicle parts and manufacturing. Lower auto rates might not be the only reason auto sales have increased. There is other evidence that our actions are having a positive impact on autos. Auto ABS issuance has improved significantly. Not only has prime auto ABS risen, but there has been a substantial improvement in subprime auto ABS issuance, which had been dormant during the financial crisis. In 2012, 27 percent of the auto ABS issuance was subprime borrowers. As investors have searched for higher yields, the ABS subprime market has opened up so that both credit costs and credit

availability have improved. For low- and moderate-income families, access to an auto can significantly impact job searches, as we have found in some of the Boston Bank's work in Springfield. There, some unskilled jobs went unfilled because firms were not located on mass transit and firms needed night-shift workers during times when mass transit was not available.

While access to credit has improved significantly for cars, it still has a long way to go for housing. There is just the beginning of a private-label RMBS market, though there are starting to be new issues with a focus on jumbo mortgages. As investors reach for yield, there will be greater demand for RMBS product, and access to credit for homebuyers who do not conform to Freddie and Fannie guidelines will start to improve.

Our economy continues to suffer from insufficient aggregate demand likely to be made worse by fiscal austerity. Our asset purchase programs seem to have the desired beneficial effects of accelerating demand for purchases that are most sensitive to the cost and availability of credit. We still have a long way to go, but monetary policy is an important reason for my increased, but guarded, optimism for continued improvements this year.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. The Eighth District economy continues to expand at a modest pace. The District unemployment rate continues to run below the national rate. It was 7.2 percent across 16 District MSAs, and the most recent reading is down 1.2 percentage points over the last year. A special survey concerning hiring plans in the District indicated that more than half of the respondents expect to increase employment in 2013. Federal fiscal policy developments have had a negative effect on hiring plans for about half of the respondents, but many said that the expected rate of sales growth is high and that current staffing levels are insufficient to meet that demand. Housing markets in the District have continued to

improve. Home prices have been rising over the last year, and building permits have also been on the upswing. Most contacts are bullish about the prospects for home sales and homebuilding in 2013. Commercial real estate prospects, on the other hand, appear to be more of a mixed bag. District anecdotal reports were generally upbeat, except for a few industries with clear challenges ahead in 2013. Most business leaders continue to pine for more stable economic leadership from Washington and an end to brinksmanship. Most welcomed the New Year's Eve deal signed into law but remain highly apprehensive about the future path of U.S. fiscal policy.

Nationally, I am somewhat more optimistic than the Tealbook regarding macroeconomic prospects during 2013. I agree with the Tealbook that potential growth likely fell in the aftermath of the financial crisis and that slower growth in potential output has been the leading reason why real GDP growth has been disappointing during the last three years. I appreciated the very informative memo by Hess Chung and Eric Engen in this regard. My national outlook suggests that in the context of a lower growth rate of potential, actual output will grow at a somewhat faster pace this year and next, due in part to a monetary policy stance that I think is considerably more aggressive than it was in the first half of 2012. I see outright purchases as more accommodative than the now completed Operation Twist program. I see the pace at which we are purchasing assets as very aggressive. I see the open-ended method of implementing asset purchases as possibly quite a bit more effective than the fixed-end-date methodology associated with our previous asset purchase programs. In addition, I see our switch to a state-contingent rather than date-contingent forward-guidance policy as removing the pessimistic signal associated with the distant date of funds rate liftoff. For all these reasons, I see monetary policy as more effective in 2013 as compared with 2012.

Simultaneous with this improved efficacy of monetary policy, I see reduced headwinds for the U.S. economy in 2013. One of the principal features of my 2013 outlook is that, at least for now, the European sovereign debt crisis has abated. While there are certainly catalysts that could inspire a renewed crisis atmosphere, for now those demons are in retreat, and I think one has to wonder if a significant shift has occurred. I had expected substantial turmoil in global financial markets during the fall of 2012 as steps were taken to implement the ECB's controversial Outright Monetary Transactions, or OMT, program. That turmoil did not materialize. Instead, with the application to that program on indefinite delay, the ECB has not been forced to intervene in sovereign debt markets and, at least for now, does not appear to be likely to be in that situation during the first half of 2013. In addition to quieter global financial markets, I see the 2012 step-down in European GDP as unlikely to be repeated in 2013. Even though Europe is in recession according to recent data, I expect output there to either remain the same or improve during 2013, removing a major drag in the global outlook that characterized 2012. Associated with this, like the Tealbook, I see modest improvements in the outlook for emerging market economies in the year ahead.

In the United States, I see certain sectors, such as tech, agriculture, housing, and energy, as potential leaders in a moderately good year for U.S. GDP growth. I view labor markets in the United States as continuing to improve, with the national unemployment rate continuing to tick down during 2013. Based on staff analysis at the St. Louis Fed, I have become convinced that the relationship between labor force participation rates and unemployment rates is not robust enough to meaningfully infer labor market outcomes for 2013. For this reason, I think the most reasonable forecast is simply for unemployment to fall further as the economy continues to improve during the year.

For this Committee, I see two key issues in the year ahead, which I will just mention briefly. The first issue concerns the management of asset purchases going forward. I would be very reluctant to abruptly end the asset purchase program with the Committee citing concerns about the size of the balance sheet. Such an action would run counter to our attempt to conduct this policy on a state-contingent basis. It would effectively take asset purchases off the table as a policy tool and possibly damage our credibility in the process. Instead, I think we should think about ways to taper the purchase program slightly in response to improvements in the economy. This would help ensure that we end the program gradually rather suddenly and that we remain true to the idea of adjusting the program in response to macroeconomic events. The second key issue is the communications via the SEP. Here it seems like one of the main challenges is to remove the current emphasis in the SEP on the date of liftoff, as we are trying to get away from that concept because of the pessimistic signal that that can send about future U.S. economic performance. Many of the changes to the SEP seem problematic to me and may confuse rather than clarify. I plan to discuss these issues in more detail tomorrow. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Fisher.

MR. FISHER. Thank you, Mr. Chairman. Very quickly, on my District, we had strong employment growth last year of 3 percent. We have also had extraordinary performance in the export sector, which differs from the rest of the country. And the most recent release of our indicators of manufacturing activity is at odds with what has been reported from other Districts in terms of the most recent economic activity of manufacturing. I want to just briefly mention two things. One is that our housing stock is running quite tight: The Districtwide inventory is running at 4.7 months, and in large cities like Houston and Dallas, it is beginning to push below the 3-month supply level. So we have a very robust economy. I am happy to hear from

President Williams; we must have different demand factors in our District. Certainly, we have been blessed somehow. And part of our demand, by the way, comes on the export side. Mexico had extraordinary economic growth last year. We expect it to continue, and are probably a little bit more optimistic than the staff here on Mexican economic growth. If you were to look at U.S. exports ex Texas since 2008, they are flat; and the difference in terms of the growth of U.S. exports comes from my Federal Reserve District, particularly the State of Texas. So we are in an unusual sweet spot in terms of the economy, and, incidentally, our state budget now has a very large surplus, which was not expected. I believe this is something that we need to take into account. The states have repaired their balance sheets, and they do have better income. Tax flows into all of the states seem to be improving, with some exceptions. And I think this takes a little bit of the sting off of what we're seeing at the federal level.

In regard to our national economy, the Dallas Fed is a little bit more optimistic than the Tealbook. We agree with the trend that you laid out, Eric, and the direction that it seems to be taking. You know from the work we have circulated from Evan Koenig where we stand in terms of our inflation forecast. It is a guess, but we are guessing it is a little bit under 2 percent or around the 2 percent level going forward, and we expect employment growth to be a little bit higher than what we seem to be getting from your forecast, but moving in the right direction toward the 3 percent level. So we are a little bit more optimistic, and I'm glad to hear that President Rosengren is getting increasingly optimistic. The concerns we have relate to the financial markets and fiscal policy—and I want to talk about that.

As President Williams and some others mentioned, there seems to be an abatement of concern about Europe. I hear the opposite from my corporate contacts that are operating businesses in Europe. Their sense is that, particularly given the weakness in France, they are

beginning to see people almost throw in the towel in terms of their expectations. Often that is the sign of a bottom in terms of behavior, but that is what I'm getting back in terms of those who are on the front lines of operating there.

I do want to make a comment on housing nationally because if you talk to the rails, we have seen 18 consecutive months now of increased activity in terms of lumber aggregates, roof tiles, and so on—very positive activity. And clearly we are getting, as President Rosengren mentioned, an improvement in the housing sector, and we all pray and hope that it is sustainable. You are also seeing it reflected in the reports I am getting from my interlocutors. If you look at MasterCard spending data and so on, or you walk through the major retailers, you see that in December you had very strong year-over-year numbers in terms of home furnishings, construction materials, and hardware—all above the 6 to 8 percent level—offsetting what was otherwise a very weak December in terms of consumer activity.

I want to address just one quick question that Governor Raskin raised earlier. Again, this is in the “for what it's worth” category, but my contacts—the major retailers, the express companies, and the telephonic companies—did point out that we had very strong activity until the first paychecks came out in January. Again, this is new data; it may not be indicative of a trend, but it is just one little grain that indicates, perhaps, some concern. In their own analysis, they think it has to do with the payroll tax increase. So that will have to be monitored and watched. But overall, we feel at the Dallas Fed that, again, we are sitting along the lines that the staff has laid out here—maybe a little bit more optimistic.

With regard to fiscal policy, who knows? Some steps were taken. A disturbing feedback I'm getting from almost every single CEO that we have contact with—and you met some of them, Governor Powell, at the dinner at my home—is a lack of confidence that fiscal

policymakers are going to be able to deal with this in a constructive way, and the concern is that it will fall back onto the Federal Reserve. I continue to find increasing concern that we will inflate our way out of the commitments the government has made rather than the government taking care of it itself. And I am hearing that increasingly, even though I continue to point out to my interlocutors that, as hawkish as I am, I am not worried about inflation. What I am worried about is our employment trends. In terms of employment trends and cap-ex, you are still hearing the operators of microeconomic units talk about productivity enhancement. Still, even though they are adding gradually, there is still a reluctance to robustly add to payroll. What I can ascertain in these conversations is that their concern about possible future inflation leads them to commit to cap-ex that is driven by productivity—and to not want to be laden with employees—that they will have to increase with the basic inflation that they see as a possible risk, perhaps just a tail risk going forward.

I do want to conclude by commenting on the financial markets. We have had such good presentations on that. I am a little concerned, Mr. Chairman because I think that investor sentiment is getting to be quite robust. From my perspective as a former market operator, we are seeing signs that the markets are overbought. Triple-C credits are trading at less than 8 percent. We see junk trading in the 5 percent range. We are seeing headlines in the financial press that are almost beginning to press the boundaries of manic optimism. And there is sort of a living-in-the-moment mentality out there. I mention it, as I have before, just because I am concerned: What do we do if we see a reversal? In my conversation with Simon earlier, I did point out we are only 3.8 months into this bull market. Only nine times in history, if my memory is correct, have we seen a doubling of money over that sequence of a bull market. The average bull market lasts for 4.7 years, and we have had them last up to 8 or 9 years. But I think we have to

constantly be mindful that we have provided the lift for all boats in the equity markets and—driven by different discount factors—in the bond markets. We have been the major impetus here. Earnings are not coming through at the same rate as they were before; they are beginning to subside. And I hope that we are prepared, Mr. Chairman, for the possibility of a correction at some point, and I think we need to think through how we might act on that front.

Lastly, I'd like to just say, with regard to the discussion tomorrow, I thought President Bullard made a very good point. I don't think it is sensible to just go "cold turkey" and cut what we have agreed to and the path that we're on and what the markets expect of us. But I do think we might give some consideration under certain conditions to how we taper our purchases going forward, and I look forward to a discussion on that tomorrow. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. In December, I reported some increase in optimism from my business contacts and directors in the Sixth District. Though still very cautious, that optimism has carried over into the beginning of the year. Broadly speaking, the pockets of strength in my District are the same as those in the rest of the country. Residential construction has continued to improve. Builders and Realtors indicate the recovery in the housing sector is real and, they believe, sustainable. Energy exploration and extraction remain very active, and auto manufacturing remains strong. Reports of contacts in the retail industry depicted generally healthy trends. This was especially the case with our director who represents a large home-improvement chain, the country's second-largest retailer. Despite encouraging performance in some sectors and the positive tone of comments of my business contacts, I still find scant evidence that overall economic activity has broken out of the slow growth track we experienced over the last several years. Uncertainty about fiscal and regulatory policy remains

the dominant theme, especially the practical outcomes related to implementation of the Affordable Care Act. A posture of caution with respect to business expansion persists. I detect no evidence yet that many firms are taking concrete steps to increase payroll. Firms remain very cost-conscious, and several directors noted that companies are adding employees only when they feel it is absolutely necessary to maintain the current level of operations. With respect to inflation, my contacts describe mostly a very soft pricing environment. I hear virtually nothing about rising cost pressures, outside of isolated areas.

I have not materially changed my outlook since the December meeting. I continue to expect moderate economic growth in the 2 percent to 2½ percent range, with moderate employment growth and inflation somewhat below 2 percent. My current growth projections are somewhat lower than the Tealbook baseline. My staff has been incorporating different measures of uncertainty into our own formal model-based forecasting exercises. The impact of uncertainty in these exercises is material and, depending on the model, reduced annual economic growth by ⅓ percentage point to 1 percentage point. I have incorporated the lower end of that range into my baseline view for 2013. Although it is not in my baseline forecast, I believe the economy could outperform my 2 percent to 2½ percent outlook should greater clarity and visibility materialize. One consistent theme I hear in conversations with contacts is that many businesses are in a good position to expand should the decisionmaking environment improve.

I am shifting my assessment of risks around economic growth in the direction of balance. I view a better-than-expected improvement in the housing sector as a plausible upside risk. In the suite of models we use for constructing forecasts, the one that emphasizes housing prices generates results that are very similar to the Tealbook's better housing scenario. If I were doing a formal balance-of-risks submission, I would hold to risk to the downside. I am not yet quite

ready to move away from a downside bias, but I am getting closer. Barring any negative developments between now and the March meeting, I expect I will see the risk circumstances as in balance by the next SEP submission. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. My economic outlook for 2013 is similar to the Tealbook's analysis. And thanks to David and his team for their response describing your thinking on LSAPs; it was, as always, highly responsive and well considered. At this point, with all the uncertainties we face, a single-point forecast would probably overstate my confidence. I think a growth rate of 2¼ percent to 3 percent is a plausible range. Given the circumstances, that's probably as good as it gets. Nevertheless, I do continue to worry that this outlook embodies too much complacency because the jury is still out on many issues. After all, the \$64,000 question continues to be, will this year finally be the one in which a self-sustaining recovery takes hold, we achieve escape velocity, and we leave behind our liquidity-trap woes? Unfortunately, this is the fourth consecutive year we've asked this question. Forecast uncertainty remains high. Our outlooks need to reconcile a complicated set of conflicting economic issues. The downward forces continue to be substantial: In our baseline fiscal restraint is shaving about 1 percentage point from economic growth, we continue to see balance sheet deleveraging and risk-averse behavior on the part of many households and businesses, and the global economy is relatively weak. There aren't any countries out there with strong-enough growth to drive the world economy, and I found Beth Anne Wilson's comments about emerging market economies interesting. They're obviously too small, by themselves, to play that role.

Fortunately, accommodative monetary policy is providing a critical counterweight to the downside forces. Indeed, we can see today more of the imprint of our highly accommodative

policy in improving financial conditions, and even in some gains in the real economy. Here some anecdotal details seem useful, and a number of my business and financial contacts this round pointed to developments that show our monetary policy actions are at work. Some of these indicate that our policy actions are gaining traction in the tug-of-war against risk aversion. From my financial contacts, we heard several reports that investors are increasingly taking on more risk by moving into equity and equity-like investments; others have already reported on this. By some accounts, they now recognize that low returns on super-safe fixed-income instruments will be here for a long time. This has convinced them to add more risk to their portfolios. We see this, for example, in the behavior of the insurance firms we talked to. Incrementally, more of these insurance funds are flowing into familiar areas, such as commercial real estate as well as infrastructure projects. These financial investments could translate reasonably soon into additional higher economic activity. More generally, as many of us have recently remarked, private capital is also flowing into residential real estate. This additional demand for housing will help mitigate the downward influence on prices coming from the large number of distressed properties still coming on the market. Indeed, contacts indicate that private equity funds have moved into distressed housing; by some estimates, some effort should be able to take 5 percent to 10 percent of the distressed houses off the market. This could have very helpful effects.

Our accommodative monetary policies are also supporting normal economic recovery mechanisms, and these seem to be working, according to several business contacts. One such area is in replacement demand for durables. Both Ford and GM tell me that low lending rates have been extremely helpful in boosting auto sales, as others have mentioned. The turnaround in housing prices and low mortgage rates also seems to be supporting economic activity. Several

contacts reported stronger outlooks for housing and building materials in 2013. This type of positive housing commentary continues to have a broad representation and is gaining momentum. This improving environment will also support associated durable goods purchases, especially with attractive financing costs.

So it seems clear to me that our policies of strong forward guidance backed up by substantial asset purchases are having a beneficial effect on the real economy. Even so, as I noted at the start, our accommodative policy stance is battling a still-formidable list of headwinds. The potential for further fiscal damage to the 2013 and 2014 economic growth projections remains high. With the economic recovery and monetary policy already battling a 1 percent fiscal drag for 2013, additional sequestration burdens could be problematic. After all, the IMF recently argued that fiscal multipliers from austerity measures have been larger than normal in Europe, likely due to monetary policies that are near the zero lower bound. The implications of this analysis for the United States are sobering. Then there is the optimism of many analysts and markets about Europe. The notion that they have turned the corner on their economic imbalances within the euro zone seems staggeringly complacent to me. Like President Fisher, when I talk to people who are doing business in Europe, I find that they are generally very concerned about the way things are proceeding on the ground.

More broadly, the global economy is looking for some economic actor to provide the engine of worldwide growth. Virtually every country in the world is hoping to address its individual cyclical problems through higher exports. Simple arithmetic shows this is impossible. I went to an event in Hong Kong, the Asian Financial Forum, and Larry Summers went all the way there to say exactly that. [Laughter]

MR. TARULLO. And I'm sure to be well paid for saying it.

MR. EVANS. I didn't ask. When I travel overseas, I remind and bore any and all listeners that the American consumer who fueled global growth over the last 15 years has been taken off the playing field after receiving several red cards, after all, from abroad. [Laughter]

Let me now turn to inflation risk. Identifiable and concrete inflation risks continue to be remarkably low. I read with interest the Board staff's memo on forecast errors from January 2010 to December 2012—that was also an excellent analysis. Apparently, the disinflationary forces we have faced have been somewhat stronger than many would have expected, and, again, Beth Anne made a comment about that related to advanced foreign economies. Somewhat in contrast to where I thought President Plosser was going when he asked the staff about the implications for appropriate monetary policy, given data back then, I think the bottom line would have been that the staff's advice wouldn't have been that different because the slack measures were relatively more robust. But I'm happy to have people clarify that. On this, first let me take note of the substantial monetary accommodation that we've attempted to provide in the form of—we all know this—QE2, Operation Twist, open-ended QE3, and aggressive forward guidance for the currently zero funds rate. I wouldn't put it this way, but I did note with interest the Dallas Fed presentation by Evan Koenig that was circulated to us that characterized our monetary policies as the FOMC having a well-stocked liquor cabinet—very colorful. And the second point is that the Tealbook has revised downward the level of potential output by several percentage points over this period. Staff analysis attributes a large portion of the slower-than-expected growth in actual and potential output to a decline in technological growth, perhaps due to restrictive financial conditions. A wealth of academic and policy research points to strong inflationary consequences of such negative technology shocks unless, of course, monetary policy counteracts the inflationary effects. But instead of pursuing more restricted policies, we've

spiked the punch bowl more and stocked the bar further. So smoothing through transitory influences on headline PCE, core PCE inflation has been well below our long-run inflation objective of 2 percent, and I infer that we've been fighting substantial disinflationary forces for some time. That's where I end up from that analysis. And finally, there is the very low growth in wages we've seen over the last few years. This puts an exclamation point on low inflation risks. The 1970s is the episode that causes us the most concern that our accommodative monetary policies may be misguided, but back then we had a wage-price spiral. Today I know of no businessperson who expects that wages are going to start growing strongly across their corporate enterprise. And households don't seem to expect this either, judging by their expectations for future low income growth in the Michigan survey, which have been almost bleak for quite some time.

Putting this all together, I'm hopeful that 2013 will be the year that the U.S. economy finally achieves a degree of economic momentum that becomes self-sustaining and ultimately gives rise to escape velocity by 2014, but this will require that we remain on guard against complacency. Importantly, my outlook is premised on maintaining our open-ended asset purchases until we're highly confident that we will have evidence of a substantial improvement in the labor markets and the real economy. Escape velocity has to be more than just a hope.

Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Pianalto.

MS. PIANALTO. Thank you, Mr. Chairman. Leaving our last meeting, I was hopeful that we would get a more complete resolution to the fiscal cliff and clearer data on the economy. On fiscal policy, some uncertainty related to taxes has been resolved, but much uncertainty on the spending side still remains. Meanwhile, the incoming economic data have been somewhat

mixed, but, in general, most signs still point to moderate economic growth over the forecast horizon, an improving labor market, and inflation near target. While headline GDP growth in the fourth quarter likely dipped due to transitory forces, the underlying pace of growth is a bit more encouraging. Anecdotal reports and incoming data on consumer and business spending were reasonably solid, despite all the uncertainty that was present.

The cloudy domestic and foreign outlook continues to give a number of manufacturers in my District pause, but my contacts in consumer-focused industries like autos and construction products remain optimistic. In addition, retailers seem satisfied with the holiday shopping season. So overall, the economy appears to be entering 2013 with improving prospects despite facing many challenges. A key factor supporting the recovery, as several have already mentioned, is improvement in the housing sector. Almost across the board, housing activity is well above year-ago levels. With the inventory of home sales being low, house prices are starting to perk up in my District as well as in the national statistics. Despite this encouraging pickup in housing, I am hearing that the pace of mortgage origination and refinancing is being restrained by the wide primary–secondary mortgage spread. Like others, I’ve wondered whether this wide spread will narrow in the future so that today’s very low MBS yields will be passed on more fully to consumers. My staff spoke with two of the larger mortgage originators in the District about where they thought pricing was headed, as both are expecting to gain market share in mortgage originations. Interestingly, they suggested that over the course of this quarter, competitive pressures would likely push down the spread between mortgage rates and MBS yields to what they would consider more normal levels. A decline in the spread should contribute to further progress in refinancing. However, these contacts are expecting mortgage

refinancing to gradually slow throughout 2013, despite these smaller spreads and generally low mortgage rates.

With improving conditions in the housing sector and less fiscal uncertainty, I continue to expect that economic growth will pick up over the forecast horizon and that unemployment will gradually decline. My growth forecast is relatively unchanged from the last meeting, averaging approximately 3 percent over the next few years. However, I have once again nudged down my outlook for the unemployment rate, reflecting the better-than-expected data. Since September, I have lowered my unemployment rate projection by about ½ percentage point throughout the forecast horizon, and now I expect unemployment to hit the 6½ percent threshold by the end of 2015.

Turning to inflation, the Cleveland Fed measures of underlying inflation suggest that inflation remains close to our longer-term 2 percent objective. For example, while recent headline and core CPI readings have been subdued, the median CPI has increased at an annual rate of 2.2 percent over the past three months, the same as its year-over-year rate. Inflation expectations derived from financial markets using the Cleveland Fed's model are also anchored close to 2 percent going forward. The risks to my outlook remain to the downside for GDP growth, but with the improving housing market and the gradual healing in the labor market, like President Lockhart, I think that the risks are moving toward being balanced. On inflation, I see that the risks are broadly balanced, as inflation expectations have remained well anchored despite the growth in our balance sheet. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. My quick overview of the Third District and the economy is not much changed, nor has my forecast changed since our last meeting. The

fourth quarter will come in weak, but that's been known for some time. The effects of Hurricane Sandy and some of the giveback on inventory accumulation in the third quarter have acted as dampening effects on economic growth. The uncertainty over the outcome of the fiscal cliff debate also reduced growth last year. Thus none of the economic numbers now being reported for November and December are particularly unexpected. Many of the factors that slowed growth in the fourth quarter, I think, are transitory, and we should be reluctant to take too much of that weakness onboard for growth going forward. This seems to be the stance of the Tealbook as well.

Reading through the aftereffects of Hurricane Sandy, economic conditions in the Third District have continued to improve at a modest pace. The indicators point to continued modest improvement in activity in the months ahead. The Philadelphia staff's coincident indexes for our three states rose in both November and December. The monthly readings on regional manufacturing from our Business Outlook Survey have been distorted by Sandy, and it's too soon to tell what the underlying trend is. However, manufacturers continue to expect activity to pick up over the next six months, with the indexes of future activity, new orders, and shipments all in solid positive territory.

At our last meeting, in early December, I reported that based on early sales in the Third District, retailers had been positive about the holiday shopping season. It turns out that outside of autos, our retailers were somewhat disappointed relative to the upbeat expectations they had earlier. Nevertheless, sales came in relatively good, but not as good as they expected. Labor markets in the District have improved since last summer. Payroll employment in our three states grew at a 1.1 percent rate for the three months ending in December. This is slightly under the pace of 1.4 percent for the economy as a whole, but it's much higher than the long-term average

of our three states, which is only about 0.6 percent. So for us, that was really quite a good performance. Employment growth in New Jersey was the weakest of the three states last year, but it, too, strengthened near the end of the year. Labor force participation rates have been rising in Pennsylvania and in New Jersey but falling in Delaware. But Delaware is a small state, and it's partly explained by demographics. The housing sector continues to improve, although Sandy had an impact. December permits and starts in the Northeast have showed a substantial rebound, which may mark the beginning of a post-Sandy improvement in activity in that region. Nonresidential building continues to show modest improvement, according to our business contacts. In the Philadelphia metro area office market, the net absorption of office space has been strong, and it has been strong enough to drive down vacancy rates over the past few months.

Looking forward, the outlook among business contacts is generally optimistic. Manufacturers expect increased activity over the next six months. Firms in the District also plan to increase hiring this year. For the special question that the Board prompted all of us to ask, we polled 117 Third District firms across a range of industries: 44 percent say they plan to increase employment this year, and only 11 percent plan decreases. The most important factor cited by the firms planning to increase employment was the expectations of higher sales growth. My economic outlook for the nation is little changed as well. Since our last meeting, I expect tomorrow's number for fourth-quarter GDP to be relatively weak, but that weakness is transitory. We have had a temporary respite from the fiscal cliff. Some of the uncertainty on fiscal policy has been resolved, but only for the moment; Act 2 is yet to come. Fiscal policy uncertainty remains a risk to the forecast, but I expect that drag to wane over the course of the year.

Households are still in the process of deleveraging, but their balance sheets are improving, helped by rising housing prices. I expect that drag, too, will fade over the year.

The Board staff has slowly been reducing its estimates of the GDP gap, potential GDP, and the potential growth rate over the recovery. I remain concerned that in setting monetary policy, we're relying too much on an output gap and other types of gaps that are imprecisely measured and difficult to project, especially in real time. In the previous two downturns, employment never regained the level that was implied by the pre-recession trend. That could happen again this time. We need to keep this in mind as we clarify what we mean by the substantial improvement in labor markets that we are looking for before ending the LSAPs. Indeed, we may need to begin tapering those LSAPs in the not-too-distant future, and we need to think hard about how and when we communicate such a message. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. Compared with the national economy, the economy of the Ninth District is much closer to what one would think of as normal. District unemployment is under 5.5 percent. The employment growth in 2012 in Minnesota, the most populous state in the District, was as fast as it has been in the past seven years. Yet outside of the oil boom areas of western North Dakota and eastern Montana, the byword is still caution in the face of ongoing uncertainty.

We talked extensively to our contacts in the intermeeting period about two kinds of investment in 2013: cap-ex and hiring. These businesses had a strong sense of caution about doing more cap-ex in 2013 and reported that any increases in their cap-ex at the end of 2012 were largely tax driven. Thus, a major pump manufacturer with an international footprint projects a 4 percent decline in cap-ex from 2012 to 2013. There was a sense from our contacts

that the most natural sector for any cap-ex would be health, but activity is deterred by the enormous policy uncertainties in that sector. Our contacts in the labor market, whether they represent labor or management, remain pessimistic about future hiring. Employers would rather add hours to their existing workers, who they know well and value highly, than hire new workers. They see adding new employees as too risky, both in terms of the costs and in terms of the benefits. Correspondingly, we heard few reports of compensation pressures, outside of workers in some specialized areas. Thus, despite the strong economic performance of the Ninth District, uncertainty and the aversion to that uncertainty remain a drag on economic activity.

These factors clearly matter at the national level, too. For example, by historical standards, equities remain unusually cheap relative to risk-free bonds. Real yields on 10-year TIPS bonds remain sharply negative. In my view, this uncertainty has played a key role in shaping the slow recovery. People and businesses are more worried about the future. Their fear deters them from spending, so it pushes down on aggregate demand. And given the still-heightened level of uncertainty, my national outlook for the next two years is not all that different from the Tealbook's. I forecast real GDP growing 2.5 percent in 2013 and around 3 percent in 2014. Unemployment will decline slowly to around 7.5 percent at the end of this year and to around 7.0 percent toward the end of next year. Finally, given the low pressures on compensation that I mentioned earlier, inflation pressures seem likely to remain muted. I expect inflation to be around 1.6 percent in 2013 and to rise to 1.9 percent in 2014.

The concerns about uncertainty that underline my forecast serve to increase the global demand for safe assets. At the same time, the supply of the assets that people and businesses, and the governments that regulate them, consider to be safe is distinctly smaller than five years ago. These twin forces of increased demand and lowered supply have led to unusually strong

downward pressures on the natural real rate of interest. Indeed, I would say that relative to our experience over the past 30 years, the natural real rate of interest is markedly lower than we would have predicted, given the current unemployment rate and the current inflation rate. This unusual behavior of the natural real rate of interest has significant consequences for monetary policy. Earlier, Mr. Chairman, I drew the Committee's attention to the contrast between the simple feedback approach to monetary policy and the forecast-based approach to monetary policy. Simple feedback rules—automatic responses to observations on current and lagged economic variables—are well designed for a particular stable historical backdrop. For me, a key lesson from the past two or three years is that the simple feedback approach to monetary policy is insufficiently flexible to allow a central bank to adapt to unusual fluctuations in the natural real rate of interest. Thus, I would say that historical regression-based models of central bank behavior, like the Taylor rule, are now systematically underpredicting the appropriate level of accommodation. In contrast, the forecast-based approach articulated in our principles statement does provide exactly the kind of flexibility that we do need to respond appropriately to economic conditions.

To wrap up, Mr. Chairman, under the current stance of monetary policy, I do see deviations between my outlook for inflation and unemployment and our objectives for those variables. As President Rosengren and President Evans have both emphasized, there is evidence that our tools are being effective. Our principles statement says that it is appropriate to adjust our policy tools, if they are being effective, to mitigate those deviations. I will discuss how best to do so in the next go-round. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. The Tenth District economy continues to expand at a moderate pace. Employment growth has increased in most of our states and industries. While uncertainty about fiscal and regulatory policy has tempered hiring decisions, these effects have been more than offset by relatively positive expectations about future sales and profitability. For the District as a whole, growth reflects strong auto sales and a rebound in residential and commercial real estate markets. Commercial construction activity, in particular, outpaced the nation throughout the fourth quarter of last year. Vacancy rates have continued to fall, with notable improvements in sales, absorption, and rents. In the ag sector, despite the severe drought, farm incomes are near historical highs, thanks in part to record crop insurance payments. The volume of land sales remains exceptionally high, and prices continue to rise. Looking ahead, livestock operators will likely see rising incomes, while crop producers face declines. With grain stocks at historical lows, ag commodity markets are likely to be volatile. A soft spot in the District is manufacturing. After falling throughout the fourth quarter of last year, manufacturing activity contracted modestly again in January, but production expectations remain relatively optimistic for the months ahead. Energy and consumer discretionary spending also softened—energy as a result of the relatively low domestic prices, and consumer spending particularly in the areas of leisure and hospitality.

For the national economy, I continue to see economic growth at a moderate pace, and my outlook for the medium term is largely unchanged. I've been particularly encouraged by the improvement in the housing market and how it has surprised to the upside. Looking back at the first quarter of last year, the median estimate from the Survey of Professional Forecasters called for ½ percent decline in house prices for 2012. The forecast was based on the Case-Shiller 20-City Composite Index that now looks likely to come in about 5 percent above its year-ago

level. So it is encouraging to see that home prices have risen substantially more than anticipated. Likewise, residential construction activity has exceeded expectations. In terms of the labor market, I think we've been seeing some notable improvements. The three-month average change in private nonfarm employment is 181,000, which is a pace consistent with a steadily declining unemployment rate. And although volatile, initial claims for unemployment insurance are also at their lowest level in almost five years. The unemployment rate, I would note, has also fallen faster than many expected.

Despite the improvements in housing and labor markets, the pace of real GDP growth remains slow. Although much of the weakness in the fourth quarter last year and the first quarter this year appears to be transitory, I am not expecting much above 2 percent growth for this year. The Board staff's memo on reasons for the weaker-than-expected recovery supports my own sense of things, as it emphasizes the surprisingly slow pace attributed to lower-than-expected growth in potential output. So the combination of these factors suggests to me that we should anticipate seeing improving growth ahead but also that we will need to be cautious about attempting to push the economy back to its pre-crisis trend.

Inflation is likely to remain below 2 percent over the near term, but with open-ended asset purchases at their current level and a zero funds rate well into 2015, I would expect inflation to rise above 2 percent in the medium term. And while longer-term inflation expectations are currently anchored, I would note that a tradable measure of the five-year, five-year ahead level of breakeven inflation remains about 30 basis points above its level prior to the September FOMC meeting, and at the upper end of its historical range. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. First, a mea culpa. Evidently I was responsible for the intermittent buzzing sound that plagued the session earlier today. While shuffling staff briefing material, I lightly brushed up against the microphone chiefly relied on by the First District, and you may have noticed the First District relying on the Second District's microphone earlier today. We in the Fifth District are familiar with technology outages, although things have improved in recent years. [Laughter] I'm confident that a thorough after-action review will result in a stronger and more resilient technology infrastructure. I'll proceed with my statement now.

We continue to receive mixed signals on economic activity in the Fifth District, and that probably means economic growth remains somewhat sluggish. For example, our diffusion index for service sector revenues rose sharply from minus 2 to plus 13 in January, but our manufacturing index fell sharply from plus 5 to minus 12. Commercial real estate is another sector in which signals are mixed. Our office vacancy rates declined last year in Charlotte and Norfolk, and asking rents there have increased. But office vacancy rates have risen recently in Washington, and asking rents there have declined. Net absorption was a whopping negative 4 million square feet in the D.C. metro area last year. Outside of Washington, though, our commercial real estate contacts are generally optimistic about the coming year. Labor market conditions also have been mixed across the District. We've seen accelerating job growth in the Carolinas, middling performance in Virginia and Maryland, and outright employment declines in West Virginia and the District of Columbia. Some firms say that they're reluctant to hire due to economic uncertainty, while others continue to report difficulty finding workers with the needed skills. One manufacturer of advanced engines, for example, noted that community college training of potential workers is inadequate because the equipment they train on is out of date.

Housing has been a bright spot across our District, outside of West Virginia, but our home furnishings contacts have yet to see sales gains to match the pickup in homebuilding we've seen. Our most recent surveys opened up on December 27, and, as you would expect, the early submitters were generous with their expressions of wrath about uncertain tax and spending plans. These complaints have continued since January 1, but attention is now also focused on the impact of the costs of health-care reform on hiring plans.

In short, the regional picture hasn't changed much since our last meeting, and my national outlook hasn't changed much either. Granted, the data flow has been mildly better of tone lately, and in response I could be persuaded to bump up my GDP forecast a tenth or so, but it would still leave it well below the Tealbook for this year. The most important difference I see between our outlook and the Tealbook is that I'm less optimistic about personal consumption spending. We talked about that a little bit earlier. I think the pall being cast on sentiment by the spectacle that passes for fiscal policy deliberations these days, along with a raft of other good reasons to be cautious, is likely to continue to dampen household spending for much of the year. So I expect consumer spending growth to come in near 2 percent, and I project GDP growth to come in only a shade above 2 percent.

My inflation outlook hasn't changed much, either, since the last meeting. I continue to expect to see headline inflation near 2 percent next year and beyond, though we may fall below 2 percent this year. Given the trajectory of monetary policy, though, I see upside risks for inflation in 2014 and beyond. I agree with President Evans. Our business contacts don't see a wage-price spiral at this point, but I doubt they would have said that in 1966 or 1967 either. I don't view the lack of current wage and price pressures as "dispositive"—I learned that word from Governor Tarullo yesterday.

MR. TARULLO. “Dispositive.” [Laughter]

MR. LACKER. A slow student. But concerning inflation, I share the sense President Evans had about his forecast: I worry about too much complacency.

For the Tealbook’s inflation projections, the concept of potential output, which we’ve touched on a couple of times today, and the implied gap between actual and potential has been important. We’ve had a lot of discussions about these today and at other meetings. Differences have been important to our different perspectives on policy. In this context, I, too, admired and I applaud the staff’s memo on identifying the sources of the unexpectedly weak economic recovery. We don’t often conduct after-action reviews of our monetary policy deliberations. So a comparison of what we were projecting at the beginning of the recovery with how things turned out is, I think, quite instructive. I should say up front that forecasting errors are inevitable, and that such a look back should be focused on what we can learn that can strengthen our understanding and analysis in the future rather than finding fault with the staff’s past analysis. I don’t think that’s appropriate, and this is very much the spirit in which I read this memo.

So what did we learn? Well, for one, we learned that our estimate of potential output can change quite a bit depending on how we see the economy perform. The staff compared the time path for real GDP with their January 2010 forecast and found that the estimated level of actual real GDP last quarter was 8.3 percent below the level in their January 2010 forecast. The staff’s estimate of potential GDP changed by a comparable magnitude: It was down 7.7 percent below the January 2010 estimate of what it would have been. So the staff, if you put that into a decomposition, essentially attributes four-fifths of the shortfall in this recovery, relative to the rapid recovery that they and many others were initially expecting, to the shortfall in potential

output. Let me just note a couple of striking features of the analysis. One is that estimates of potential respond so much to the incoming data, and I think that's entirely consistent with what the staff have told us over the years: that we should regard contemporaneous estimates of potential as subject to considerable uncertainty. The second notable feature is that in the plot of the path of potential, there appears to be a kink around the end of 2008 and 2009. So it appears as if something in the most recent downturn left its imprint on the staff's estimate of potential. The third striking feature is that potential is very, very smooth, except for this little downward kink. As you all know, an alternative interpretation of the data that has been advanced by some economists, including President Bullard, is that there was a one-time downward shift in the level of potential output during the recession. And that would line up roughly with the view of some of us and many academic economists that the notion of potential output that's relevant to policy is affected by many different contemporaneous shocks to the economy and can vary significantly over time. So I'm just going to leave these observations at that and just note that I think the Committee would benefit if we could learn more in the future about the staff's thinking about potential and, in particular, how they think about these alternative approaches to thinking about potential. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. President Lacker, your comments and President Plosser's certainly illustrate that measuring potential output and the output gap is very difficult in real time. But if we went back and looked at the policy recommendations that were made by the staff based on those measurements, clearly, they've been too tight throughout. If you look at inflation, we've been repeatedly easing, again and again, in order to maintain inflation at 2 percent. So a priori, if you went back and looked at their initial estimates, I think that the policy recommendations are going in the other direction. Your basic point about it being

difficult to measure output gaps is certainly true, but there's no presumption from that that policy should be tighter or easier. You have to make your best decision that you can.

MR. LACKER. I totally agree with that.

CHAIRMAN BERNANKE. Okay. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you. First off, let me endorse President Kocherlakota's remarks. If you remember in the past, I've said that the Taylor rule gives me a headache.

MR. TARULLO. You're not getting another dollar. [Laughter]

VICE CHAIRMAN DUDLEY. No, for all the reasons that you stated, Narayana, I think I had to endorse those remarks. Moving to a forecast-based rule—noting that we were in a different regime—is extremely important.

All right. So what about the economy? Our outlook is pretty close to the Tealbook. I think there were two substantive differences that I'd want to highlight. First, I think the end of the temporary payroll tax cut will have a bigger effect on consumption over the near term because I think the multipliers are higher when we operate at the zero bound. We're getting a \$110 billion drop in disposable income. That's sizable, especially when its incidence is skewed toward lower incomes, and it is front loaded in the calendar year because of how the Social Security payroll tax works with the salary cap. Second, despite that, I would also differ in emphasizing the degree of uncertainty about how the economy will respond to this tightening of fiscal policy. I really don't know what's going to happen in the first quarter to consumer spending. I have a very broad range of potential outcomes, in part because I don't know how much people were holding back their spending decisions based on the fiscal cliff, which seems to be at least partially resolved. So, despite my first observation that I think the impact will be

bigger than that noted in the Tealbook, I have a pretty wide range of uncertainty around that. We'll know a lot more in about two or three months when we actually get the consumer spending data for January and February.

Aside from the near-term fiscal restraint from the payroll taxes, which obviously was broadly anticipated, I think the outlook has improved a bit since the last meeting because, one, we didn't fall off the fiscal cliff and, two, financial conditions are considerably more buoyant. Risk appetite has increased considerably, which is what we were seeking. I think that we have to be careful that this doesn't go too far, but I don't see much evidence of it at this point. People talk about high-yield bond yields being low at 5 percent, but the spreads don't seem to be particularly narrow. When we talk to financial market participants, they tell us that they think the fixed-income market is probably fully valued, even rich, but that the equity market actually looks pretty cheap relative to fixed income. If you look at the equity risk premium, it seems several hundred basis points higher than normal, and some of the market participants we talk to say you could actually have a "meltup" in the equity market—the equity market could go up considerably higher than where it is now. On this year's expected earnings, the P/E ratio for the S&P 500 is only about 14. If you flip that and take a look at the reciprocal, you're talking about a real yield of 7 percent, versus a real yield on the 10-year Treasury of close to zero. That's an extremely wide equity risk premium. I'm also more optimistic because I think the housing market recovery has become more firmly entrenched. As home prices continue to go up, that will actually lead to a further easing in mortgage underwriting standards, and that's important. Fourth, I think the external financial market risks have diminished.

I find what's been going on in Europe just remarkable in terms of the change in sentiment relative to the change in the outlook. The actual forecasts haven't improved; in fact, the IMF

actually downgraded its forecast for Europe again for 2013–14 a little bit. However, the sentiment has improved remarkably. Obviously, the ECB's OMT is really important, but a second thing that's really important, which doesn't get enough attention, is how Greece was treated. Recognizing that Greece behaved probably not in a very good way over a very long period of time—starting with lying about what its deficits were—the fact that it hasn't been thrown out of the euro zone means that it takes a lot to get thrown out of the euro zone. So that means that the runway for Italy and Spain is pretty long. As a consequence of how Greece has been treated, I think people's views of redenomination risk have come down tremendously, which is actually very important. Now, having said that, I think that there's still plenty of risk in Europe. We have election risk, we have austerity-fatigue risk, and we have-lack-of-progress-toward-European-integration risk. And the reality is, if you look at the economic data, the divergence between Germany and the rest of Europe is starting to increase again. If you look at the most recent PMI data, German PMI was up while the French PMI, in particular, was down very sharply. You've got a gap now of 11 points between Germany and France, and that divergence is noteworthy because it will actually make the political agreement on how to move forward a little bit more difficult and will probably entrench the German view that austerity is the pathway to victory a little bit further, which I don't really agree with.

One new risk that I think is worth highlighting and that hasn't been mentioned:

Developments in Japan warrant a lot of close attention. On the one hand, I do understand what Prime Minister Abe's shock therapy is trying to do—fiscal expansion, monetary ease to shatter the deflation psychology and get Japan out of their debt deflation trap—but this is not without its own set of risks. Japan is very far along on an unsustainable debt course; it is way ahead of pretty much everybody else. If local investors were to lose confidence in where Japan is headed

and start to redeploy their monies abroad, the risk is that the yen could go down much more sharply than desired or anticipated. Now, at some point, yen weakening is probably desirable from the Japanese policymakers' perspective, but once you set that in motion, there's a risk you'll lose control—not only control of the currency, but also control of inflation psychology. Also, I think it's disheartening that while they're trying to do a lot in terms of monetary policy expectations and inflation expectations, it doesn't seem as though anything is being done on the supply side—on immigration policy, for example. And as Beth Anne noted earlier in response to a question, Japan has a potential GDP growth rate of only about ½ percent a year. So it's difficult to see how Japan gets on a sustainable debt path with such a low potential GDP growth rate.

Finally, let me just make a few remarks on the Tealbook's balance sheet assumptions. We had some discussion earlier about how the Tealbook's assumptions that we're going to purchase \$500 billion of additional Treasury and agency MBS securities this year compares with the primary dealers' median forecast of roughly \$1 trillion into early 2014. Now, some people see that gap of \$500 billion versus \$1 trillion as a problem because the market expects X but we're going to do Y. I don't think that's a big problem at all. First of all, there's a good chance that the gap is not as wide as the \$500 billion represented by the difference between the Tealbook and market expectations. I think if you actually took a survey of voters, you'd probably find that the number was probably more like \$750 billion, \$800 billion. That's where I would put it. So the gap is probably not \$500 billion; it's probably more like \$250 billion. The second thing I would say is that gap is pretty small relative to the uncertainty about what we're going to actually do—not only our uncertainty about what we're going to do but also the dealers' uncertainty about what we're going to do. As Simon said in his remarks, the standard deviation

of the dealers' expectation was \$500 billion—one standard deviation. So this idea that we should be concerned about a gap of \$250 billion or \$300 billion when the uncertainty about what we ourselves are going to do is so large seems like something not worth worrying about correcting. If we corrected it, we might correct it to the wrong outcome. We could correct expectations and then do something totally different. I really don't see what the benefit of doing that would be, and my view is that trying to close this expectation gap is really counterproductive. It would seem to contradict our core message that the purchase program is outcome based—with the amount governed by the economic outlook, efficacy, and costs. We're going to learn about that as we go, and that's going to determine how much we ultimately do in terms of our asset purchases. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Yellen.

MS. YELLEN. Thank you, Mr. Chairman. My view on the likely pace of growth over the coming year is little changed since December, but I consider the risks now more balanced. Like the Tealbook, I anticipate economic growth at a moderate pace and some modest improvement in labor market conditions. There are, of course, sizable risks to the forecast, but tail risks do appear to have diminished. Global financial markets have been decidedly calmer as a result of the ECB's OMT program, Europe's progress toward banking union, and the steps Spain has taken to rein in deficits and strengthen its banking system. However, like President Evans, President Fisher, and Vice Chairman Dudley, I remain quite concerned that markets will again test policymakers' resolve. Key fiscal targets in peripheral countries could easily be missed, and high unemployment could cause social tensions to erupt. The OMT has thus far reassured investors so successfully that there's been no actual need for intervention, but a day may come when its workability, which is uncertain, will be tested. Economic growth in Asia

also appears to be strengthening, and the tail risk associated with the possible hard landing in China has receded.

Here at home, some fiscal risks remain, but at least it now seems less likely that the debt ceiling will be breached, and the uncertainty about tax policy that has weighed on business decisions has been largely resolved and in a way that is reasonably business friendly. In part for this reason, I'm a bit more optimistic than the Tealbook on investment spending. Key uncertainties relating to the global outlook and U.S. tax policy have diminished. Firms are enjoying record profits, and industrial capacity has been shrinking for several years. More generally, investment has been so weak since the onset of the recession that the capital stock, along with the stocks of consumer durables such as cars, has aged considerably. There could be a good deal of pent-up demand that will show through to durable goods spending, and of course, as President Rosengren and others have emphasized, low interest rates provide added impetus.

On housing, I was tempted to endorse a stronger forecast than the Tealbook baseline and found myself attracted to something along the lines of the Tealbook alternative scenario. House prices and starts have both surprised to the upside; the rental market is going strong; household formations have increased; and a combination of rising rents, exceptional affordability due to low house prices and mortgage rates, and growing confidence among homeowners that prices are unlikely to move lower in most markets could precipitate a faster rebound in residential investment than is incorporated in the Tealbook baseline. Rising house prices boost wealth, the quality of homeowners' collateral, and the willingness of banks to extend credit. So we could see meaningful spillovers to consumption spending and the emergence of a positive feedback loop.

I certainly hope that such a dynamic will emerge, but in the end, I think the staff has been sensible not to get carried away by such possibilities. One reason for caution is that price appreciation has been most rapid in precisely those markets that experienced the biggest busts, cities like Miami, Phoenix, and Las Vegas. But given how far house prices fell in these areas, it will be quite a long time, even with rapid appreciation, before house prices exceed reproduction costs. So a spurt in new construction in these areas is unlikely. Moreover, as I've mentioned previously, the fraction of homeowners in such areas who are underwater on their mortgages, while falling, remains exceptionally high, and for the many who are far out of the money, the house price increases to date neither generate sizable wealth effects nor ease liquidity constraints. Las Vegas provides an example. House prices are rising fast, and an impressive 5 percent of homeowners with mortgages bobbed above the water line just during the third quarter of last year. But 63 percent of homeowners with mortgages remain underwater, and one in five has mortgaged more than twice what the house is worth. Stockton, California, provides another case in point. Along with neighbors like Modesto and Merced, Stockton stood at the epicenter of the subprime debacle. All three cities enjoyed rapid price gains in 2012, and Zillow projects that all three will again rank among the top markets in 2013 seeing double-digit gains. In a sense, these markets are hot. Homes for sale in Stockton currently average only 49 days on the market, down from 89 a year ago, and the inventory of homes for sale is down 61 percent over the last year. This decline appears to be driving the price action, and bidding wars are now common. But the tightness of inventories here, too, is due importantly to negative equity. Fifty-six percent of homeowners in Stockton are still underwater on their mortgages, and many of these trapped homeowners are just waiting to seize the opportunity to sell the moment that prices rise enough to permit it. I expect this shadow inventory to ultimately cap appreciation. Las Vegas and

Stockton may be particularly severe cases, but I think they serve to illustrate why impressive aggregate house price gains may, at least for a while, have smaller effects on consumption and residential construction than one might expect based on past experience.

Turning to the labor market, I've been pleasantly surprised by the decline in the unemployment rate in recent months and agree with the staff's assessment that the bulk of this recent decline reflects a genuine diminution of slack. That said, possible signals of more-permanent labor market damage, such as the rise in the number of previously unemployed workers leaving the labor force, bear careful watching. With respect to the outlook over the coming year, I consider it quite likely that with economic growth around 2½ percent, we'll see only marginal further improvement. But we've been surprised previously that labor market conditions have improved when growth has been weak, and I wouldn't rule out the potential for such a pattern to reassert itself. In response to past such deviations from Okun's law, the Tealbook scaled back its estimates of the level of potential output, but a key question is whether the pace of structural productivity growth has fallen persistently in the wake of the recession. An alternative Tealbook scenario labeled "Supply-Side Damage" considers the possibility that the pace of structural productivity growth will be lower going forward. This is a possibility that Bob Gordon has highlighted in recent work, and it accords with Laubach and Williams's estimates of trend GDP growth, which have declined by 1 full percentage point since the onset of the recession.

A decline in the pace of productivity growth has important policy implications. In particular, we've set as the goal of our asset purchases a substantial improvement in the outlook for the labor market. To assess whether that criterion is met, I think we should consider both shifts in the level of slack and the pace at which we expect the remaining gap to close. Since our

asset purchase program was announced in September, the staff, in response to unanticipated declines in unemployment, has revised down its end-of-2013 forecast for the unemployment rate by four-tenths of 1 percent. That's a meaningful reduction. However, there's been only a minimal downward revision to projected structural productivity growth. But if the pace of structural productivity growth has fallen, as the Laubach–Williams estimate suggests, progress may turn out to be more rapid. Another implication, of course, of slowing productivity growth is a decline in the equilibrium real interest rate of similar magnitude. Of course, there are also risks that unemployment will decline yet more slowly than the Tealbook forecasts if a stronger job market fosters a more rapid pickup in labor force participation. I thus consider the jury still out on the likely pace of improvement of the labor market, but I'll be closely watching in the months ahead developments that shed light on both productivity growth and participation.

CHAIRMAN BERNANKE. Thank you. Governor Duke.

MS. DUKE. Thank you, Mr. Chairman. Like most of you, I don't see much change to the outlook, but I do have a bit more confidence in my forecast of steady recovery, as financial markets have improved and the downside risks from political brinkmanship seem lower since we last met.

As the banks look forward to 2013, their plans are all about lending. Most expect credit costs to decline a bit more as credit quality improves, and they hope to offset declining interest margins with loan growth. To the extent that loan growth can't outrun margin pressure, they're turning to expense control. I didn't find anyone with an appetite to extend maturities to improve their margins. They seem quite willing to accept flat or even slightly reduced earnings rather than take on interest rate risk that they know will bite them over the next few years. But even as they swear off such tactics themselves, most have a story about a competitor who seems to be

recklessly offering longer-term fixed rates on loans. So, for the economy, except for mortgage lending, the headwinds from tight credit conditions are rapidly dissipating. As the SLOOS indicates, competitive forces are finally forcing the easing of standards. But more important, even here, the easing seems to be taking the form of terms such as pricing or structure rather than credit indicators such as collateral margins or cash flow requirements.

The competition for C&I loans is already fierce, and it seems to be picking up in CRE lending as banks work through problem loans, insurance companies return to the market, and CMBS issuance picks up. Also, last year was a peak year for maturities in CMBS loans, as the five-year loans from the origination peak came due. And that won't be in play this year, so the demand for refinancing should be less. With very little new demand, banks are chasing refinances from the books of others and guarding their own flanks. Happily for some borrowers who have come back from the dead, bankers report that a number of their problem credits are being taken out by other banks that presumably are able to restructure them into good credits and shed the troubled-debt-restructure stigma. My guess is that CRE lending will improve faster than the underlying fundamentals of the properties themselves.

On the consumer side, auto lending is red hot. Given the age of the fleet, the historically low level of consumer debt service burden, and the availability of credit across the spectrum, I see upside potential in auto sales and auto lending. Credit card lending is pretty flat, and competition seems to be at a standoff. I think the combination of losses experienced during the downturn and the pricing restrictions in the CARD Act will stymie the easing of standards in credit cards for some time. One card issuer did note, however, that spending on cards is outpacing growth in retail sales. He said that when retail sales are falling, spending on cards usually drops faster, as credit cards are used to purchase larger-ticket items. So it's possible that

credit card spending rates, rather than credit card balances, could be an indicator of the direction of retail sales.

Home equity balances continue to drop, as originations are still weak and refinancing payouts are still elevated. Further, some part of the volume that does exist in home equity seems to be a substitute for mortgages rather than traditional home equity lending. A number of the banks reported high proportions of first liens in their current home equity production, as some potential mortgage borrowers are willing to accept slightly higher rates and shorter amortizations in exchange for simpler, faster application and closing processes. Even in the mortgage space, there are some early signs that competition may improve conditions. The SLOOS showed some slight easing, including one large bank that reported easing conditions considerably. I also picked up hints that mortgage originators will soon need to be more proactive to maintain the robustness of their pipelines. One large originator told me that rate locks are moving from 90 to 60 days as processing backlogs ease. A number of banks reported new marketing efforts to keep their pipelines full.

Regulatory developments should also contribute to improved credit availability. Settlements related to prior mortgage origination and servicing problems, including the recent settlement between the banks and the Fed and the OCC, should allow some shifting of resources from problem resolution to new origination. The CFPB issuance of final rules on QM definition, servicing standards, and loan officer compensation removed a great deal of uncertainty from the business, and I hope we can remove much of the rest by finalizing capital rules and QRM definitions. The FHFA's first attempt to resolve putback concerns doesn't seem to be working, but I'm still hopeful that there'll be ongoing work in this area. Staff work that was summarized in the Tealbook raises the possibility that refinancing volume helps crowd out lower-quality

borrowers. I believe this is part of the story, but I also think that reduced putback risk and changes to servicer compensation will make a difference in the willingness to lend to borrowers with a higher probability of default.

Inventory of both new and existing homes for sale continues to drop, even in the face of growing demand. I looked back, and it was only in the meeting last March that I nervously raised the possibility of tight supply turning prices around. Those forces now seem quite obvious. Now growing demand is in play as well. Household formation is picking up, and whether they be renters or buyers, those households will need housing. I believe we're finally poised to see the housing recovery that's been missing, and I think it will continue to strengthen regardless of the way other downside risks play out. Low mortgage rates have certainly played a part in the improvement in housing, but even if rates rise a bit, they're still going to be incredibly low. And a tick up in rates often brings in volume, as purchasers and refinancers fear that they might have missed the bottom and come off the sidelines. A slight rise might also price out the serial refinancers and make room for those who've been crowded out. I'm not advocating that we engineer a rise in rates. I'm just suggesting that if it did happen, it wouldn't necessarily choke off the momentum in housing.

I'm looking forward to seeing the housing story unfold and to finding out how much of a spark it can provide to the rest of the economy. If it's possible for the cost and availability of credit to drive a stronger recovery, this should be the year, President Evans, in which we finally see an upside surprise. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Mr. Chairman. I think, taking everybody's comments to date as a whole, we've heard a pretty good discussion of the potential for, as Betsy just put it, an

upside surprise, as opposed to reasons to still have some caution. Somewhat uncharacteristically, I find myself reading ambiguous data more optimistically than I have in the past. I had thought, as Charlie Evans and others around this table had, that each of the first few apparent surges in activity over the last several years was likely to be short lived and probably associated with either monetary stimulus, fiscal stimulus, or both. This moment does feel a bit different, and I want to mention briefly three of the reasons. The first, as Betsy was just discussing, is housing. I was struck by the fact that in his column in the Sunday *New York Times*, Bob Shiller couldn't bring himself to be pessimistic about housing. He could only bring himself to guard against excessive optimism.

Second is the deleveraging process. I don't think anybody really knows where the equilibrium point for household debt is; how far back do we have to go—to 2004 levels, 2003 levels, 2002 levels—to be at a more sustainable point? But we have surely gone a good bit of the way down that road. And maybe more to the point, it's important to note that not all households are deleveraging at the same pace. So let's say hypothetically that we're 70 percent of the way there. A lot of households have completely deleveraged, at least to the degree they need to, and thus they are in a position to spend more over the coming few quarters. And, finally, I actually take it as a reason for optimism that even with a roughly 1 percent negative hit to GDP growth due to the fiscal decisions to date, almost everyone is still predicting north of 2 percent growth for this year, and that suggests that there is actually now some sustainable strength in the economy. Now, having noted that, I think all of Charlie Evans's caveats apply, foremost among them that there not be too much drama around the process of the next fiscal package or too much fiscal contraction in the substance of that package. But with those caveats, it seems to me now

not implausible to expect that toward the end of this year, we begin to see significantly accelerating growth.

Even if that relative optimism turns out to be the case, though, and we are moving toward a sustainable, stronger recovery, we have a long way to go. And as I tried to do some of the same thinking about what sustainable improvement in the labor markets would mean, as Janet has obviously been doing, it seemed to me that there are two kinds of questions we're going to want to ask ourselves at some length in March. One, where have we been in the labor market—which is to say, what's the base off of which we're trying to improve? And, two, are there constraints on the improvement that we could reasonably expect? With respect to the first, I'm obviously not going to try to rehearse the whole state of the labor market. But I think it's worth reminding ourselves that this economy still has 4 million fewer jobs than it did in January 2008. Total employment is just about where it was in early August of 2005, and remember that this is a raw number and is not adjusted for intervening population growth. The basic picture of job growth in the United States continues to be steady but it is a painfully slow process. In the last 18 months, we've averaged about 150,000 new jobs each month. In the last 12 months, we've averaged 152,000; in the last quarter, about 151,000. There's significant variation from month to month, of course, but remarkably consistent performance across the period as a whole. We get some two- or three-month periods of substantially higher, substantially lower, but then, within a few months thereafter, those deviations are compensated for by a reversion to the mean. At this rate, then, of about 150,000 a month, we'll get back to the total number of jobs we had in January 2008 sometime in the spring of 2015. Taking labor force increases into account, of course, and even adjusting for the decreasing trends in labor force participation and maybe slower trend economic growth, we'd still be millions of jobs short at that time from where one

could reasonably have expected to be in the absence of the financial crisis. Now, I certainly expect that the rate of job creation is going to pick up at some point, but I would note that it could pick up to an average of the 200,000 jobs per month that Charlie mentioned last time, and would only get back to the January 2008 levels, unadjusted for population growth, sometime late in 2014. So, in other words, there is plenty of room and need for faster job growth.

On structural damage, I want to build on a couple of the comments that John made earlier about the Beveridge curve, which I also mentioned at the December meeting. I think here the basic question is posed by the fact that the somewhat irregular shift up and to the right that characterized the early stages of the recovery has persisted, and it's become more regular over the last year or so, producing that parallel line that we now see when we look at the Beveridge curve. Now, there were similar shifts in 1975 and 1982 following serious recessions, but then the curve looped back fairly quickly as a recovery proceeded. The persistence of the current shift perhaps suggests that there is some nontransitory structural labor market damage being reflected in that parallel line. But those earlier recessions had much quicker recoveries in terms of GDP growth, suggesting that the renormalization of the labor market may just be taking more time now because of the slow pace of recovery. This explanation would imply that this current path of the curve will eventually loop back toward the pre-2007 curve as the economy continues to recover.

There's no way to weight definitively those alternative explanations. However, to this point at least, the structural damage story still is not really showing up in the data where we might expect to see it. Dispersion of employment gains and losses across industries, which never rose as much as in the mid-1970s recession, has already returned to pre-recession levels. The mismatch indexes, such as those constructed by Şahin and Song and by Lazear and Spletzer,

have fallen substantially. The Barnichon–Figura model, which is noted in the Tealbook, relating the hiring rate to the vacancy unemployment rate, as depicted in the Beveridge curve estimates, estimates that the natural rate has risen at most 1¼ percentage points from pre-crisis levels. And this estimate is probably high, given that it doesn't take into account the selective hiring likely tied to the halting, uncertain nature of the economic recovery. There's still no increase in the gap between the exit rates of the long- and short-term unemployed. In fact, the long-term unemployed as a share of the total unemployed is still high by historical standards, but it dropped almost 4 percentage points in 2012. The unemployment rate of construction workers, a group perhaps most likely to suffer some chronic problems in light of the cause and consequences of the crisis, has been coming down faster than that of the labor force as a whole, even though in absolute terms, of course, it remains much higher. And this improvement is principally a result of a much stronger hiring rate for laid-off construction workers rather than a massive exit from the labor force. One of my favorite indicators of slack, the category of those working part time for economic reasons, while coming down modestly through 2012, is still higher than at any time since the 1981–82 recession and about twice the average levels of the 15 years preceding the financial crisis. And, finally, as the Tealbook notes, there have been no significant wage pressures. Only recently have we gotten a little pickup in what had been before then a pretty stagnant wage picture.

All of this suggests that the better explanation for most of the elevated unemployment rate continues to be an aggregate demand shortfall. The data to this point, at least—and we have to be tentative about it—more strongly support the hypothesis that the Beveridge curve is in an elongated process of looping back, and that there's still considerable room for noninflationary stimulus. There is surely some structural damage underneath the layers of cyclical

unemployment, but we haven't dug ourselves out far enough to be seeing the evidence of that damage. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. Over the past couple of months, the economy seems to have evolved pretty much as I expected. We have not yet seen much indication that we're moving into the self-sustaining stage of the recovery, but there are signs that flickers of improvement are under way and that accommodative monetary policy is helping to keep that improvement from stalling out. As noted by many around the table here, one area in which we're likely seeing the positive effects of our policies is in the housing market. After we initiated new MBS purchases in September, MBS yields fell and mortgage rates declined; rates on fixed-rate mortgages currently remain close to all-time lows. Of course, over such a short time period, it's hard to definitively link these lower rates on fixed-rate mortgages to improved activity, but there are some encouraging signs. For starters, households themselves report that low interest rates make this an excellent time to buy a house. In January, the share of respondents in the Michigan survey who reported that this is a good time to buy a house, because interest rates are low, rose to the highest level in nearly a decade. Moreover, the share of households reporting that it's a bad time to buy a house, because rates are high or credit is hard to get, dropped sharply in the second half of last year. Another encouraging sign is vacancy rates. For some time, we've been saying that residential construction hasn't been responding fully to low rates, in part because of high vacancy rates that divert demand to existing units. In fact, during 2012, the single-family vacancy rate came down considerably, and it now stands near pre-recession levels, suggesting that the drag on construction from this factor has probably

abated. Indeed, single-family housing starts increased at an annual rate of more than 34 percent over the second half of last year, up from about 4 percent in the first half.

Once we begin to see these signs of life in the housing market, various secondary effects usually kick in, and we're beginning to see those, too. For instance, house prices moved up 8 percent last year, which boosts the wealth of households and improves confidence, all else being equal. And we've now seen households reporting expected increases in home prices on net. Compared with the first half of last year, survey respondents in the second half were much more optimistic about house prices rising over the next year and over the next five years. This improvement in optimism regarding home prices provides an additional impetus for economic activity. In addition, after years of decline, there are some tentative signs that home equity lending is reemerging. Large banks, regional banks, community banks, and credit unions are reporting upticks in home equity lending. This increase in home equity lending could provide additional liquidity for homeowners who may be seeking to refinance a major purchase, consolidate debt, or refinance a mortgage with a small balance. This ability to tap into liquidity could provide households with the ability to increase consumer spending.

Another channel through which our policies are likely working is the dollar. It appears that the decline in the dollar over September and October of last year was driven, at least in part, by the new monetary policy accommodation we put in place. It's surely too early to be able to identify the impact of those changes on our net exports and on the manufacturing sector, as those channels usually work with a considerable lag. But unlike the housing sector, we don't have strong reasons to believe those channels are attenuated. So I expect the impact of our mix of monetary accommodation measures to boost net exports—either through a lower dollar or

through increased foreign demand, depending on how other central banks respond to our actions—which could, ultimately, spur domestic production in the quarters ahead.

I'm encouraged that our policies are supporting economic activity, but discouraged by how long it's taking for this support to remain necessary. While it's good news that the unemployment rate has moved down to 7.8 percent, the labor market doesn't yet seem sufficiently robust to signal an economy that can grow without extraordinary monetary accommodation. The declines in the unemployment rate in the second half of last year may have been statistical noise or perhaps were due to discouraged workers leaving the workforce. Moreover, the unemployment rate misses the huge problem of underemployment. It appears that many of the workers who have been added to the rolls during the recovery are working in jobs that are paying less than what they earned before the recession, don't offer benefits, or offer fewer than full-time hours. And consumer confidence fell for the third straight month in January, slipping to its lowest level in more than a year. Perceptions of job availability weakened moderately this month. The percentage point differential between respondents saying jobs are hard to get and those saying they are plentiful now stands at 29, up from 25 in December. So the increased pessimism is not fully explained by the recent increase in payroll taxes.

In sum, I'm encouraged by the signs that our policies are having beneficially supportive effects. At the same time, I think the ability of the economy to grow in a way that is definitively and assuredly self-sustaining has yet to emerge.

CHAIRMAN BERNANKE. Thank you. Governor Stein.

MR. STEIN. Thank you, Mr. Chairman. I thought I would spend a few minutes talking not about the outlook, but rather about one of the financial stability risks that we all hear about

quite a bit. This is the risk of an abrupt and disorderly correction in the Treasury market at some point, perhaps when we stop asset purchases or otherwise make a change in policy. We've often heard this, and people say things like, "This time around is going to make 1994 look like a walk in the park." In the face of such a melodramatic assertion, three questions you might ask are: First, what exactly are the economic mechanisms that might give rise to this sort of sharp correction? Second, are our policies, and is QE in particular, in any way exacerbating this risk? And, third, is there anything else we could do to mitigate this risk? I'm going to throw out these questions not because I have any answers—I'm very clear in my mind that I'm extremely hazy on this stuff—but because I just thought it useful to conjecture a little bit and think about the sorts of data we might want to look at.

A first pass at this might be something you'd call the rubber band theory, which is something like this. We've pushed term premiums very low—they're historically low; that is to say, bond prices are very high relative to fundamentals. So somehow when we let go of the rubber band, it's going to snap back. It's not going to just go to fundamentals; it's going to overshoot in some sense. Now, of course, the problem with this theory is that the way we've thought about our effect on the term premium is via the stock of duration that we take out. If that's the case, then stopping purchases or even beginning to sell bonds—even if we didn't do a good job of telegraphing it—would only have an effect that's proportional to the duration thing. There's no mechanism that creates amplification or overshooting. Just to put numbers on it, we've convinced ourselves that if you make a surprise announcement of a \$500 billion purchase, it might do something like 15 or 20 basis points. Certainly, then, with a well-telegraphed move in the other direction—we wouldn't go in the other direction; we would just stop—it would seem as though 15 or 20 basis points ought to be an upper bound on how much you lose. So you don't

get much out of the standard kinds of stories. I think that if you just want to make progress, if you just want to sort of have a coherent theory, you have to focus not just on where the pricing is or where the term premium is, but also on who's bearing the duration risk, either directly or synthetically—and there are lots of ways for that to be done synthetically by writing put options and so forth. From a stability perspective, the key question is whether somehow—and this is a little hard to know—more of the given stock of duration risk is migrating into the hands of people who are effectively leveraged and will have to unwind these positions if things start to move against them. This is where you can get amplification. For those of you who are familiar with the work of John Geanakoplos on leverage cycles, this is a little bit of the flavor—that high prices are associated with a concentration of risk in the hands of leveraged players, and that's where you get the fragility from.

With this story in mind, here's a set of facts that strike me as tentatively interesting. If, for example, you look at the implied vol on very long-dated interest rates from swaptions, it's been falling pretty sharply in recent months, and it's starting to get to the point at which it's strikingly low in absolute terms. Now, in some sense, that's obvious if you think about things over the next few years, but if you even look at a 2-year option on a 10-year swap or a 2-year option on a 20-year swap, those implied volatilities have come down 15 or 20 percent just since September. And in some cases, they're not as low as in 2007, but they're near five-year lows. Why is this relevant? Loosely speaking, you'd be inclined to say that it might tell you something about complacency and willingness to take risk, or underestimating risk, or believing that we're not going to let the long rate move up by too much—something like that.

A bit more specifically, there are a couple of channels you could imagine. One potential channel is, that you might think that some leveraged players, in deciding how much leverage

they can take on, use some kind of value-at-risk model in which the amount of leverage you can take on is proportional to your measure of value at risk, and that's in turn related to these measures of volatility. A second one—this is completely speculative—is that you might ask, “Why is volatility low?” Well, it's because either more people are selling the insurance or fewer people are buying the insurance, and that's why the price of protection is low. But of course, that is a form of embedded leverage. In other words, if I'm thinking, “Ah, here's a good business; it's not too risky, and I'm going to sell a lot of put options,” that would be driving the price down, and if there's somebody out there who's written a lot of put options, that's a form of leverage we might want to worry about. Again, I want to be clear. I'm just offering conjectures to try to articulate a version of a theory to tell us what we might want to go look for in the data. I think that conceptually it's clear what we want: some notion of increased concentration of the duration and leverage against the risk—which is hard to measure well because we don't have data. We can do this to some degree for the banking sector. Even there, it's difficult because some of the exposure is not on the balance sheet but might be, as I said, in the form of some sort of option. But at a minimum, I think when the Desk talks to market participants, when the LISCC team does its stuff, this is one sort of thing you might want to look for. And as I said, a second question to ask is whether any of this has any connection to our asset purchases. I noted that these implied vols have fallen significantly since September. That's just a coincidence at this point. You can imagine doing a more careful event study. I know that the staff is working on this topic, and I look forward to seeing what turns up there.

Finally, on mitigation, if this story is the right story, which is just an “if,” is there anything that we could do to reduce the risk? For sure, it has to be helpful to communicate as best we can so we don't catch anybody by surprise when we stop buying assets or start

tightening. At the same time, I think this story gives you a little bit of caution about the limits to the communication strategy. In other words, in this story, a big spike in yields is not just a change in expectations due to the fact that we didn't guide expectations properly. It could come from a relatively small change in expectations combined with a relatively mechanical sort of unwind. Obviously, that's not to say that you don't do the best you can with communications, but that maybe you're a little bit humble about how well you could manage something like this if it's out there. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Powell.

MR. POWELL. Thank you, Mr. Chairman. Since the last meeting, the data suggest to me a modest improvement in the outlook, if only because the economy has weathered the year-end fiscal cliffhanger with no loss of momentum. My industrial contacts report no real improvement, and my own experience in that space is that when the inflection point comes, it can be pretty dramatic; you don't have to squint to see it. So I don't think we're missing it. But still, there's a feeling, which many around the table have sensed, of coming improvement, particularly in the financial markets, if not yet in the data.

For some time, the narrative has been about persistent headwinds restraining an economy that periodically has shown real underlying strength. Those headwinds are suddenly much weaker, as the worst outcomes for Europe, the fiscal cliff, and China appear to have become much less likely. If that state of affairs persists and if the underlying narrative has been correct, we should finally see, perhaps as the year moves along, the arrival of the long-awaited pickup in economic growth to a level that's worthy of a recovery, and that is the narrative that the financial markets appear to be embracing. Of course, those headwinds may return, and others remain, particularly credit availability for less-creditworthy households. And it's quite possible that the

conflict over fiscal matters may intensify in a disruptive way as the year goes on. At the last meeting, I expressed the hope that this fiscal battle, if we have to have it, would be a useful one, a debate worth having. There seems to be little chance of that now. But there's always hope. Nonetheless, for now, the headwinds are perceived to be much weaker—the 10-year flirts with 2 percent, and U.S. and global equity markets have rallied sharply, led by economically sensitive stocks. Although it doesn't show up yet in the dealer survey, some investors are saying that they sense the end of quantitative easing over the horizon, and as a result, there's a sense of a rotation into equities and away from the safety of Treasuries, which accounts for some of the very large increase in the yield on the 10-year. And we should welcome all of that and consider whether our statements and actions reinforce or restrain the positive feelings that are out there. So I am joining Governor Tarullo in dipping one toe into the slightly more optimistic pool. I do feel for the first time that there's a shot to break out of the 2 percent growth trajectory, and the markets clearly agree. I also agree with at least a couple of others around the table that I no longer see the risks as skewed to the downside. And I wonder—it's a discussion for tomorrow—whether that's broadly agreed on, in which case we ought to reflect it in the statement.

While financial conditions are a net positive, there's also reason to be concerned about the growing market distortions created by our continuing asset purchases. And because we're going to go into a deep dive on financial stability in March, I'm going to be brief today. I want to say that I think President Obama captured these concerns very well in her speech of a couple of weeks ago. Many fixed-income securities are now trading well above fundamental value, and the eventual correction could be large and dynamic. You hear that all the time now in the fixed-income markets—and in the media, for that matter, which actually may suggest that it won't happen, of course. But you hear it all the time; we all do. The leveraged finance markets are a

particular concern. Rates are low; spreads are not that low yet, but they're definitely tightening; and terms are deteriorating rapidly. There are many examples of bubble-like terms, which we can talk about at the next meeting. The Dell leveraged buyout, if it does happen, may be very prolific in that theater. I don't think there's an imminent crash coming. I do think that the incentives will rule in the end, and the incentive structure that we put in place with the asset purchases, is driving securities above fundamental values. So there is every reason to expect a sharp and painful correction.

We also—I want to touch on this point—generally have the view, and I agree, that the growing risk buildup is a job for regulatory policy, as opposed to monetary policy. And as I said, I'm sympathetic to that argument. Monetary policy is not well suited, in some ways, to address asset bubbles. I find it much less satisfying that the risk buildup is a clear, and perhaps intended, consequence of monetary policy. If the argument is that monetary policy should stick to the dual mandate, as President George pointed out, it's worth remembering the power of another financial shock to damage the economy and drive us away from the mandate. In any case, we ought to have a low level of confidence that we can regulate or manage our way around the kind of large, dynamic market event that becomes increasingly likely, thanks to our policy. This crosses the line into tomorrow's discussion. I think the likelihood that we will see a substantial improvement in the labor market is rising, and so are the financial stability risks that are a consequence of our asset purchases. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you very much. Only one person comes after Governor Powell. That's me. So bear with me. Let me try to summarize a very good discussion.

The outlook today was variously characterized as gaining a little traction, modest gains, trend-like growth, improving prospects, and possible upside surprise, among others. Will the self-sustaining recovery finally take hold? The risks are less skewed to the downside, particularly risks associated with Europe and China; Japan is more of a question. Risks associated with U.S. fiscal matters and possible brinkmanship remain significant, though somewhat less severe than earlier. Potential growth likely fell in the aftermath of the crisis, perhaps causing unemployment to fall more quickly but also keeping growth at disappointingly low levels.

In the household sector, housing markets continue to improve, with sales, prices, and construction up and supplies of homes down. Shipments of lumber and building materials continue strong. Private equity firms have moved into distressed housing. Household formation is up, and vacancy rates are down. Among consumers, activity is mixed. Holiday sales were relatively good, but higher payroll taxes will affect spending, particularly of lower-income consumers. Confidence has also been down recently. The deleveraging process is continuing, and higher home prices will help, except possibly for homeowners who are still underwater. There is significant pent-up demand for durable goods.

The labor market is generally improving, and unemployment is likely to gradually decline. Unemployment data have been better than expected. Payrolls are growing somewhat more quickly, and UI claims are low. However, total employment is still 4 million lower than in 2008, and signs of labor market damage should be carefully monitored. State-level employment growth is correlated with reports by small businesses of inadequate demand, supporting aggregate demand factors as a determinant of employment. International evidence suggests that the U.S. Beveridge curve will shift back to its initial position, but that hasn't happened yet.

In the business sector, business contacts have generally exhibited cautious optimism. Uncertainty about the economy and policy limits expansion and hiring, although the financial capacity to expand is there if sales growth warrants. Indeed, profits are historically high. Sectors like high tech, agriculture, housing, autos, and energy are among the most dynamic, leading the recovery. The strength of exports varies across Districts. Foreign growth is not sufficient to drive U.S. growth, and indeed, not everyone can grow via exports. A weaker dollar may help the United States.

Fiscal tightening at the federal level seems likely to be about a 1 percent drag on the economy this year. States are doing somewhat better, reducing overall fiscal drag. Lack of confidence that the Congress will solve fiscal issues is quite pervasive.

In the financial area, internationally, actions by central banks are having beneficial effects on financial conditions. In particular, the ECB's OMT program has calmed the sovereign debt crisis in Europe. However, real activity there is depressed, and risks remain. Risk-taking has increased, which is a goal of policy, but there are some signs of frothiness as well—for example, in agricultural land, LBOs, and fixed-income instruments. Excess demand for safe assets has driven down the natural real rate of interest, and a similar effect can occur because of lower-trend productivity growth. The possibility that a sharp increase in rates will cause financial instability needs careful analysis. Credit conditions are better, allowing increased transmission of low rates to autos, housing, and commercial properties. However, reports on CRE were mixed. Motor vehicle spending and residential investment have been relatively strong, reflecting monetary stimulus. Indeed, people are now buying cars with air conditioning. [Laughter] The ABS auto loan market has opened up, including subprime. However, there are still restraints in

mortgage markets, notwithstanding some improvements on the regulatory side. C&I lending is strong.

Finally, inflation has been relatively soft and should remain near or below target. Cost pressures are limited, including wage growth. The median CPI is close to 2 percent. Inflation expectations are well anchored near 2 percent, although the five-by-five TIPS breakeven has moved up some. There is some concern among members of the public about future possible inflation, and some people around the table saw it as a medium-term risk.

I'll conclude with a few observations on monetary policy. Some argued that monetary policy thus far has had positive effects. Open-ended purchases are, indeed, an aggressive approach; state-contingent policy also increases the effectiveness of our policy. An abrupt end to asset purchases should be avoided indeed. Instead, it should be tapered as the economy improves. Policy should rely on forecast-based approaches rather than feedback rules. Finally, care should be taken in relying too much on estimates of output gaps in setting policy.

There is an eight-minute review of the meeting. Any comments?

MR. LACKER. Well done.

CHAIRMAN BERNANKE. A question? Yes, President Bullard.

MR. BULLARD. Mr. Chairman, as I understood it, some people are only considering buying cars with air conditioning. [Laughter]

MR. KOCHERLAKOTA. Which argues that policy maybe needs to be more accommodative.

CHAIRMAN BERNANKE. Thank you for the clarification. Let me make just a few comments. I don't have a great deal to add. I agree with the general tone of a somewhat better feeling in the economy. The financial markets are reflecting that. I note the increase of about 30

basis points in real 10-year interest rates, which of course is going against the effect of LSAPs, and so that presumably reflects a greater optimism about the outlook. I also note, as Vice Chairman Dudley did, the increases in the stock market—14 percent over the last 12 months. That may in fact be partly reflecting LSAPs, but as the Vice Chairman noted, the increases also seem justified by earnings and by alternative yields. The better tone in financial markets and the generally improved outlook reflect probably two things: both a better modal outlook and reduced risk, downside risk in particular. There's been a great deal of discussion around the table about the improvements in Europe. Notwithstanding problems that still are evident in the U.S. fiscal debate, the fact that the House agreed to extend the debt ceiling was a pretty strong signal that there are limits to brinkmanship and that the most negative outcomes are less likely than we perhaps feared.

In terms of the modal outlook, I thought it would be interesting to just very briefly look at how the labor market has evolved since our September meeting, which is an important meeting in terms of when we introduced the “a substantial improvement in the outlook” concept. Let me talk about three variables and, in each case, talk a bit about both forecasts and how the variables have evolved. For unemployment, in the three months prior to the September meeting, the unemployment rate averaged 8.2 percent. At that time, the forecast for unemployment at the end of this year was 8.0 percent; the current forecast is 7.6 percent. So we've seen both improvement and a better forecast. For private payrolls, the three-month average prior to the September meeting was 120,000 a month. The forecast now, as of January, for the fourth quarter of this year is 172,000 per month, which is actually a little bit lower than was forecast in September, but that is a function of changes in timing. In terms of levels, the Tealbook is now forecasting almost 300,000 more jobs at the end of the year than it was in September. And likewise, for total

hours worked in the nonfarm business sector, the current forecast for the end of this year is about 2½ percent above the actual level of last summer and about 1 percent higher than the forecast that was made in September. So, confirming the general sense of improvement is a trend toward better outcomes, and to the extent that there has been news, it is at least modestly on the positive side.

Now, having said those things—and I believe that they convey a lot of what was said around the table—I think my comments wouldn't be balanced if I didn't point out a few negatives. The obvious point on the tail risks, of course, is that while they are more moderate, they remain serious. Specifically, in both the U.S. and European situations, the fundamental risks are deep political issues, and while we've seen improvement in the financial condition in Europe, in particular, the resolution of these political debates is still some way off. For example, in Europe, while there's been progress in developing a single bank supervisor in the euro area, there's been some backsliding in terms of requiring countries to recapitalize their own banks in the case of losses, which tends to increase the so-called doom loop between weak countries and weak banks.

On the question of the modal outlook, a number of people talked about potential for perhaps an upside surprise. I tried to think a little bit about where a significant improvement in the outlook would come from, and it's actually a little hard to identify. We know where the downside comes from; we know what the drags are—fiscal and so on. The factor that most people identify as having the potential to lead to a much stronger cyclical recovery this year is housing, and, to try to get at that, I did the a simple numerical, “back of the envelope” calculation. The Tealbook assumes that residential investment will rise by 18 percent in real terms this year—a fairly significant increase, although not unprecedented. Suppose it were 10

percent more, a 28 percent increase, a very significant increase. Simple arithmetic suggests that that would provide about an additional four-tenths in GDP growth in 2013. Likewise, if, instead of assuming that house prices rise by 5 percent, you assume they rise by 15 percent—which I think I would worry about a little bit if it actually happened—that would add only about two-tenths to GDP growth, based on normal calculations of wealth effects. So, a much stronger housing recovery—and obviously, this doesn't include every possible channel—by this back-of-the-envelope calculation gives you about a six-tenths' increase in growth or about a three-tenths' reduction in unemployment. What I'm trying to convey here is that a stronger housing recovery by itself is not going to pull this engine to the speed that we would like to see it. Now, you may wonder how this compares with the housing alternative simulation that was done in the Tealbook, which got much stronger results. The answer is that in that alt sim, which is a perfectly reasonable alt sim, the housing effects are combined with additional factors—stronger investment and stronger consumption—which are over and above that generated just by the housing sector. In other words, what that alt sim is visualizing is not just a stronger housing sector, but also a self-fulfilling, much-higher-confidence type of recovery than we've seen thus far. So, what I'm suggesting is that, to get the kind of recovery that I think we would all like to see, we're still going to need to get the kind of self-fulfilling, escape velocity type of phenomenon that we've been trying to achieve and have not yet, I believe, successfully attained. Again, while I think there is progress, we should be at least a little cautious about overestimating the power, particularly of housing, to pull us forward on its own.

A final comment I'd like to make is about the potential output issue. In the memo by Hess Chung and Eric Engen, which I also was very interested in, they show that potential output growth has been much less than we thought, not only in the United States, but also in other

countries as well, as was suggested by the presentation earlier today. The question that has not really been answered is, what are the causes of that slower growth? In particular, to what extent is slower growth in potential output endogenous to the financial crisis or to the deep recession, and what are the linkages between those two things? Put another way, is there really a clear distinction between potential output growth and cyclical growth? This is a very important question not only for forming our forecasts of output, but also for thinking about the costs and benefits of policy. To the extent that there are interactions between potential growth and the cyclical state of the economy, that interplay may change the benefit calculation for monetary policy. Now, we've talked about some of the linkages. An obvious one is the skills of the workforce, the hysteresis in labor markets that we've talked about. The Tealbook already takes account of participation rates and capital formation, but what about other factors, such as the effects of aggregate demand on the rate of introduction of new processes and new products? The point, I think, that President Bullard made in an earlier meeting was that a higher-pressure economy will draw forth more entrepreneurship, more new businesses, and more new activities in the economy. So there are some very important unanswered questions here about the linkage between potential growth and the state of the business cycle. I'd note that a lot of research on the Great Depression has suggested that there's an interesting paradox—that the 1930s, despite the very weak state of the economy, was actually a decade of extraordinary advances in technology. But it's been argued by some authors that because of the weakness of the economy, the incentive to put those innovations to work in the market on a the scale necessary to make those innovations profitable was not there, and so it was only after the Depression, World War II, and subsequently that those innovations contributed to a boom in productivity. This is a very vague issue. I was, again, really interested in this memorandum and the work on the linkage between deep

recessions and potential growth because it does raise the intriguing possibility that these two things are not separable, as we tend to think of them. And to the extent that that's true, I think that collectively, we need to do more to understand that.

I'll stop there. Any comments or questions on anything? [No response] Okay. We now have, as usual, a reception and a dinner; there will be no business at the dinner. And we will begin the meeting in the morning at 9:00 a.m. Thank you very much.

[Meeting recessed]

January 30 Session

CHAIRMAN BERNANKE. Good morning. Let me start by calling on David Wilcox to update us on some data.

MR. WILCOX.³ Thank you, Mr. Chairman. Top-line GDP growth was estimated this morning by the BEA at minus one-tenth of 1 percent, which was very close to our forecast of plus one-tenth of 1 percent. That's as close as we get to a bull's-eye.

MR. FISHER. Just a sign error. [Laughter]

MR. WILCOX. Yes, well—I'll take a sign error for which the digit is only a digit after the decimal place. It's the sign errors that involve whole percentage points that are more of an issue. The composition of demand was also very close to what we've been expecting. The main contributor to the downside surprise, such as it was, was a bigger decline in federal purchases, as you can see in the table that you have in front of you; the BEA's defense spending was even weaker than we had penciled in. On the whole, and while we obviously haven't had a chance yet to look through the information in any detail, I doubt very much that this release will have any material implications for our projection of real activity. On the inflation side, as you can see at the bottom of the page, all three of the high-level PCE indexes that we track came in very close to our expectations as well. On the income side, the BEA built in a considerably bigger bump in fourth-quarter income than we've been expecting. It attributed that to a tax-related time shifting, so, to that extent, that won't affect our assessment of the fundamental wherewithal of households or businesses. Thank you.

CHAIRMAN BERNANKE. Thank you. Any questions? [No response] All right. We're now at the point for our policy discussion. We start with Bill English.

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

MR. ENGLISH.⁴ Thank you, Mr. Chairman. I'll be referring to the handout labeled "Material for FOMC Briefing on Monetary Policy Alternatives." The top-left panel of page 1 shows results from the three most recent surveys of the primary dealers: the one taken before the December meeting (the dotted red line), the "flash" survey taken after the December policy announcement (the dashed blue line), and the regular pre-meeting survey received last week (the solid black line). As you can see, the median projection for the peak level of SOMA securities holdings didn't vary a great deal across the three surveys; it rose modestly after the December meeting, but, due in part to that meeting's minutes, which pointed to increased concerns about the costs and risks of further balance sheet expansion, the peak dropped back to about its earlier level.

The two smaller panels to the right summarize the dealers' responses to questions about the potential efficacy and costs of additional asset purchases. With regard to efficacy (the red bars), dealers generally reported that purchases were moderately effective in putting downward pressure on longer-term interest rates, supporting the mortgage market, and easing overall financial conditions. With regard to costs (the blue bars), the dealers saw possible impairment of market functioning as the most important cost in determining the future size, pace, and composition of SOMA purchases; effects on financial stability, future policy implementation, and inflation expectations were close behind. Reduced Federal Reserve income was viewed as least important.

CHAIRMAN BERNANKE. Bill, could I interject?

MR. ENGLISH. Yes.

CHAIRMAN BERNANKE. Is this their own assessment of the costs or their assessment of what we think?

MR. ENGLISH. Their assessment of how those costs might affect your decisions to adjust the pace of purchases.

CHAIRMAN BERNANKE. Thank you.

MR. ENGLISH. As Simon noted in his Desk report yesterday, the dealers generally expected that the end of purchases would be driven primarily by an improvement in labor market conditions, though a number of them pointed to program costs as at least a contributing factor. That result is consistent with the generally negative relationship, shown in the bottom panel, between the dealers' expectations for the date of the end of purchases and the unemployment rate anticipated at the time that purchases cease, although, as the chart makes clear,

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

dealers continue to have widely differing views of the level of unemployment that will be associated with a cessation of purchases.

Page 2 depicts simulations based on staff policy assumptions for each of the three Tealbook policy alternatives, which differ with respect to both asset purchases (the top-left panel) and the federal funds rate (the top-right panel). The black solid lines show the results for alternative B, the red dashed lines show alternative A, and the blue dotted lines show alternative C. The green line in the top-left panel shows the primary dealers' expectations for the path of asset purchases, which are, once again, closest to the staff assumption for alternative A. Under alternative B, the unemployment rate (in the lower-left panel) falls somewhat below 6½ percent by the end of 2015, with inflation (the lower-right panel) running a little below your 2 percent objective through the latter part of the decade. Under alternative A, the unemployment rate falls more rapidly and inflation runs a little above 2 percent for a time. And under alternative C, the unemployment rate is somewhat higher and the inflation rate is lower for the next five or six years. I should note that in alternative C, the federal funds rate is assumed to rise from its effective lower bound well before the unemployment rate hits 6½ percent or projected inflation rises to 2½ percent. Implicitly, we're assuming that a policymaker preferring this alternative would be more concerned about prospective inflation risks or the financial stability consequences of keeping interest rates very low for a long period, and so would choose to raise the funds rate before either the unemployment or inflation threshold is reached.

Turning to the policy decision at this meeting, alternative B, on page 7, would continue purchases of longer-term securities at the current pace and maintain the threshold-based forward guidance introduced in December. You may see the outlook for the economy as little changed from the time of the December meeting, with the unemployment rate still expected to remain for some time at levels well above your estimates of its longer-run normal rate, and inflation anticipated to stay subdued. Moreover, while the strains in Europe appear to have eased somewhat of late, you may still see significant downside risks to the economic outlook not only from that source, but also from unresolved U.S. fiscal issues. You might therefore want to continue on the policy path established in December. Even members who are uncertain about the efficacy of further asset purchases, or are concerned about the potential costs and risks associated with them, may prefer to wait for a while longer in order to obtain additional information before making an adjustment to the policy path.

The first paragraph of alternative B notes that weather and other transitory factors have weighed on economic activity in recent months. Given this morning's GDP release, which showed a small decline in real GDP in the final quarter of 2012, you might prefer to change the first sentence to indicate that the incoming data "suggests that growth in economic activity paused in recent months" (as shown in blue), rather than say it "indicates that growth in economic activity slowed," as we had it in the Tealbook. The first paragraph also refers to the continued moderate pace of employment gains, while noting that the unemployment rate remains elevated, and it upgrades the characterizations of the housing sector and business fixed investment

relative to the December statement. The second paragraph employs more positive wording than in December in its discussion of the medium-term economic outlook and acknowledges that global financial strains have eased somewhat, while noting that significant downside risks remain. It also offers the option of adding a reference to risks related to unresolved fiscal issues. The remainder of the statement under alternative B is essentially unchanged from December.

According to the Desk survey, market participants expect the Committee to continue asset purchases at their current rates and to make no changes to the numerical thresholds. Thus, a statement along the lines of alternative B should have little effect on market participants' expectations for monetary policy or on asset prices.

The more accommodative path for policy under alternative A, on page 5, would appeal to policymakers who judge the current path as unlikely to be sufficient to generate satisfactory progress toward the Committee's longer-run goals of maximum employment and 2 percent inflation. Such an assessment may reflect the view that many of the headwinds that have been restraining economic growth are likely to persist and that the combination of a weak labor market and the impact of the tax increases recently passed by the Congress are likely to be a considerable drag on consumer spending. Moreover, with the economy still well below maximum employment, inflation below target, and short-term interest rates at their effective lower bound, you may judge that the risks to the economy from a new adverse shock would be significantly higher than those associated with providing even more accommodation to support a stronger economic recovery.

The first paragraph of alternative A is identical to that of alternative B. The second paragraph largely retains December's more downbeat language regarding the medium-term outlook and economic risks and adds a reference to the risks posed by unresolved fiscal issues. The third paragraph announces an increase in the pace of purchases of agency MBS to \$45 billion per month, and of longer-term Treasury securities to \$55 billion per month, bringing the combined monthly pace of purchases to \$100 billion. The fourth paragraph is unchanged from December, while the fifth paragraph lowers to 5½ percent the unemployment threshold in the forward guidance for the federal funds rate.

An announcement like alternative A would surprise financial markets. Investors would presumably revise up their projections for total asset purchases and shift down their expected path for the federal funds rate. Longer-term interest rates would likely fall, although inflation compensation might increase. Stock prices would probably rise, but that increase could be tempered if market participants read the statement as indicating that the FOMC had a gloomier economic outlook than expected.

Alternative C, on page 9, might appeal to policymakers who see the recent data as suggesting that, after accounting for temporary factors, the current underlying pace of economic growth is sufficient to bring about ongoing improvements in the labor market. They may also believe that the easing of strains in Europe and the passage of

the American Taxpayer Relief Act as well as the more recent action on the debt ceiling have appreciably reduced the downside risks facing the economy. Moreover, some participants may be concerned that the current pace of asset purchases could impair the functioning of the Treasury or MBS markets, or that sizable further purchases could greatly complicate exit when that becomes appropriate. Some may also be worried that maintaining such a highly accommodative policy stance could ultimately lead investors to take steps that would undermine financial stability.

The first paragraph in alternative C offers a more upbeat characterization of economic developments. The second paragraph states that the Committee expects economic growth to return to a moderate pace and the unemployment rate to decline; it also notes that downside risks appear to have diminished. The third paragraph announces a substantial reduction in the pace of asset purchases, and the fourth paragraph indicates that if the economy develops as anticipated, the Committee expects to reduce the pace of purchases further and to end them by midyear, while also indicating that the pace might need to be maintained or increased if the economic outlook deteriorates.

A statement like alternative C would come as a considerable surprise to market participants. Interest rates would likely increase sharply, and stock prices could decline significantly.

Draft directives for each of the alternatives are presented on pages 12 through 14 of your handout. I'd note that we made some fairly minor changes to the directive language to clarify it and to make it more consistent with that of the Committee's postmeeting statements. Thank you, Mr. Chairman. That completes my prepared remarks.

CHAIRMAN BERNANKE. Thank you. Any questions for Bill? President Fisher.

MR. FISHER. Bill, I'm just curious. Looking at the first sentence in alternative C, paragraph 3, if and when we decide to start tapering back—I'm assuming you're looking way down the road—is that the kind of language you would envision our using to tee up tapering?

MR. ENGLISH. Clearly, it would depend on why the Committee decided to throttle back. But this was intended to be a sentence that points both to the labor market and to the efficacy and costs, and so covered a range of possible reasons why the Committee might take such a step.

MR. FISHER. This is roughly the kind of language we would use if, in April or June or God knows when, we decide to cut back?

MR. ENGLISH. Yes.

CHAIRMAN BERNANKE. Other questions? [No response] Okay. Seeing none, we're ready for our policy go-round. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. I support alternative B, and I can support the language in the statement as is. I accept the wisdom of keeping the language as little changed as possible in the absence of a new policy action. That said, I do have a couple of minor comments about the language of the statement. In paragraph 2, I think the word "significant" before "downside risks" could be removed. The better picture in Europe, along with the fact that the Congress navigated around at least the immediate risks related to fiscal policy, might justify this. This would be a small recognition that the risk environment has lightened up a bit. I don't feel terribly strongly about this. In paragraph 4, I propose removing the words "as always" in the sentence referencing efficacy and cost considerations. To me, the insertion of "as always" gives the sentence a boilerplate quality and makes the consideration of efficacy and costs sound like an afterthought. I think it would be wise to nudge the language, over the next two or three meetings, in the direction of explicit balance between economic conditions and efficacy and costs. Finally, I support adding the bracketed language referencing unresolved fiscal issues as a key risk.

I'm looking forward to the full discussion of the success of the LSAP planned for the March meeting. At this meeting, it is premature, in my view, to contemplate anything like the policy in alternative C, but I don't think it's premature to think about and discuss when and how we might begin to alter the course of our open-ended purchase programs. Let me express a concern. I can envision a situation developing in which there is significant sentiment on the Committee favoring tapering down or even ending the LSAP, even under circumstances in which

economic and labor market conditions have not really progressed enough to justify such an action on the basis of observed labor market improvement. The Tealbook assumption is that asset purchases end in midyear. At that time, the projected pace of job creation is scarcely better than it's been over the last two years, and the unemployment rate is forecast at 7.7 percent. If a year-end date is considered, the Tealbook forecast in the fourth quarter has no pickup in the pace of job creation, and the unemployment rate is still 7.6 percent. I have a hard time seeing how we'll explain a wind-down or stopping of purchases on the basis of labor market conditions and not on the basis of some interpretation of efficacy and costs. As I said, I think it would be wise to begin to move toward a repositioning of the balance of considerations by incorporating stronger mention of efficacy and costs into future statements and other communications, even well ahead of taking any action. We began that process, I believe, with the December minutes. I think that we may have to reframe the LSAPs as open ended for the time being but still as purposely temporary programs with limits. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. I support alternative B as written. This is an appropriate time to watch further developments in the economy and to take some time to determine the impact of our recent and continuing actions. As a result, I would make no change to the December statement other than to update the statement to reflect incoming data. The improvement in housing and stock prices, auto and residential interest rates remaining near cyclical lows, and the broadening of credit availability are all positive developments generated by our actions, as many of us discussed yesterday.

In Part B of the Tealbook, much of the discussion of the choice between alternatives A and B was couched in terms of whether accommodation was sufficient to produce sustained

improvement in the labor market. The preferred policy doesn't just get the economy back to full employment, but it also gets us there as soon as possible without increasing inflation expectations. That seems to be the intent of the comparisons of alternative policy rules. But there is also another cost that all of these simulations ignore—possible permanent effects of this slow recovery on potential output. As we consider the benefits and costs of our actions for the next meeting, I would encourage a broader discussion of the costs of inaction as well as action. Most of the models we use assume no permanent societal cost to a much slower return to full employment. However, labor market scarring; permanent exits from the labor market, as discussed in several alternative scenarios over the past few Tealbooks; poor market experiences for newly educated workers; and growing problems associated with income inequality, exacerbated by periods of long-term unemployment, can affect the path of the economy in important ways not captured in many of the models we typically use in our calculations. What is the evidence that long-term potential for the economy is affected by the speed of the recovery? The Tealbook, Part B, has unemployment at the end of 2015 at 5.9 percent if we follow the constrained optimal control policy but at 7.3 percent if we follow Taylor (1993). Clearly, the optimal control approach is preferred; they both have inflation below 2 percent in 2015, while Taylor (1993) has a much higher unemployment rate for much longer.

Prolonged unemployment is of course undesirable, but it seems to me that there are likely other reasons to be concerned with this very slow return to full employment, perhaps not well captured in the modeling exercise. Are there long-run costs to speed of adjustment that effect the fiscal deficit, potential growth in the economy, or our global competitiveness? How much of Japan's stagnation can be attributed to its acceptance of a slow recovery and obsession with the potential for inflation while continually being surprised by deflation? While we need to consider

the possibility of future inflation or asset bubbles, there is little evidence of either in the current data. The possibility of these costs seems small relative to the costs of very high unemployment that will be exacerbated if we choose to remove accommodation quickly. It is important to understand those costs and benefits we think we measure reasonably well. Some of the costs of a larger balance sheet are difficult to quantify but get plenty of discussion. I would encourage us to also spend time discussing the costs of inaction that are difficult to quantify but, nonetheless, can be quite real as well. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. We just instituted the threshold formulation on forward guidance and added Treasuries to our LSAP program at the last meeting. To my way of thinking, as I said yesterday, there's been little change in the economic outlook since then. Thus, it would be premature to make any change in the policy statement, except as necessary, for this meeting. However, I do think we need to look carefully at the language in paragraph 1. At our last meeting, we said that economic growth was continuing to be moderate. Even though with the new numbers that came in, the discussion we had yesterday suggests that people's outlooks have actually brightened somewhat since the last meeting. So we want to be careful that the change in language in the first paragraph doesn't convey too negative an impression about our outlook going forward. The staff does suggest that the weakness in the fourth quarter was perhaps transitory due to weather-related and other factors. But we need to make sure that we don't send too negative a signal based on these latest numbers.

Looking ahead, there are a number of open issues that I think it would be prudent for the Committee to continue to address over the next several meetings. And I'm glad to see that we'll have some of that discussion next time. I think we do need to understand better and talk about

how we operationalize thresholds. The inflation threshold is formulated in terms of the outlook for inflation between one and two years ahead. The Chairman has indicated in his press conferences that we'll be looking at a number of measures and forecasts of inflation. I think it's very important, if we're going to operationalize this, for us to come to some understanding about exactly how we're going to do that: what forecasts we're going to use, how we're going to measure those, and how we're going to come to some shared understanding of when we think we might be close to that threshold. We should not leave it to doing it by the seat of the pants at some future time whenever we think it might be necessary. I think we need to look forward and work on that.

We do need to do some of the same type of work for the unemployment threshold. Indeed, a decline in the unemployment rate driven by stronger employment growth might be presumably viewed differently by this Committee than a decline driven by changes in labor force participation. We should discuss in advance how we will react to those sorts of information and whether or not the thresholds would be implemented. And if so, if we choose not to act at a threshold, I think we need to talk about what our communication will be at that point? Will we create another threshold? Will we just abandon the threshold altogether? What would come next in that environment? And I think we need to anticipate again what might happen and what plan we would have if we got to a threshold and we chose not to act. What would happen to our credibility if we chose not to act and we had sort of created a new threshold? How effective would that be? So I think there are some really important questions regarding that that we need to come to grips with among ourselves.

Our other tool is asset purchases, and I welcome the discussion of the efficacy and costs of LSAPs at the March meeting. We also need to discuss the other part of the stopping rule for

LSAPs, and that is substantial improvement in the labor market. We had some discussion about that yesterday, and I think this is going to be important. I'm actually very sympathetic with the remarks made by President Lockhart just a few moments ago about considering what it means to have substantial improvement in unemployment or labor markets. If we look at the Tealbook forecast, there may be some people who say that even by the end of this year, it may not be substantial. So if we really think we're going to be tapering before the end of the year, then I believe we need to think hard about how we communicate things about the labor market.

Lastly, as the Tealbook discusses, the effective stimulus provided by the thresholds in the forward guidance depends critically on how policy will be conducted after the threshold is crossed. We've come to no agreement on that particularly. We say in the statement that we intend to keep a highly accommodative stance of policy for a considerable period of time after the asset program ends and the economic recovery strengthens. The Committee should discuss how we intend to implement that policy after the recovery strengthens as well as ways to enhance the credibility of that intention, because it's important for the effectiveness of the policy today. So I hope we can discuss all of those issues. They're all important for how we implement the policies we've put in place.

I would also remind people, in our discussion of policy paths and choices, that these outcomes have a lot of uncertainty associated with them. One of the lessons we've learned from many pieces of research, both presented by the staff and in the literature, about optimal control policies and adopting optimal control policies within a particular model: Those optimal control policies are very specific to a particular model. And indeed, different models can have very different optimal control paths that look quite different. So I would be cautious about our relying too much on the optimal control paths of one particular model. We've advocated and talked in

this Committee several times about robust rules that are robust across models, and I think we need to focus more on those types of rules than on optimal control policies. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. The major challenge I see ahead for us is how to stop buying assets when the time comes, and by that I mean, how to communicate about it and how to rationalize it to ourselves and the public. Unlike our other asset purchase programs, this one is open ended, so it won't end itself and we don't have any precedents to fall back on. So I think it is worthwhile giving this some thought and discussion as we go forward, even if we don't know when we're going to face this issue. In our statement, paragraph 4 spells out three considerations that could justify ending our asset purchases. First, obviously, is a substantial improvement in labor market conditions, and I anticipate robust discussion in future meetings about whether observed improvement in labor market conditions has been substantial enough to warrant the end of purchases. One problem we could face, as has been pointed out before yesterday and today, is that we get conflicting signals from unemployment and employment growth. In that connection, I'm struck by the charts in Part A of the Tealbook that suggest to me that the staff's unemployment rate forecast has improved in the last three meetings almost entirely because of reductions in their forecast of labor force participation. And I agree with President Lockhart that if the unemployment rate were to fall, but without a substantial increase in employment growth, we'd be harder pressed to justify citing labor market conditions. In that regard, I think our understanding of trend versus cycle in labor force participation is a bit murky at this point. So I believe future research on labor force participation in the months ahead would be useful. Apart from labor market conditions, we can invoke the efficacy and costs

clause of paragraph 4. I think that it makes abundant sense—as you have directed, Mr. Chairman—for us to spend more time discussing these in upcoming meetings. An expanded record of those discussions in the minutes can help prepare the public for ending the purchases when the time comes.

I recognize that the staff will be preparing memos for the next meeting. I'm looking forward to some more full discussion there. But in the meantime, I'll make a couple of observations. First, I'll just say that, to me, the most obvious class of costs associated with our asset purchase program involves the implications for the exit process. And on this, I'd note that our official pronouncements in the past have been resolutely confident about our capacity to withdraw monetary stimulus when the time comes in a way that prevents an increase in inflation. But if we keep going, at some point, our balance sheet is going to become so large that the consequences of small errors in the pace and timing of tightening become quite significant. So I think it would be useful for us to acknowledge publicly—and for you to acknowledge in your press conference, Mr. Chairman—that one of the potential costs of future asset purchases is that further expansions of our balance sheet raise the risk of compromising our capacity to withdraw stimulus in a timely way. Concerning efficacy, I think it would also be helpful to acknowledge publicly—as you did in your last press conference, Mr. Chairman—the relatively humble state of our understanding of the effects of our asset purchases. The theoretical accounts we have of how our asset purchases affect real activity have always faced some serious challenges. For example, the limited arbitrage assumptions underlying some accounts are hard to reconcile with the empirical observation that apparently a huge range of investors appear to be capable of operating in virtually any segment of the U.S. Treasury market. I'll also mention that Governor Stein has made the useful point—it was enlightening to me—that even if our purchases drive long-term

yields below the expected sequence of short-term yields, it may not have much of an effect on business investment. And what I'll call the strong form of the Stein critique says that the sequence of expected short-term yields will be the relevant hurdle rate for a firm's physical investment opportunities, even if the firm is capable of borrowing at a lower long-term yield, because the sequence of short rates represents an investment option always available to them, even if their longer-term cost of funding is lower. I think this is worth taking seriously, because it would imply that our asset purchases may be having little effect on firms' investment, even if we can lower long-term yields. And more broadly, I believe it would be useful to back away from resolute certainty about our purchases having a discernible effect on economic growth right now.

Concerning the statement language, I support "suggests" and "paused," I'm against "fiscal issues," and I support President Lockhart's suggestions about deleting "significant" and "as always." Thank you very much, Mr. Chairman.

CHAIRMAN BERNANKE. President Lacker, did I understand you to say that the unemployment improvements were mostly on the participation side?

MR. LACKER. Well, that's an ocular decomposition I did, and I may be wrong about that. But labor force participation has been revised down substantially.

MR. WILCOX. At the end of 2013, our projection for the labor force participation rate is down about one-tenth.

MR. LACKER. Through what? From when?

MR. WILCOX. From September. The scale was dramatically different. So, measured in terms of inches on the page, it's the same, but the scale spans only 1½ percentage points in the labor force participation rate chart, whereas it spans 3 percentage points in the unemployment

rate chart. We've revised down the unemployment rate about four-tenths at the end of this year, for example, and the labor force participation rate about one-tenth.

MR. LACKER. I stand corrected, but the possibility remains that the trend in labor force participation eludes our grasp.

MR. WILCOX. Past results are no guarantee of the future. [Laughter]

CHAIRMAN BERNANKE. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I support alternative B for today. I want to make some remarks on the management of the asset purchase program in the coming quarters. As I mentioned yesterday, I do not think that the asset purchase program should be ended on the basis of risks emanating from the size of the balance sheet, if at all possible. If we end the asset purchase program for reasons in this sphere, the Committee would essentially be saying that, in its collective judgment, the balance sheet cannot be expanded any further. This would take an important policy tool off the table in an era in which the Committee does not have a lot of credible policy tools. Instead, I think the program should be ended according to the Committee's judgment on economic conditions. This would be a far better signal to the financial markets: In effect, the program is ending because the economy is improving and because there's a lot of other monetary accommodation in train. The Chairman outlined yesterday some of the case for labor market improvement, and, according to most forecasts, we will see further improvement along this dimension as the year progresses. I'm fairly confident that we will be able to make a reasonable case—although, as always, uncertainties abound.

I also urge the Committee to consider minor adjustments to the asset purchase program as the macroeconomic situation evolves during the year. Some of the language in alternatives A and C hints at this sort of adjustment. I have long advocated that the asset purchase program be

thought of and operated as if we were in a more normal interest rate targeting regime. In that regime, the Committee often makes relatively minor adjustments to policy in reaction to changes in macroeconomic conditions. The same could be done in the current regime by adjusting the pace of purchases up or down as macroeconomic fortunes wax and wane. One idea along this line would be to consider tapering the asset purchase program during the year should we be fortunate enough to see continuing improvement in the economy. A tapering program would avoid an abrupt end to the asset purchases, with its attendant high hurdle to starting up the program once again. Tapering could take the form of reducing the pace of purchases as we continue to receive data indicating some improvement in labor markets. One particularly concrete version of this might be to reduce the pace of purchases by \$15 billion for each one-tenth point reduction in the unemployment rate, provided that inflation does not exceed 2½ percent in this period. But the Committee could simply make more judgmental adjustments at each meeting as macroeconomic conditions evolve. Making minor adjustments to the program as the data arrive would make the asset purchase program more state-contingent than it is today and, in my view, would help make the program more effective. It would also provide the Committee with a tangible way to manage the program going forward.

I want to comment briefly on two additional issues. I think that possibly the Committee should revisit its planned exit strategy in the context of a larger balance sheet than was anticipated at the time that the current exit strategy was adopted. As it stands today, we are planning to pay substantial sums in interest on reserves for the largest banks in the nation and to foreign banks. These amounts may be larger than the total profits reported by these firms in a given year. Relatedly, the large balance sheet may mean that remittances to the Treasury would be zero for an extended period. I would prefer that we think about ways to smooth our

remittances to the Treasury in order to avoid what may be difficult appearance issues for the Fed going forward. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Pinalto.

MR. LACKER. Mr. Chairman.

CHAIRMAN BERNANKE. Yes. President Lacker.

MR. LACKER. I'm sorry. Can I attempt a revival of my reputation?

CHAIRMAN BERNANKE. If you think so.

MR. FISHER. So little time, Jeff. [Laughter]

MR. LACKER. I said "attempt."

CHAIRMAN BERNANKE. President Lacker.

MR. LACKER. At the end of 2014, the labor force participation rate projection is 63.5; in the last Tealbook, it was 63.7. So the difference is two-tenths. You divide by the labor force participation rate to get the implication for the difference in the unemployment rate. So that would be three-tenths. And the difference in the civilian unemployment rate projection from the last Tealbook to the end of 2014 is indeed three-tenths. There may be some rounding in there that I'm not aware of, but that was the basis of my assertion. I apologize for the confusion.

CHAIRMAN BERNANKE. Thank you. President Pinalto.

MS. PIANALTO. Thank you, Mr. Chairman. I support alternative B today. As I indicated in yesterday's go-round, I continue to see gradual improvement in the economy and labor markets, and I see inflation remaining close to our longer-term objective of 2 percent. Our previous asset purchase programs have almost surely contributed to the improved outlook for economic activity, and up to this point, at least, the associated risks appear manageable. Moreover, as was discussed yesterday, the unemployment rate has declined somewhat faster than

most of us had anticipated last fall, and the staff's estimate of the GDP gap has narrowed. The cumulative effect of these developments heightens my interest in evaluating the benefits and costs of additional asset purchases. I have growing concerns that additional asset purchases will not have an appreciable effect on real economic activity and that the costs and risks associated with a sizable further expansion of our balance sheet are likely to outweigh the benefits. I've been concerned for some time now that our asset purchases could be creating undue risks for private investors, for financial firms, and for us. These risks are greater, it seems to me, in the low interest rate environment, which we expect to last for quite a while longer, and these risks could compromise financial stability, market functioning, and our ability to exit in a safe and timely manner.

The Tealbook discussion of the case for alternative C provides an excellent characterization of my views about the risks. Because we're planning to have a thorough discussion of the risks and benefits at our March meeting, I'd like to suggest a few risks that I think are worth considering. First, some of my contacts tell me that financial institutions and investors are prepared to sell assets very quickly and get the first-mover advantage in a rising interest rate environment. So I'd like us to explore how well prepared banks and other financial companies are for a rise in interest rates and how robust the financial system is likely to be. Second, I'd like to know whether we see evidence that financial institutions are taking on undue leverage and credit risk to compensate for lower-than-expected returns on fixed-income assets. And, finally, I'd like us to have a more complete picture of how our enormous presence in the agency MBS market might affect the housing market when the time comes to implement our exit strategy and we begin to unwind our MBS position. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. It's probably worth mentioning at this point, given your comments and President Bullard's comments, the two areas of focus for the staff for the next meeting. The first, obviously, is financial stability and the interest rate factors—the effects on financial firms, their holdings, who's holding these assets, and what is the risk of a jump in long-term rates. These are the issues that Governor Stein raised yesterday, and I want to note that they are very much on the agenda. President Bullard talked about smoothing, and we are doing some substantial work on strategies for smoothing remittances. That's, I think, a useful suggestion as well. So these things are under way. President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. I, too, support alternative B. Unlike the Tealbook assumption, I expect that we will need to continue our Treasury and MBS purchases at the current pace for some time to come, certainly past the middle of this year. In thinking about this, I'd like to refer to alternative A in the chart on page 2 of Bill's handout. If you look at alternative A, which is assumed to have the purchases going out further, and if you look just at inflation and ignore for the moment unemployment, alternative A actually does a better job over the next decade of hitting the 2 percent inflation target, on average, than alternative B or C. So I feel that from a point of view of trying to achieve even just our inflation objective, continuing these purchases longer is right to do. Importantly, our policies have contributed vitally to the current historically low levels of long-term mortgage, auto loan, and other interest rates, which are helping the economy gain traction. And I'd like to say that I agree with everything President Rosengren said earlier in this go-round.

As I mentioned yesterday, low rates are energizing a positive feedback loop in residential and commercial real estate, which is providing critical impetus for a faster recovery. If we were to end our asset purchases prematurely, we could disrupt this progress. Not only would that

impede economic revival, but it would also put further downward pressure on inflation, which has been running persistently below our 2 percent objective. The Tealbook box on Japan provides a sobering reminder of the potential long-term costs of timid and self-doubting monetary policy. In response to persistent deflation and economic stagnation, the Bank of Japan announced a series of measures in the past that proved inadequate to deliver their inflation objective or faster growth. Like Sisyphus trying to roll a bolder up a hill, the Bank of Japan's halfhearted efforts—too little, too late—failed to make lasting progress. The lesson for us is clear: Despite the uncertain costs and benefits of LSAPs, doing too little poses as great a risk as doing too much.

With regard to the statement language in paragraph 2, I would omit the bracketed phrase regarding fiscal issues. I would also omit the word “significant” as a modifier of “downside risks.” The risks are still to the downside, but global and domestic strains have unquestionably eased notably since December. I would not make the change recommended by President Lockhart regarding paragraph 4; I would leave it as is. Thank you.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I support alternative B, and I support the statement language with its changes. I expect the total size of our LSAPs to be much closer to the alt-A path once we get around to navigating the margins of improvement. For me, substantial improvement is most likely to occur in the second half of the year. I certainly agree with President Williams's comments about the inflation path. The alt-A path for purchases is much more desirable, closer our long-run objective, and the risk of too little action, as Presidents Williams and Rosengren both mentioned, is very high.

As I noted yesterday, our policy of clear forward guidance on the funds rate, backed up by substantial asset purchases, seems to be creating significant benefits in the form of better financial conditions and increased real activity. I think that's clear from our discussion of improved auto sales, durable goods purchases, the housing market, and commercial real estate, and the table is set for cap-ex to improve due to better financial conditions. I'm reminding everyone that this is offsetting the fiscal and global headwinds we're facing. Given how far we are from meeting our dual mandate goals, that means the current marginal benefits of our accommodation are still quite large, and I certainly agree that continued high unemployment has very high costs and risks when you think about the scarring effects and what it has to say about the outlook for reduced potential output. I agree with President Rosengren on that. Moreover, at least so far, the costs of additional purchases seem modest. Market functioning is not an issue. Also, I don't think we are doing anything that will prevent us from exiting when the time comes. When we finally need to exit, a few years from now, we have the tools to remove accommodation, even with a large balance sheet.

Now, let's remember—our current monetary policy strategy is to provide bountiful confidence to households, businesses, and markets that we will stay the course with strongly accommodative actions until the recovery is well under way. We are saying that we will not step on our current policies. We will not defeat their effectiveness the way the Bank of Japan did, which President Williams mentioned. The ECB did it with a couple of missteps. Or, the Fed in the 1930s—in particular, the risk of a situation like 1937. We should alter this course only if we are under much duress and in response to something that's a clearly identifiable event that the public will have no difficulty understanding as a reason for why we had to alter our course. I agree strongly with the comments that President Bullard made yesterday and today. To the

extent that we can, I think it's important to end the LSAPs with an economic success. That will bolster confidence in our forward intentions for our threshold policies as well. Again, it won't defeat our policies.

Now, I think we should be very careful. I think we should come to some joint understanding of what we mean by the economic success—the substantial improvement. I would not set the bar too low, but we should have some idea about what is achievable and then live with that true flexibility with open-ended purchases. I think the cost of declaring our balance sheet to be too large is really high, because once we take that tool off the table—I agree with comments made earlier—it's going to be hard to bring it back if we need it. So we have to be very confident about that. And if we're viewed as moving the goalposts away from our previous intention of substantial improvement in the labor market outlook, that's going to have credibility implications for how people view our thresholds. They won't believe them as much. So I think that these policies have to be considered jointly. So that means we can keep our focus on whether we're truly seeing substantial improvement in the labor market outlook. What does that mean? For me, it seems solid evidence that we're on the way to meeting our full employment goal. I think that means six months or so of solid, above-trend employment growth. I've said something in the neighborhood of 200,000 per month. Others can weigh in on that, but I think it means that we should be confident that we're on the way to where we ought to be. As I noted yesterday, given the fits and starts of growth—including this morning's number—we've seen over the last several years that we need to guard against complacency. So while I see reason to be more hopeful that we will make substantial progress, it's a ways away.

Finally, if we want to have more of a discussion of margins other than substantial labor market improvement, without some readily identifiable public event, I really feel strongly that

the Chairman ought to go out and give a speech on this. Just changing the wording in a statement is going to cause a lot of questions if there's not a reason why we're doing it. That's why I agree that I wouldn't take out the "as always" in paragraph 4; I wouldn't shine a light on that. I think that only the Chairman can really go out and describe what we're thinking. And a press conference isn't the right substitute for a speech in this particular, important case, because there are so many other things that are trying to be conveyed at the press conference that it may or may not come off exactly the way that we want. That's my recommendation, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. The Committee took a major policy step this last meeting by switching to policy thresholds, and I think it is reasonable to give the public time to absorb the content of that move before taking another significant step. But I will suggest that the Committee should begin to move, both in its internal deliberations and its external communications, toward lowering the unemployment threshold to 5½ percent over the first half of this year. This is one of the differences between alternative A and alternative B. I'll make two related, but still distinct, arguments for why the Committee should make this move, and then at the end, I'll discuss some of the wording changes that have been suggested for alternative B.

Now, as I said in the previous go-round, given the current stance of policy, I expect inflation to average less than 2 percent over the next two years, and I expect unemployment to remain above 7 percent over the next two years. This forecast conforms closely to the outlook described in alternative B and in the outlook in the Tealbook, and I think it's actually fairly similar to a wide range of the forecasts we've heard around the table, certainly on the inflation front. So we're confronted with a small negative deviation relative to our inflation goal and a

large negative deviation relative to our employment goal. Yesterday, Mr. Chairman, we took the step of reaffirming the principles statement, the long-run goals and strategy statement, which I think will, over time, assume a quasi-constitutional status in this Committee. I think that statement is clear in its operational, penultimate paragraph about what needs to be done in this situation. The Committee should seek to mitigate these deviations from its goals by adding accommodation.

Now, how can the Committee provide that additional accommodation? Alternative A suggests that one way to do so is to lower the unemployment threshold down to 5.5 percent. As the Tealbook, Part B, explains, market participants would then anticipate that the fed funds rate would be lower for longer. This anticipated arc of fed funds rates would provide more stimulus, stimulus that's needed given the outlook I've described for unemployment and inflation. According to model simulations described in footnote 3 on page 30 of the Tealbook, Part B, the economy could be expected to reach full employment about six months sooner than under current policy. Inflation would be about 25 basis points higher—in other words, still close to 2 percent. I think President Plosser offered some wise words about the wisdom of not relying on one model. Fortunately, in the System, we actually have a wide suite of models we can look at, and they're going to deliver similar answers in this situation. They're forecasting relatively low inflation going forward as well as low output relative to the benchmark level. Further, one of the things that is really nice about our threshold approach is that it offers a lot of protection against the possibility that we're using the wrong model, in the sense that we have an inflation threshold that is fairly tight —50 basis points above our target—where we'd be forced within this Committee to consider strong moves in response to breaching that threshold. So I agree that we don't want to rely on just one model; we want to rely on a suite of models, and we want to have

policy that's robust to the possibility that the one model or the suite of models that we're using is wrong. I believe, though, that this Committee has handled those possibilities quite well in its current statement.

I've suggested lowering the unemployment threshold to 5½ percent. The Tealbook raises the concern that a change in the unemployment rate threshold might lead the public to grow concerned about our degree of commitment to our forward guidance. Now, I don't see this as an issue myself. The current FOMC statement says we don't expect to raise the fed funds rate until the unemployment rate has fallen below 6½ percent. It certainly doesn't say we're going to raise rates as soon as the unemployment rate hits 6.4 percent. So I don't see lowering a threshold as violating any prior commitment that we've made. Indeed, many observers, including some around this table—President Plosser again today—have noted, and I think quite rightly, that one of the weaknesses of the current statement is its ambiguity about what the Committee would do once the unemployment rate falls below 6½ percent. My proposal says that, assuming that the various inflation conditions continue to be met, the fed funds rate should be expected to stay low until the unemployment rate falls to 5½ percent. So, automatically, the proposal is providing clarity about what the Committee will do when the unemployment rate is between 5½ and 6½ percent. The Tealbook also raises the concern that lowering the unemployment rate threshold might be seen as signaling a lack of confidence in the economy. I think this could be a problem if we don't lower the threshold until we see an unforeseen weakening in the economy, but my proposal is to lower the threshold sometime in the first or second quarter, when the economy is likely to be growing moderately. In such a context, it would be easy to explain a reduction in the threshold as being the product of our study and analysis in the wake of our December 2012

actions, exactly the kind of study and analysis described in footnote 3 on page 30 of the Tealbook, Part B.

I'll quickly add that I very much appreciated President Rosengren's remarks about our lack of understanding about the connection of observed output performance and what's happening to potential. Mr. Chairman, you mentioned this as well yesterday. I would just call it our lack of knowledge, and so it's something we really have to be thinking seriously about, especially when we see the staff's analysis that our forecasts for output growth turned out to be too high relative to what we saw, and that translated into potential. One simple-minded conclusion from that could well be that the fact that output was low was what actually caused potential to be low. I'm not saying that's right, but it's certainly a simple-minded conclusion one could reach. More study, more thinking along those lines, is called for.

So my first argument in favor of moving toward lowering the unemployment threshold is that the outlook in alternative B, which we've heard around the table from most participants, suggests that we need more accommodation. Lowering the unemployment rate threshold to 5½ percent would do that and lead to a noticeably superior macroeconomic outlook. Now let me turn to my second argument. In the past, I've argued that lowering the unemployment rate threshold is a useful complement to buying assets because a lower threshold tells the public that we intend to hold our purchased assets for longer. So a lower unemployment rate threshold makes any given asset purchase more powerful. That's a complementarity. But I think the lower unemployment rate threshold can also be a useful substitute for asset purchases, and this point is going to have a great deal of salience for our policy deliberations over the next six months or so. In March, we're going to deepen our conversation about the costs of asset purchases. My own anticipation is like the Tealbook's: Our evaluation of these costs will lead us, over the first half

of the year, to disappoint markets about the extent of our asset purchase program. That disappointment might take the form of our ending up tapering program in some way. I'm not saying it's going to lead us to stop it, but I think there will be disappointment. We'll need a way to make up for that disappointment. I think that reducing our unemployment rate threshold to 5½ percent is a substitute form of accommodation that can actually make up for disappointment associated with reducing the perceived size of our asset purchase programs. So, for both of these reasons—the first reason, simply that that's what the principles document tells us to do; and the second, that it would be a helpful substitute for reductions in our asset purchases—I think the Committee should move toward lowering the unemployment rate threshold to 5½ percent over the first half of the year.

Let me turn to alternative B and talk about some of the changes that have been suggested. I like the idea of getting rid of “significant” from the description of downside risks; that's appropriate given where we stand right now. I think that in paragraph 4, I like the suggestion of President Lockhart to remove “as always.” I think that is inappropriate. I believe that sentence is in there because it's not as always, and so I think that we'd want to have an accurate description of what the Committee is doing in terms of thinking about the likely efficacy and costs. We're making a special effort on this, and “as always” is sending the wrong message on that dimension. Then, on the “fiscal issues” situation, I am not sure what we're thinking we're accomplishing by having that clause. And if I heard a strong argument for why that's in there, I would be willing to listen to it. It has political risk associated with it. I'm willing to run the political risk if there's a really good reason for it, but I'm not sure what the reason is. My own inclination, based on what I know right now, would be to get rid of it. Then I have a suggestion of my own, Mr. Chairman, which is that I would change the word “sufficient” in the second

sentence of paragraph 2 of alternative B. It says, “The Committee expects that, “with sufficient policy accommodation,” and then it goes on to describe a bunch of things. I think this sends the wrong message. It says that the Committee is happy with an outlook that has the unemployment rate falling gradually toward its dual mandate level and the inflation rate running at or below its 2 percent objective. So I would suggest changing the word “sufficient,” which has the connotation of being satisfied with that outlook, to “current”—instead of saying “sufficient policy accommodation,” go with “current policy accommodation.” Thank you.

CHAIRMAN BERNANKE. Just a word on the “fiscal” to tell you what the thinking is. There were a couple of stories in the last couple of days about how the sequester now seems, according to the politicians, very likely to be enacted in full, which would presumably have a major impact on the near term. I have said in press conferences that monetary policy can’t offset highly contractionary fiscal policy. If we want to separate, in some sense, this as the part we can’t really control, this would be one way to do it; that was the rationale.

MR. KOCHERLAKOTA. Thanks for that.

MR. LACKER. Mr. Chairman.

CHAIRMAN BERNANKE. President Lacker.

MR. LACKER. I’m interested in having President Kocherlakota clarify what he thinks “current policy accommodation” means. I think of it as how much we own, not how much we plan to buy. So I’m just curious.

MR. KOCHERLAKOTA. I think this is a challenging problem. I’m not sure I’ve solved it in the appropriate way. “Current monetary policy stance” might be appropriate instead. I understand the point you’re raising, President Lacker. But I think I feel very uncomfortable with the use of “sufficient.” That’s what I was trying to describe. I think what the statement is trying

to connote is, given what we have in place as of our December meeting, this is what we expect to happen. And I don't think the word "sufficient" really is the right word for that.

MR. LACKER. I'd raise one other thing: the second sentence does not say anything about inflation. It says that "economic growth will proceed at a moderate pace" and that the unemployment rate will get to levels we think is consistent with our dual mandate. By not saying anything about inflation, the implication is that this may come at the cost of inflation being not consistent with our dual mandate. I doubt markets have picked up on that, but, as a matter of grammar—and we haven't been scrupulous about this in other places—I would just point out that it's not crystal clear.

CHAIRMAN BERNANKE. The last sentence is pretty clear.

MR. LACKER. I know the last sentence is. I'm just dealing with the second sentence.

CHAIRMAN BERNANKE. All right. I'll go to President George.

MS. GEORGE. Thank you, Mr. Chairman. Like others, it seems clear to me that policy will need to remain accommodative for some time to encourage and support the projected pace of economic growth and employment as various sectors complete the deleveraging process and demand returns to more normal levels. Our current policy, of course, goes well beyond accommodative and continues to provide an unprecedented level of easing, with open-ended asset purchases and zero interest rates well into the future. After effectively deploying asset purchases during the crisis to arrest deflationary pressures and stabilize markets, we are now continuing asset purchases to accelerate the recovery and bring down unemployment faster to achieve our objectives. My concerns with this policy are certainly not with its intentions and desired outcomes, but with the efficacy with which asset purchases can in fact accelerate the decline in the unemployment rate. My concerns remain focused on the unintended consequences

or possible side effects associated with this extraordinary level of accommodation in a growing economy. Certainly, our asset purchases have contributed to some degree to the housing market recovery, although they occurred relatively late in the year, and it's not clear that it's a primary factor behind the better-than-expected improvement. We've seen lower secondary mortgage rates, although those rates have backed up substantially over the past month. Primary mortgage rates also fell a bit after the September meeting but have risen recently. I continue to be concerned about the number of potential costs of our current purchase program, such as market functioning, complicated exit, balance sheet normalization, financial imbalances, and the potential for higher longer-term inflation expectations. I, too, look forward to discussing these issues in March and hope we can clarify the efficacy and costs of this policy, including the points that President Rosengren made about the cost of prolonged high unemployment.

I appreciate that these risks are particularly difficult to quantify today and, in some cases, to describe with any precision. They are not staring us in the face today, and it may be well into the future before we realize them. And the ability to distinguish between healthy and unhealthy search for yield is most challenging. One issue that does concern me, though, is the emerging shift in strategy by individual and institutional savers, banks, insurance companies, and pension funds to recast their portfolios and products as the near-zero-rate environment becomes untenable for safe returns. Examiner findings in my own region suggest that banks are beginning to extend the duration of their portfolios, which will make it more challenging for them to adjust when rates begin to normalize. Other institutions and investors are also placing more emphasis on strategies that entail greater risk, moving away from traditional, investment-grade products and toward riskier lending or equities. Whether this increased risk proves healthy and supportive of economic activity, only time will judge. However, having spent a fair part of my Fed career

examining banks, I know how difficult it is to identify the tipping point in real time when a healthy shift toward risk becomes excessive and potentially damaging. Our actions today contemplate continuing a policy that I believe is too accommodative and poses more risks than benefit in achieving our objectives for sustainable economic growth. The recovery is continuing, and we are making slow progress toward our objectives. As we see the recovery take hold, I am concerned that the continued high level of monetary accommodation proposed in alternative B increases the risk of future economic and financial imbalances and, over time, could cause an increase in long-term inflation expectations.

I, too, would suggest keeping the language as is in alternative B, and I would support President Lockhart's suggestion on the word "significant."

CHAIRMAN BERNANKE. Thank you. President Fisher.

MR. FISHER. Thank you, Mr. Chairman. And I will not use any reference to my breeding bull ranch. I'll leave all analogies to Governor Duke, who had a much more pleasant analogy at our last meeting. I want to speak about three things very quickly. One, no one has mentioned it, but I was encouraged to see the staff begin to socialize the paper by Seth Carpenter. I think that's helpful. We'll see what the reaction is. And I wanted to add that, with reference to President Bullard's comment—and we've talked about this offline, Mr. Chairman—it might be helpful for us to think through how we might smooth out our remittances over time, if indeed we get any backlash from the standpoint of questioning about what we remit to Treasury. So I did want to comment on that article in the *Wall Street Journal* this morning and congratulate the staff for beginning to socialize this. I think it's important to see what the reaction is.

With regard to the statement, as everybody at the table knows, I don't support our current policy. But if I did, I would be attracted to alternative B. I think President Lockhart has made

some very good comments. And I would reinforce his comment with your comment, Mr. Chairman. It is important, given what you said publicly and the reality, that we include the reference to unresolved fiscal issues. Our critics are less vocal now than they were before, but those who are critical of us do view us—particularly after the last meeting and having embraced an unemployment target—as perhaps being tempted toward being politicized. This would make it clear that this is an issue that we are mindful of and that there are still retarding effects of current fiscal policy on the efficacy of monetary policy. I would also support his two other suggested changes. And with regard to the word “sufficient,” Narayana, you said you were trying to figure out how we could do this appropriately—perhaps using the word “appropriate” or something. I think the point made about “sufficient” is correct. It’s an awkward word, but at the same time, I, like you, don’t know what to replace it with.

I’d like to spend just a minute on the LSAPs and how we might condition our thinking in coming out of it. Mervyn King made a great speech on January 22, in which he defended flexible inflation targeting, and he argued the following. I’m going to quote it, as I think it’s good. “The primary responsibility of any central bank is to ensure stability of the price level in the long run. To drop the objective of low inflation would be to forget a lesson from our post-war history. . . . The anchoring of inflation expectations has been the most successful aspect of the inflation targeting regime and it has allowed” central banks—he said “the Bank,” referring to the Bank of England—“to avoid an unnecessarily damaging tightening of policy in response to short-run movements in inflation. It would be irresponsible to lose that.” I think that should be tattooed on each of our foreheads. The work by Evan Koenig and Tyler Atkinson from the Dallas Fed that we circulated recalls the binge drinking by previous FOMCs, which then went through detox and have since had 30 years of sobriety. Inflation expectations were running at

about 5½ percent or so in the early '80s. They were driven down to 2 percent through some very harsh measures taken by our predecessors and have been steady as a rock for the last 13 or 14 years. And we reinforce that, Mr. Chairman, with our statement that we have a 2 percent target for the long term. To me, that accomplishment is one of the significant accomplishments of your leadership of the FOMC. I know there are other opinions at the table, but I think it is very important that we remember, as the study showed, that inflation expectations are really the determinant, the most important determinant, of where inflation is likely to be. So we need to hold that front. And yet, as Charlie Evans referenced the paper yesterday and as the paper argues, we do have a pretty well-stocked cabinet. We still have excess reserves of \$1.52 trillion as of the statement of January 23—that's 92.9 percent of reserves—and a monetary base at \$2.7 trillion. So I think Koenig and Atkinson are right. We've installed a liquor cabinet in the Fed's rec room. It's fully stocked with an assortment of booze.

I'd make two points. Yesterday, many at the table inferred that we might take credit for the perceived improvement in the economy, but nearly all of the money that we've created remains in the form of excess reserves. It isn't circulating through the economy. What we have done, basically, is to provide a monetary head fake. We've used language, which is good, and declarations, and indeed, we have, I think, had some effect. I don't think we can take full credit, however. Indeed, rates are even higher at the 10-year level and further out the rate spectrum than they were, as we acknowledged yesterday, when we made our declarations at our last meeting. So the real key is whether the monetary booze, as my colleagues refer to it, is going to fuel a raucous party later on at some point in the future. As President George was just pointing out, we have to think about the very long term. And perceptions here are the key to whether we keep inflation expectations anchored and are responsible guardians of that accomplishment that has

been achieved at great cost in the postwar period, referred to by Mervyn King. So far, so good. At last night's close, however, the implied inflation rate of the five-year TIPS closed at 2.46, the highest rate since May 2, 2011. So my point is that we simply have to be careful to protect that accomplishment. I think we need to underscore that constantly, which we do—and which you do, Mr. Chairman—not only in your press conferences, but also in everything we say and do.

With regard to the future of this program, I want it clearly understood that I am not advocating going cold turkey—so, basically, no migration—to use and kill the liquor cabinet image—from Wild Turkey to cold turkey. I think this just requires discipline. I do agree with the suggestion, by President Pianalto and President George, of the various risks that we need to consider in addition to the constant risk, which we have to be mindful of, of unanchoring inflation expectations. And I believe that President Bullard made a sensible suggestion that if and as we see improvement in the economy—on both fronts, particularly on the employment front—we do consider, instead of going cold turkey, a tapering process, and that we begin to build in at least a cognitive map of how we might do that and how we might express it. And then I would add one other suggestion with regard to the risks that we should consider. We're taking up a lot of the long-term space in the Treasury market; the public is holding short-term paper. The question is whether or not that will create political pressure on us, given the fact that if short-term rates rise, we're likely to lead to further deficit burdens from an interest rate standpoint. And the risks there would from the fact that we've basically exited the short-term market and are focusing our activities in terms of purchases at the longer end of the yield curve.

Those, Mr. Chairman, are my comments, and I thank you for tolerating them.

CHAIRMAN BERNANKE. Thank you for calling attention to the *Wall Street Journal* article, which I commend to people around the table. It's a good exposition of the staff work,

which makes very clear that it's a possibility that there will be a period of low or zero remittances. And I think getting that out there and having that part of the discussion is, obviously, constructive. Governor Yellen.

MS. YELLEN. Thank you, Mr. Chairman. I support alternative B, and I consider it appropriate at this meeting to make only modest changes to the statement. In paragraph 2, I do very much like the shift from the negative rationale for our purchases—namely, that without them, economic growth might not be strong enough to see improvement in the labor market—to the more positive rationale that with the program we do expect to see gradual improvement. My preference would be not to add the bracketed clause in this paragraph. Although there certainly remain large unresolved fiscal issues, it seems problematic to me to insert this clause now, just four weeks after agreement was reached on tax issues and concerns about the debt ceiling are receding. I could support the suggestion of removing the word “significant” as well in this sentence.

We've linked the pace and duration of asset purchases to the goal of a substantial improvement in the outlook for the labor market. I certainly don't think that criterion has been met. The unemployment rate has declined a bit, but with the moderate economic growth the Tealbook forecasts, there is not yet an expectation of significant improvement over the coming year. My own outlook is similar to the Tealbook's, so I do not now anticipate sufficient progress in the labor market to terminate this program for this reason before the end of 2013, and I, too, envision total purchases that will come closer to alternative A than alternative B. Of course, I intend to keep reevaluating the outlook.

With respect to the efficacy of our asset purchases, I see them as definitely having lowered primary mortgage rates, which is contributing to a surge in refinancing and is aiding

recovery of the housing market. And I agree with the comments of Presidents Williams and Rosengren and others about the broader beneficial effects. Because the minutes surprised markets, the reaction also provides something of a read on the program's efficacy, at least in terms of its impact on asset prices. The most recent Desk survey suggests that there was only a modest shift in market expectations concerning the ultimate size of the program. We would not have expected a major market response, but key financial variables did move in a manner consistent with a small tightening of policy. During the two hours subsequent to the minutes' publication, yields on 10-year Treasuries moved up about 5 basis points, the S&P 500 declined about ½ percent, and the dollar appreciated three-tenths of 1 percent versus the yen and four-tenths versus the euro. Because the benefits of our asset purchases come about largely through the transmission to asset prices, and from there to the real economy, for what it's worth, this bit of event-study evidence is consistent with past assessments of their likely benefits.

With respect to the costs of our asset purchases, they do not seem to be impeding the functioning of financial markets. With respect to risks, we are seeing some increased risk-taking in financial markets, although I also remind myself that within limits, a greater willingness to bear risk is something we want in order to promote the recovery. As Governor Stein noted yesterday, interest rate volatility has declined, and there are reports of a rise in the use of leverage. I, too, worry that investors may resort to strategies to enhance returns that could subject them to significant losses if interest rates were to rise sharply. As Governor Stein discussed, if these investors are highly leveraged, this could create systemic risk. A prolonged period of low interest rates may be spurring such behavior, along with a diminution of perceived tail risk, but I doubt that this is importantly attributable to our asset purchases per se. We do need to watch these developments carefully; use our supervisory tools, such as stress tests; and

consider what other tools we could deploy should we conclude that they pose a significant threat to financial stability. But at the same time, we need to keep firmly in mind that there are large social costs and serious downside risks that would be associated with the failure of the economy to return toward maximum employment over the next few years or with a prolonged decline in inflation below our 2 percent objective. And I certainly agree with Presidents Rosengren and Kocherlakota and others—and with the remarks that you made yesterday, Mr. Chairman—about the potential impact of such a prolonged period of slow recovery on the long-run potential of the economy.

With respect to the potential for losses on our balance sheet and a possible suspension of remittances to the Treasury, I agree with the comment you just made—we certainly need to communicate the possibility of such outcomes to the public soon and clearly. At the same time, I would certainly emphasize the rationale for this program and its expected benefits. I think the publication of the Carpenter et al. FEDS working paper is certainly a good step in this direction. Considering the federal budget situation overall, I believe and would forcefully argue that the program is strengthening, not weakening, federal finances by lowering the interest cost to the Treasury of new issues; by diminishing the potential for inflation to undershoot our target, which would result in an unanticipated redistribution from government to domestic and foreign holders of Treasury debt; and, of course, by strengthening the economy and thereby boosting tax revenue. We would hardly be the first country to experience such losses in the conduct of monetary policy, and we can learn from other countries' experience. The central banks of Switzerland, Chile, and Israel, for example, all have maintained their independence and the support of their governments and the public in spite of incurring losses in their conduct of monetary policy. Importantly, these central banks were understood to be pursuing objectives in

the national interest. Even with negative capital, a central bank can continue to conduct policy successfully, except in very extreme cases.

Overall, then, my assessment of the efficacy and costs of our asset purchases has not materially changed since we started the program in September. I therefore think it's appropriate to leave the expression of our commitment in paragraph B(4) unchanged. I consider it important for us to communicate more clearly to the public our assessments of the efficacy and costs of our asset purchases. Should we at some point decide that we need to scale back these purchases, even though a substantial improvement in the outlook for the labor market has not yet materialized, I definitely think we will have to explain to the public why and how our assessment of efficacy and costs has changed, and a failure to do so would severely damage our credibility.

Turning to forward guidance, I believe the market has responded well to the adoption of thresholds, although there is some confusion out there about whether 6½ and 2½ are thresholds or triggers. I agree that it's appropriate to drop the calendar date today and allow the market to take over the job of judging when the thresholds may be reached. I anticipate that we will be able to leave the forward guidance as is for quite some time. Certainly, today, with the unemployment rate far above 6½ percent, inflation expectations well anchored, and my forecast for inflation one to two years ahead running well below 2½ percent, I consider the status quo appropriate.

CHAIRMAN BERNANKE. Thank you. Governor Duke.

MS. DUKE. Thank you, Mr. Chairman. I think the choice of alternative B for this meeting is a pretty easy call. The bigger question is when we might reduce or stop asset purchases and, perhaps more important, whether we will adjust purchases in response to labor market conditions or for some other reason. I think the case that purchases will be adjusted in

response to an improving labor market outlook is stronger today than it was last September, when we first launched open-ended purchases, or even when we held our last meeting. Downside risk from the fiscal cliff is not eliminated, but it has been substantially lessened. Prospects for foreign economic growth seem brighter, and the threat of a blowup in Europe appears to be deferred, if not lessened. At the same time, domestic growth in late 2012 seems to have been more resilient to shocks and to uncertainty than I might have expected. And even if the Chairman did pop my optimism bubble yesterday with his buzz-killing math, I still think that there's growing evidence of momentum in housing that represents an upside risk or at least a sturdier cushion against future shocks.

Over the next few months, we'll see how consumers adjust to higher payroll taxes, and we'll see how the fiscal fights unfold. If we do see a string of good news, it might give us an opportunity to boost confidence by adjusting purchases in response. I agree with President Bullard and others that when we act, we should look at an adjustment rather than a hard stop. I'm also looking forward to reviewing the staff work on efficacy and costs that's under way for the March meeting. So I think we have a lot to gain by waiting. At the same time, I believe it's quite important to our credibility that we make clear the difference between our commitment to keep short-term rates low, which is predicated only on economic performance, and our commitment to asset purchases, which is also governed by cost and efficacy considerations. Despite the brighter outlook, I think it's perfectly plausible that we might reach the point at which costs no longer outweigh benefits before we reach what we can credibly point to as substantial improvements in labor markets. If that happens, and if we've been clear in advance that cost and efficacy considerations represent real conditions in the stopping rule, not boilerplate, then stopping for these reasons should not cast doubt on our commitment not to raise

the funds rate. And I do see very real limits to our ability to continue to affect economic performance by removing duration from the market through asset purchases. These are not limits that will become evident as we continue; they are limits we know about today. To be clear, I view these limits as the end of the runway rather than a reason not to accelerate or to pump the brakes now. Even at the end of my metaphorical runway, it's not bounded by a definitive wall, but rather by a surface that gets progressively rockier and bumpier. So I don't think my opinion that there are limits to asset purchases is at odds with my agreement with Presidents Evans and Williams that we shouldn't step on our own effectiveness before we get there. We should simply be clear that there is a limit.

Two risks to duration removal that worry me the most are market functioning and the interest rate risk we're taking on our balance sheet. As we think about market functioning costs and the efficacy of asset purchases, I think it might be helpful to think separately about purchases of mortgage-backed securities, longer-term Treasuries, and medium- or shorter-term Treasuries. I'm especially interested in knowing how much runway is left in long-term Treasuries and MBS. I endorsed earlier the notion of adjustments to the pace of purchases. It seems plausible to me that we might find it prudent to adjust our pace of MBS purchases in response to changes in origination volume. This would be an example of a market functioning, rather than a labor market, response. In terms of balance sheet risk, my primary concern is the potential for outright operating losses and the political risk those losses might bring. To a lesser extent, I worry that once such losses become a very real possibility, they could actually affect monetary policy decisions. I'm probably the only person at this table who has had the joyful experience of explaining to stakeholders the losses that resulted from an unfavorable turn in interest rates. But I can tell you that my experience was that when the losses came, as they predictably would,

nobody cared about the profit that we had made in those same positions in the past. I don't think the risk comes so much from a reduction or even a suspension of remittances. I think the political risk comes from the scrutiny that would follow an announcement of outright losses—an announcement that the Federal Reserve has lost money. The political risks I see are a resumption of calls to audit the Fed and a loss of authority to purchase some assets, pay interest on reserves, or borrow in other ways, such as by using reverse repos or term deposits. The loss of any of these authorities would impair our ability to conduct monetary policy in the future, just as the effectiveness of our future emergency liquidity operations will be limited by Dodd–Frank provisions that restrict our 13(3) authorities and require disclosure of discount window borrowers.

There are some ways to inoculate ourselves from some of the political risk and extend this particular runway. First, we can make sure that our remittance assumptions are embedded in any official baseline budget projections. Having watched the ferocity in the fight over less than \$100 billion in revenues or expenditures, I certainly don't want a surprise swing in our profits to trigger a debate over whether the unexpected shortfall should be covered with taxes or expense cuts. We can also be transparent about the variability in earnings that's likely to result from changes in interest rates as our balance sheet grows. As a number of people have mentioned, the recent publication of the Carpenter et al. FEDS paper is a good start; we should do more of it. We should also be mindful that as time passes, demand for currency grows and reduces our dependence on interest-bearing funding, which reduces the potential for negative carry. This increases the flexibility to make decisions about assets free from concern about losses. And I think that even if we reach the end of the asset purchases as a viable tool, there might still be some room for policy action by varying the assets within our portfolio. What's more, even as we

run into market limits on our purchase of certain longer-term assets, we can still increase accommodation by committing to holding those assets for longer. Holding rather than selling MBS securities as part of our exit strategy could also reduce the recognition of market losses. So I hope that in addition to reviewing costs and efficacy, we will revisit our announced exit strategy at future meetings. However, I don't think we can eliminate the political risk entirely, so I would not want to continue asset purchases that we can see today would result in base-case losses, unless the economic outlook were more dire than it is today. Finally, I think questions of efficacy and risk to financial stability are real, but I view them as concerns for monetary accommodation more broadly rather than specifically as concerns for asset purchases. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Mr. Chairman. First, I have to return to our adoption of the consensus statement on policy yesterday. I was happy to abstain without comment, but I was told after the meeting that that's an unacceptable way to proceed and I need to make a comment for the record. So I'm going to do that now. First I would say that I admire the way that Narayana formulated his understanding of the statement yesterday in his comments, and I'd be happy to embrace that or, for that matter, the speech of then Governor Bernanke to which Narayana alluded. But nothing that has happened in the last year has changed my view that the document itself made vagueness a virtue to an excessive degree, and, ultimately, I don't think it has advanced the cause of achieving or communicating greater consensus in the policy views of the Committee as a whole. But it certainly hasn't made things worse than they were before, so I'm content to continue to abstain.

Turning to monetary policy issues, I first want to make one point, which is not about the statement itself but refers to some earlier comments. There were a few people who said earlier that we shouldn't identify potential costs to the balance sheet position of the Fed that mean we would not be paying any remittances to Treasury, because that would suggest that we wouldn't any longer have the LSAP as a policy measure. To be fair to our colleagues—including Betsy, who just did this—I don't think what they've done is to say there's some absolute level beyond which, under any circumstances, they wouldn't be willing to go. They have identified the political costs, as Betsy articulated them, as a cost to be taken into account. But she did say that if there were more dire economic circumstances, she might be willing to do more, and I presume the reason for that is, at that point, her judgment of the balance of benefits and costs would have changed. So, Jeff, I don't think anybody is suggesting that that issue is, in and of itself, dispositive. I think it's just a matter of people differently valuing costs and benefits.

Turning now to the monetary policy action itself, I was struck by what Narayana said in his intervention, because it returned to a theme that I at times have addressed and that Bill Dudley has at times addressed, which is the desirability of thinking forward several meetings, or part of the year, and trying to, in a strategic fashion, think through how we're going to act and communicate our actions. Some of you may recall that even though I was obviously in favor of greater accommodation in the 2009–10 period, I was cautioning against what I then characterized as the impulse to have to throw a maiden over the cliff to a dragon in every meeting, just to be perceived as having done something. And I thought what Narayana did a little while ago was to present a possible strategic approach that couples a shift in LSAP policy with a complementary change in the thresholds. Now, Narayana may well favor the change in the thresholds even without the LSAP policy, but the point is that he was trying to think of them together and think

of how we're going to move over the course of the next several meetings. And I think that strategic perspective is really important for us to maintain when we've got a bunch of novel types of actions, including now both the thresholds and the open-ended LSAPs, on the table. That strategic perspective is very much worth discussing in March and June—and thereafter, if necessary. For today, I think it counsels minimal changes in the statement, certainly in the policy portions of the statement. Now is not the time, in my view, to move even incrementally on policy, largely because of the overinterpretive propensities of the folks out there who'll be on CNBC as soon as the statement is released this afternoon and who will follow on for the next couple of days. As I think I've said before, these guys make Kremlin watchers look as though they just weren't paying attention. And they just do overinterpret any little shifts in language to reflect more of a policy change than we certainly intend.

Paragraph 4 could certainly have been drafted differently. I, frankly, was a bit surprised back in September that some people didn't ask for changes in the drafting of it, but it became what it is. And I believe it would be ill advised at this juncture to change it, because people will read into it a shift in policy that I don't think reflects the view of this Committee today. So I wouldn't make any changes in paragraph 4, even though I fully anticipate a discussion of these kinds of changes and issues in March and June. Of course, paragraphs 1 and 2, almost by necessity, change every meeting because they're supposed to be retrospective and prospective. Mr. Chairman, to my memory, nobody has commented on the blue language in paragraph 1?

CHAIRMAN BERNANKE. You would be the first.

MR. TARULLO. Well, I'll do it then. I'm going to take the patriotic approach and suggest that we have some of the red and some of the blue against the backdrop of the white paper. I would suggest that we say that the “information received since the Federal Open Market

Committee met in December *indicates* that growth in economic activity *paused* in recent months.” The GDP results that David communicated to us as the meeting began make it reasonable to use the verb “indicates.” It’s not just a suggestion anymore, and everybody’s expectations about growth in Q1 and Q2 would suggest that Q4 was a pause rather than a slowing. In paragraph 2, as the Board knows, I had some of the same reaction to the paragraph 2 language as Narayana did. And I believe that maybe Richard has come up with the best adjective, which would have been “appropriate,” because “sufficient” is a little value laden—you’re not sure which side of that you’re on. I think it is fine to omit “significant” before “downside risks”; that certainly comports with the discussion that we had yesterday. Like Janet, I think it would be a bit odd to insert “in part reflecting unresolved fiscal issues” at this point. It would have certainly been fine to do it in December. But even though the prospect of full sequester would be disruptive and a significant fiscal issue, what we faced in December was that possibility plus uncertainty about taxes plus the fiscal cliff, and at least some of those—the debt ceiling, tax issues—have been taken off the table. So I believe that inserting it now would once again elicit that kind of overinterpretation that’s probably not particularly helpful. I do think, Mr. Chairman, that if things continue along a path in which full sequester seems increasingly likely, we’ll have the opportunity to return to it again in March or, for that matter, June, depending on how things work out. And again, you would have ample opportunity to comment on it either in your monetary policy testimony or at the March press conference. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. Well, I guess we are doing some cleanup from yesterday. In the spirit of starting with some cleanup of the issues, I did want to follow up on President Fisher’s question regarding the Authorization for Domestic Open Market

Operations in extraordinary circumstances, only to note what I perceive to be the rationale of his question, which maybe wasn't fully fleshed out and which is really one of governance. You will recall that he asked the question: If the Chairman becomes indisposed, will it be the Vice Chair of this Committee or the Vice Chair of the Board or some other person who will be the person who will authorize the Desk to take actions? The answer was that it will be the Vice Chair of the Committee. From a governance perspective, that's probably less than ideal, but I wanted to just complete the perceived rationale, I think, for the question and leave it at that.

As I described in the economic outlook go-round, I believe the economy is showing some signs of improvement, but we haven't yet moved into what might be a self-sustaining recovery. At this point, I don't see convincing evidence yet that the outlook for the labor market has substantially improved, and I believe the benefits of our policies still outweigh the costs. Having now seen fourth-quarter GDP growth at negative one-tenth, I also think any near-term shocks to economic activity could be particularly debilitating. I believe there's still considerable downside risk that economic growth is not sustainable. At the same time, because I also see signs of improvement, I wouldn't advocate for the more aggressive form of accommodation contained in alternative A. At this juncture, I support the continued accommodation described in alternative B.

Although the wording of alternative B is largely similar to the language we adopted in the December statement, there is this one subtle aspect to it, which many have described. Instead of saying that the Committee remains concerned that if we don't provide sufficient accommodation, the recovery will sputter out—or worse—the new language really does give it a more positive spin away from the prospects of poor prognosis, which can cast policy action into a self-defeating mode that hinders rather than supports growth. In the shift from the old sentence, the

new sentence says that the Committee expects that, with “sufficient”—or is it “current” or “appropriate”?—accommodation, the unemployment will decline toward a mandate-consistent level. One of the benefits to the policy that we’ve put in place throughout the statement both in the forward-guidance language in the statement of lower for longer—saying that we’ll keep rates lower well beyond the point when the economy begins to strengthen—and now in the asset purchases statement is that we’re sending a signal that policy actions are intended to support economic growth. If one of the downside risks that we have identified, or another one that we haven’t foreseen, should materialize, our policies will have created a floor of support that will keep the economy from completely tanking. This qualitative language can cut off some of the tail risk that people fear, and less fear of tail risk enhances optimism, spending, and rational risk-taking today, even without any other change in monetary policy. So I support the change in this wording in alternative B.

I’d also like to commend President George for reminding us that it is exceedingly difficult for supervisors to definitively find the tipping point in which healthy reach for yield becomes unhealthy, systemic, destabilizing, and dangerous to the macroeconomy and to our ultimate attainment of the mandate. Even if examiners could locate this point definitively for us, it is not clear that this body is equipped to consider the regulatory, supervisory, enforcement, and examination tools that would keep these instabilities from spreading and propagating. In short, an ounce of supervision is worth a pound of emergency liquidity support. So we need continued supervisory diligence of the sort that President George reminds us of, and I thank her for her comments.

I’d also like to express my support for a future refresh of the sequencing that we set forth in the exit strategy. For example, because of the impact of keeping MBS holdings on our

balance sheet, which I believe has already begun to show through into housing markets, I think that this is likely proving to be a very effective channel. Our MBS holdings are assisting us in supporting the relatively more robust growth in the housing sector. They obviously have moved us out of a Treasury-only balance sheet, but when it's time to exit, we may want to determine whether we have the sequencing right in the selling order of the MBS. The beneficial impact of MBS holdings, combined with the possibility of capital losses incurred in their sale, may suggest that they not be sold as early in the exit plan as we originally designed it to be. So I look forward to the staff's continuing work in assessing our ability to execute an effective exit if MBS is held on the balance sheet rather than sold at the time it was originally anticipated.

Finally, while I don't feel strongly, I do want to make one observation regarding the reference to unresolved fiscal issues: Having not mentioned the fiscal cliff when we were staring into the abyss, the timing of mentioning fiscal issues now seems off—late, if anything.

Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Stein.

MR. STEIN. Thank you, Mr. Chairman. I support alternative B, but looking to the next meeting in March and assuming that the outlook is roughly where it is now, I would favor something where we begin to step down the purchases. In part, this is simply because I think I'm roughly in the Tealbook ballpark; I believe a cumulative program on the order of \$500 billion makes sense for reasons I've discussed before—my own weighting of efficacy, fiscal costs and risks, financial stability issues, and all of that. Of course, I recognize that not everybody shares those concerns and certainly not to the same degree, and as a result, not everybody is in this Tealbook ballpark of \$500 billion. So let me try to make a set of arguments that maybe will be a little bit more broadly resonant, and I'm going to try to take the tack that Governor Tarullo just

suggested, which is to think about this as a strategic set of issues in terms of the dynamics of expectations management and preserving flexibility. A first observation is that market expectations continue to be out of line with what I take to be not my preferences, but the approximate center of gravity of the Committee. The most recent dealer surveys show expectations to be for a total program size of approximately \$1.2 trillion. As a group—Vice Chairman Dudley, you mentioned yesterday that your estimate was that you thought the median of the group was in the \$750 billion, \$800 billion neighborhood. That sounds completely right to me as well. So, as Governor Duke mentioned last time, that still leaves us with a few hundred billion dollars' worth of bad news to deliver to the market. Based on the dealer surveys, the minutes moved the market prices a little bit, but if you consider expectations, it was really quite a minimal impact. And I do differ; I do think it is important. Of course, it's very hard to do, and there's going to be a lot of error, but I think it's important to do the best we can to align expectations, if for no other reason than it gives us operating room. We've heard a number of times how people would be uncomfortable at any given point in time of doing something that was surprising to the market. So the better we can do on aligning expectations, the better off we'll be.

With that in mind, I was just trying to think through what the inferences will be if we hold steady in March? Let's think about it. We'll be about six months into the program. It will be known that we're doing a serious rethink of cost and efficacy. Moreover, if we assume that the economy in March is roughly where it is today, I would not want to argue that we've made substantial improvement to the labor market, but it wouldn't be unreasonable to say that there has been some forward progress since September. As the Tealbook points out, the forecast for the year-end 2013 unemployment rate would be roughly four-tenths lower. Fiscal cliff issues

have been at least partially resolved. The Dow is now flirting with 14,000. So, on a continuous scale, there's been some improvement. If we don't turn the dial at all, I guess the inference, as a logical matter, is that either (a) we're growing increasingly comfortable on cost and efficacy; (b) we're setting a pretty high bar for labor market improvement, so four-tenths is really not much; or (c) the dial is really not so much a dial that we would adjust in a continuous fashion but has more the nature of a discrete on/off switch. It seems as though the first two inferences would, if anything, have to push market expectations for program size out further—again, increasing the gap between where the market is and what I take to be the center of mass of the Committee. And with respect to the third, I'm not very comfortable, as a number of people alluded, with the idea of holding this up as a discrete on/off switch. I think the idea that we respond more gradually to information is probably useful. Another way to say this is that if you have a discrete on/off switch, it's a coarsening of the information available to the market because, as we learn and as we adjust, that's not feeding through, and I don't think the minutes are a substitute for action. If it's not feeding through, and the market just doesn't learn, that just pushes that learning further down the road and creates more volatility at a further point.

Another argument that I would make as a strategic argument for stepping down—it doesn't have to be a huge step-down—is that it gives us more headroom and more flexibility to respond to changing circumstances down the road. Although I was attracted to parts of alternative C, one thing that I didn't like, because I thought it went counter to this, is that there was a passage that said, “If the economy develops as anticipated, the Committee expects to further reduce the pace of its asset purchases . . . and to bring them to an end by midyear.” In other words, the whole idea is, if you think there's an upper limit on balance sheet size, an advantage of slowing the pace is that we don't have to say things like that. It gives you more

room to extend if the economy then slows down again. I think if you want to be open ended in spirit and, at the same time, recognize that there's some tension, an upper limit on balance sheet size, slowing down the scale obviously gives you more room to be flexible going forward.

Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Powell.

MR. POWELL. Thank you, Mr. Chairman. I support alternative B at this meeting. However, I also believe that it will soon be time to move to something like alternative C, probably well before the end of this year. I look forward to the assessment of costs and benefits at the next meeting, and I'm going defer my policy comments until then, except to say a couple of things. First, my principal concerns remain financial stability and fiscal losses. And if the economy continues on its current path, and subject to further dialogue on the nature of the risks that we face, I believe we should adjust our purchases downward, with a view to ending them before year-end, whether or not we see a substantial improvement in the labor market. And again, I would say that it is key that we take an opportunity, if we get one to remove the thought that this is an on/off kind of thing. I also accept that there's a downside case. For example, if the risk clouds come rolling back in or if the fiscal negotiations become disruptive once again, it may be necessary to continue the purchases—or even increase them, for that matter.

On a separate matter, I want to talk for a minute about the stopping rule. As many of you know, I did propose an amendment earlier in this process before the meeting, which would have done something like what President Lockhart suggested. And interestingly, I was advised, I think correctly in both cases, that I had offered the amendment both too soon and too late. That may say something about my socialization to the way we do things here. Too soon, because it's really something that ought to be done, if it's going to be done, in connection with a press

conference. But I think the broader point is this: The efficacy-and-cost rule is a real thing, and if you think about it, it can't be the case that we simply intend to keep purchasing whether or not efficacy is proven and whether costs are perceived to be greater. Of course, with costs, the issue is that they're down the road, they're hard to see, and we're not going to see them in real time. So it's a heavy burden, and I actually think that cautions a little bit of humility and caution. It cautions caution. Having said that, the language of paragraph 4 does seem to me to suggest boilerplate; many of us see it that way. It's not something we should perhaps address at this meeting, but in a way, it embeds an independent barrier to changing our purchases, and that should never be the case. When the market expectations are different from the intentions of the Committee, the Committee should adjust the market's expectations, rather than the reverse. It can be fixed with a simple drafting change, perhaps at the next meeting, and I will defer the rest of that until then. There are also other ways to add to clarity. Those of us who feel more strongly about this can speak publicly about it. I would echo those who noted positively the paper on fiscal matters by Seth Carpenter and others, and I'd say that I think that is a very positive and significant step toward improving transparency and opens the door for more. To foreshadow our next discussion, I also think that including balance sheet projections helps clarify matters regarding our asset purchases. It doesn't really, of course, address our individual reaction functions, but it does provide some clarity in that respect.

In conclusion, let me say that, assuming that the economy keeps on its current path of modest improvement or does better, I think the time is coming when we should dial back our purchases and then stop them well before the end of the year. I would finally conclude that I could actually live with the risk language in alternative B, but I would certainly support removal

of the word “significantly” and then look forward, if this peace scare continues, if this recovery scare continues, to maybe moving to the language in C. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. I support alternative B. I feel strongly that we should make very few changes to the statement at this meeting. We don't want to inadvertently imply any change in our policy stance or thinking. The fact is, we don't really know much more than we knew at the December meeting in terms of the likely near-term trajectory of the economy. I think making changes now might signal lack of resolve and could undo some of the improvement in financial conditions that we've seen and that we are, in fact, seeking. So I would not take out the “as always” in paragraph 4. Also, I would not add the reference to “fiscal issues” in paragraph 2; adding the “fiscal issues” is odd timing because we didn't add it when we were staring at the fiscal cliff. To add it now seems inappropriate to me. On paragraph 1, I generally agree with Governor Tarullo, but I come out in a very different place in terms of those two words. I actually favor “suggests” and “slows.” The reason is that while I understand the reasons for wanting to do “indicates” and “paused,” to me, that puts way too much weight on a single indicator: the fourth-quarter preliminary GDP number, which was minus 0.1 percent. It's going to be revised, and GDP is the average of a quarter over the average of the previous quarter. The reality is, Hurricane Sandy came along and disrupted activity in late October and early November. I think most of the data show that the economy probably was growing in the rest of November and December. So I don't want to put too much weight on the fourth-quarter GDP numbers. I would prefer “suggests” and “slows”—“suggests,” because all of these data are revised.

MR. TARULLO. But I don't get the “slowed” part of it.

VICE CHAIRMAN DUDLEY. Because I think things have slowed a bit because of temporary factors.

MR. TARULLO. But what you just said would have suggested a pause early in the quarter and the beginning of an acceleration. “Slowed” seems to indicate a deceleration.

VICE CHAIRMAN DUDLEY. No, but it slowed relative to six months ago. So, we can see where people come out. I don’t think this is a big deal in the scheme of things.

MR. TARULLO. I don’t either.

VICE CHAIRMAN DUDLEY. But for completeness, I just wanted to give an alternative perspective.

Now I want to say something more significant. In our evaluation of our asset purchase program, I think that we really do need to reevaluate our June 2011 exit principles. I would agree with Governor Raskin on this. I believe we could alter the principles in a way that would potentially enable us to have more monetary policy accommodation at a given balance sheet size, that we could alter them in a way that could lower the risk of a future interest rate spike that could threaten financial stability, and that we could alter them in a way that reduced the risk of future balance sheet losses. The way I started to think about this conceptually is that we wrote down those exit principles a long time ago in a very different set of circumstances. We need to see now if those exit principles still put us at the efficient frontier in terms of these tradeoffs that we’re making across all of these different variables. Let me give you some examples of what I have in mind. For example, we might decide not to sell the agency MBS. If we announced that change, it would have a number of potential benefits. One, it would make policy more stimulative because our balance sheet would be bigger for longer. It would reduce the risk of financial stability disruption of a sharp rise in mortgage rates or a negative effect to market

functioning in the agency MBS market. It would also reduce the risk of negative net income and the need to put a deferred asset on our balance sheet. So, eliminating the agency MBS sales could actually be an improvement in a whole bunch of different dimensions, and I think we need to consider it.

That's a very simple one, but you could argue that our considerations could take us even further in this direction. You might want to commit to keep our balance sheet fixed in size for some period of time, or you might want to peg the balance sheet to a given fixed duration. If we really are saying that there are limits to how far we want to go in terms of the size of our Treasury asset purchases, then maybe we have to think about other ways to make policy more stimulative. I think we're on a road that has two tracks. On one track the economy starts to show improvement in the first half of the year, and then on that track, it's pretty simple to know what to do. We start to taper purchases, and the tapering actually sends a very positive message that we're becoming more confident about the economic outlook, so therefore we can purchase less Treasuries. That's a very easy road. The road I think we need to prepare for, though, is the one on which the economy doesn't show improvement, and we become increasingly uncomfortable with continuing to expand the balance sheet without limits. If that were the case, we need to think about what we would do to both dial back the purchases at some point in time and replace them with something else that would make it clear that we weren't backing away from our commitment to achieve our dual mandate objectives. I hope that in March we could talk about the exit principles as part of this discussion, because I really don't think those exit principles are anywhere close to the efficient frontier in terms of where we are today regarding what we're trying to accomplish with all of these different constraints that we face. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you very much, everybody; there were many good insights and suggestions in the go-round. Most people agree that the case for continued accommodation is strong. Narayana put it in terms of the forecast criteria, with inflation below target and unemployment still well above where we would like it to be. In addition, I think we ought to be at least a little bit—“self-congratulatory” is way too strong, but we have maneuvered ourselves into the current position in a fairly effective way. The thresholds were well received. There were, obviously, various concerns about how the communication would be interpreted. It seems to have worked pretty well. It does seem that our policies are having some beneficial effects and may, indeed, be providing an important bit of additional thrust for an economy that is just approaching the level of self-sustaining recovery. So there are some positive things that we should appreciate. Further, as we talk about these issues in public, I realize people have different views on the relative benefits and costs of our programs, but I think most of us believe that the benefits taken alone are probably positive. They rely very heavily on psychology and expectations, and I hope that as we discuss the programs, you’ll have some opportunity to explain what the purposes and goals of the policies are, as well as looking at the costs.

As we’ve talked about, in March we will conduct our first regular review of the program, looking at it from not only from the perspective of the outlook and of the efficacy of the program, but also looking specifically at the potential costs. While the whole range of costs will be discussed, I think the ones that would most benefit from our deeper analysis and that have been raised by a lot of people are, first, the fiscal costs in a narrow sense and in a broader, U.S. sense; and, second, the financial stability issues. Very closely related to those issues, as the Vice Chairman and Governor Raskin mentioned, we should be thinking about our exit strategy going forward. There are some reasons to believe that changing the exit strategy, besides being

necessitated by the change in circumstances, might actually be helpful in providing more accommodation and reducing some of the costs and risks of the policy. That's something we should talk about, and I'd like to at least begin that conversation in March. In particular, Narayana and others raised the possibility that there may be tradeoffs between our commitments with respect to the balance sheet, our commitments with respect to the thresholds, and our LSAPs, and it's possible we might find a combination that would be less costly but would achieve the same degree of accommodation. So these are some of the issues that I think will make for a very interesting meeting in March, and this, of course, will be an ongoing discussion going forward.

This is apropos of nothing in particular, but I was thinking a lot about Governor Stein's very well-placed concerns about medium-term interest rate movements at the time that the markets begin to expect an exit process from the Fed. I raise the following issue for consideration in March; maybe the staff can think about it. As of yesterday, the U.S. 10-year yield was 1.95. In Germany, the equivalent yield was 1.66; in the U.K., it was 2.08; and in Canada, it was an identical 1.95. Of those four countries, two have quantitative easing and two don't. Now, what is the significance of that? One possibility is that quantitative easing doesn't do anything. I don't think that's true. Another possibility is that there are spillovers, that quantitative easing in one country affects yields in another country. But if so, what are the implications of that for macroeconomic developments and for exchange rates, for example? So there are some interesting questions there. And there's yet another question that is really important to look at as we discuss this issue, and I think it was raised as well: How much of these low yields are due to purchases and those types of policies? How much are simply due, first, to the rate policies and, second, to just expectations about the future of the economy? The

latter two are factors that are common across these different countries. So I guess I take a little bit of comfort from those numbers, in the sense that it doesn't feel that, relative to other countries, the U.S. interest rate is so suppressed that it's posing, at this point at least, a serious risk of a major escalation. But these are interesting questions that we need to think about. Again, I look forward to our March discussion and the ongoing conversations after that.

With respect to the statement, let me begin with the very difficult question of “suggesting” and “pausing.” I have no particular strong views on this. Perhaps we could compromise and leave it where it was. The red language indicates “slowed,” but does anyone have a view that they'd like to express? Governor Duke.

MS. DUKE. I don't feel strongly between “suggests” and “indicates,” but I do think “paused” is a better description than “slowed.”

CHAIRMAN BERNANKE. Okay. Do people agree with that? I'm seeing nodding about that. Okay. So did you say you preferred “indicates” or you don't care?

MS. DUKE. I don't care much between “suggests” and “indicates.”

MR. KOCHERLAKOTA. That's your position.

CHAIRMAN BERNANKE. I'm sticking to it. [Laughter] Let's see. All right.

MS. YELLEN. I think “suggests.” “Indicates” is, in a way, taking just one preliminary number very seriously.

MR. ENGLISH. And I think that was our view in putting in “suggests.” It's one observation, and it will probably revise.

CHAIRMAN BERNANKE. It does say “information received since the Federal Open Market Committee met in December,” and so there's a lot of other input besides just the GDP

numbers. All right. I think we have made an important decision. “Suggests” and—so we’re going blue, is that what we’re doing? All blue. Excellent. All right.

That being resolved, the more substantive question—and I’ll address everything that was raised—was on the risk statement. I explained the reason for possibly including “unresolved fiscal issues” at this point, but most people felt this was the wrong time to do it or that we missed our chance, if we were going to do it. So I accept that. And a lot of people suggested removing “significant” before “downside risks.” I think the thrust of the meeting was consistent with that. So, notwithstanding an aversion to change, I guess I would agree with that. Let’s eliminate “significant” and eliminate the bracketed language about fiscal issues.

MR. ENGLISH. Can I just say a word on “significant”?

CHAIRMAN BERNANKE. By all means.

MR. ENGLISH. If you remove “significant,” you may want to then put it back again if things get worse. And will that be uncomfortable?

CHAIRMAN BERNANKE. Well, as I said, there’s an aversion to change.

MR. FISHER. You could say “intensified” if it got worse.

CHAIRMAN BERNANKE. Yes. I think there was a clear sense of the Committee that the risks were less skewed to the downside—a number of people said they were closer to balanced at this point. Is that okay? Is there any objection?

VICE CHAIRMAN DUDLEY. You might want to wait to do that until the March meeting, when you have the SEP exhibits that show that the risks have actually shifted toward less downside risk, but I don’t feel strongly about it.

CHAIRMAN BERNANKE. All right. I really feel the sense of the meeting was to eliminate it—if that’s okay. So that was substantive. Narayana’s suggestion about “sufficient

policy accommodation”—again, I don’t feel strongly. I think an alternative word would be “appropriate.” Do people prefer “appropriate”? President Fisher suggested that.

VICE CHAIRMAN DUDLEY. But again, why are we changing that word?

CHAIRMAN BERNANKE. Why are we changing? Are we changing? What was it last time?

MR. ENGLISH. It was “sufficient.”

CHAIRMAN BERNANKE. It was “sufficient”?

VICE CHAIRMAN DUDLEY. Sounds a little weird to change.

CHAIRMAN BERNANKE. But, it was “without sufficient.”

MR. EVANS. It was a different context, though. It was “without sufficient . . . accommodation.”

CHAIRMAN BERNANKE. All right. I’m going to take a straw vote on “sufficient” versus “appropriate.” How many would like “sufficient”? One, two, three. “Appropriate”?

VICE CHAIRMAN DUDLEY. Does “appropriate” win?

CHAIRMAN BERNANKE. “Appropriate” is appropriate. Okay. “With appropriate policy accommodation.” All right.

MR. WILCOX. Just one other question on the “significant downside risks”.

CHAIRMAN BERNANKE. Certainly.

MR. WILCOX. The preceding phrase says “continues to see,” and now we’ve changed slightly what you continue to see. It’s not necessarily a problem—I just raise it for your attention.

CHAIRMAN BERNANKE. All right. I think we saw downside risks before; we see them now. They may be a little different in scale. But thank you for the point there.

All right. Finally, on B(4), I would strongly suggest that we leave this until March. I think it would be entirely appropriate in a context of our discussion of benefits and costs to somehow reorient the language in a way that highlights the efficacy and costs in a different way. But why not wait until March to do that, after we've had a discussion? Any objections? [No response]

All right. So we're using the blue language in paragraph 1 and changing "sufficient" to "appropriate" in paragraph 2. We're striking "significant" in paragraph 2 and striking the bracketed language. I believe those are the only changes. Would you like to read the first two paragraphs and then take a vote?

MS. DANKER. I can, if you'd find that helpful.

CHAIRMAN BERNANKE. Why not?

MS. DANKER. Okay. "Information received since the Federal Open Market Committee met in December suggests that growth in economic activity paused in recent months, in large part because of weather-related disruptions and other transitory factors."

The second sentence of the next paragraph: "The Committee expects that, with appropriate policy accommodation, economic growth will proceed at a moderate pace and the unemployment rate will gradually decline toward levels the Committee judges consistent with its dual mandate. Although strains in global financial markets have eased somewhat, the Committee continues to see downside risks to the economic outlook," et cetera. This vote covers alternative B, as amended, and the associated directive.

Chairman Bernanke	Yes
Vice Chairman Dudley	Yes
President Bullard	Yes
Governor Duke	Yes
President Evans	Yes
President George	No

Governor Powell	Yes
Governor Raskin	Yes
President Rosengren	Yes
Governor Stein	Yes
Governor Tarullo	Yes
Governor Yellen	Yes

CHAIRMAN BERNANKE. Okay. Thank you very much. It would be a good time for a coffee break. Let's return at 11:30. Thank you.

[Coffee break]

CHAIRMAN BERNANKE. Okay. Why don't we recommence the meeting? The final item on our agenda is a discussion of potential enhancements to our economic projections. As you know, we've been having an ongoing discussion about how to improve the communications of the Committee and, in particular, how to give a better view of the rationale for our policy actions and future policy decisions. We did a lot of work on the consensus forecast idea. I think that's something we should keep on the back burner, but at this point, we were unable to come to a clear resolution on how to make that work. Because our usual strategy when we're faced with unavoidable problems is to ask Janet Yellen to solve them, we sent to her subcommittee a request to look at possible enhancements to the SEP, and that's our subject for discussion today. We thank Dave Reifschneider and Stacey Tevlin for their very helpful background memo, and Stacey is going to provide the introduction. Stacey.

MS. TEVLIN.⁵ Thank you. I will be referring to the handout labeled "Material for Briefing on Potential Enhancements to the Survey of Economic Projections. As the Chairman just noted, earlier this month, participants received a memo from Dave Reifschneider and me discussing various options for enhancing what is published in the SEP. In my remarks today, I will review the options we considered and will highlight a few issues.

As noted in the upper panel, the current version of the SEP does a good job of conveying the diversity of views among participants about the outlook for real activity and inflation as well as the appropriate path of the federal funds rate.

⁵ The materials used by Ms. Tevlin are appended to this transcript (appendix 5).

However, it is less well designed to illuminate the Committee’s “collective” view of future economic conditions and their implications for appropriate policy. In addition, the SEP provides almost no information about participants’ views, individual or collective, concerning the likely future course of the Federal Reserve’s current asset purchase program, even though it is one of the FOMC’s main policy tools at the moment. Finally, quantitative information on the uncertain nature of the outlook, and hence the perspective it provides on the Committee’s projections, is not prominently displayed in the SEP. Improving the SEP in these dimensions could potentially increase public understanding of the context and the reasoning underlying the Committee’s actions, both conventional and unconventional.

In our memo, we considered several possible enhancements to the SEP, which are summarized in the middle panel. Most of these possibilities were included in the set of tables and figures circulated to you by the subcommittee on communications at the time of the December FOMC meetings. As noted under the first bullet, the Committee might choose to augment the material now published by also reporting medians of the individual SEP projections, possibly computed for some subset of participants. In addition, the Committee could choose to distinguish the federal funds rate assessments of members (or nondissenting members) from other participants. The SEP also could include so-called fan charts illustrating the uncertain nature of the outlook for real activity, inflation, and possibly the federal funds rate. Finally, the Committee could provide additional information on the outlook for the Federal Reserve balance sheet, possibly in the SEP or in other forums.

The first of these enhancements is discussed in the bottom panel. Medians are a simple way to summarize the “center” of any collection of forecasts, but computing them for different groups of participants helps illustrate different things. When computed using all 19 submissions, they illustrate the central view of all FOMC meeting participants. When computed using members’ submissions, they illustrate the central view of those who voted on the policy decision. And when computed using the submissions of nondissenting members only, they illustrate the central view of those supporting the policy decisions.

Medians of nondissenting members would presumably provide the best picture of the thinking underlying the policy decisions. With regard to the internal coherence of the economic story they would tell, medians computed in the way that we envision—separately for each variable for each year—would not be guaranteed to present a view of the outlook and the accompanying appropriate policy that any one participant would find reasonable. But this risk of incoherence is less of a problem for a group with more homogeneous views; by definition, nondissenting members have more similar views about appropriate policy than all voters—and possibly all participants, too.

In any event, medians computed various ways could be informative, and if the Committee wished, it could report more than one type of median in the SEP. Operationally, however, as we documented in the memo, the differences in medians across groups generally would not have been large over the past year, with the one

notable exception having been the funds rate projection that would have been reported in April of last year. Recognizing the risk involved in drawing a conclusion from the experience of just one year—especially a year with only one dissenter—our sense is that the choice of one group versus another may be of second-order importance.

We also investigated the possibility that medians calculated over subsets of the participants might jump in potentially confusing ways because of the annual rotation of Reserve Bank presidents into and out of membership. But our conclusion was that medians were quite robust to changes in membership, so this consideration, likewise, might not be a first-order one.

Another possible enhancement would be to distinguish the individual policy expectations of selected subgroups. One approach to drawing such distinctions is shown on the next page. In both the bar chart and the scatterplot below, darker blue represents nondissenting members, while lighter blue represents other participants, both dissenters and nonvoters. This style of presentation could be beneficial because it might help convey more clearly the views of those formally supporting the Committee's guidance about the timing of liftoff. In addition, as the liftoff date draws nearer, such coloring in the scatterplot would help clarify the views of such voters about the path of the federal funds rate beyond liftoff—something that has an important bearing on the stimulus provided by your forward guidance. At the same time, however, reporting information like this might also have disadvantages. For example, releasing such charts could jeopardize the traditional anonymity of the SEP because outside analysts would have a little more information that they could use to identify your individual forecasts. In addition, distinguishing between nondissenting members and others could erode the spirit of collective decisionmaking that the Committee has traditionally practiced. In light of the range of possible risks, the Committee may wish to consider whether making such a change to the SEP could have unintended consequences.

In the top two panels of the next page, I take up the issue of including fan charts in the SEP. Fan charts can be quite useful because they convey the considerable uncertainty that attends the projections. They also may help put forecast differences into perspective and may help display the likely accuracy of the Committee's projections more clearly than the table of average historical forecasting errors that is currently included in the SEP. However, as was discussed in the memo and the accompanying appendix, including fan charts would require the FOMC to choose a method for computing them. Generally speaking, your choices are to base them on measures of historical forecasting accuracy, generate them with stochastic simulations of models, or provide the staff with your individual quantitative assessments of the uncertainty associated with your own forecasts. These three methods have various pros and cons that the Committee would want to consider.

Finally, the bottom panel discusses the issue of how to communicate your views, both individually and collectively, about the likely evolution of the balance sheet and the factors shaping that evolution. Clarifying the views of the Committee to the

public will be especially difficult in this area because there is a wide range of views among you about the likely costs and benefits of additional asset purchases, and the appropriate tradeoff between them, and because the issues are complicated in nature. In addition, the current asset purchase program has many dimensions, such as the pace and mix of purchases, the nature of the stopping rule, and your intentions regarding future sales, which further hinders both agreement and clear explanation.

As noted in the memo and the final set of bullets, you have several avenues of communication in this area that you may wish to explore. First, new questions could be added to the SEP that would explore such topics as your expectations for the likely stopping date of purchases or the size of the balance sheet at the end of each year. However, because SEP questions are generally pretty simple and the issues involved here are not, members may decide that that is not a fully satisfactory vehicle. Second, the minutes could be used to communicate the Committee's views. In this case, a structured discussion where everyone addressed the same questions would probably be desirable to ensure that the summary adequately conveyed the views of all participants. Third, the Chairman and others could use speeches and congressional testimony to increase public awareness of the issues involved.

The last page of your handout repeats some questions on possible SEP modifications that were circulated to you last week by the subcommittee on communications. In your remarks during the go-round, you may wish to refer to these questions. We will now be happy to take any questions you might have.

CHAIRMAN BERNANKE. Thank you very much. Are there any questions for Stacey or Dave? [No response] I see no questions. Okay. We turn now to the head of the communications subcommittee, Governor Yellen.

MS. YELLEN. Thank you, Mr. Chairman. As you mentioned, when we launched the consensus forecast initiative in June, we did so mainly because we felt that the SEP in its current form is not very effective at providing the public with guidance as to how our individual views on the economic outlook and appropriate policy come together and inform our collective policy decisions. Even though we decided at the October meeting to abandon the consensus forecast initiative, at least for the time being, the need for improving our communications regarding the rationale for our policy decisions has not diminished. When we discuss modifications to the SEP today, we should not lose sight of this ultimate goal.

At the October meeting, we took a straw poll to see which modifications the Committee considered most promising in furthering this goal. Based on the views expressed at that meeting, my subcommittee circulated some mockups of possible additions and modifications to exhibits in conjunction with the December SEP. I'd like to commend the staff for their memo and presentation analyzing the pros and cons of these mockups as well as other options. My subcommittee has circulated a memo with questions for discussion. The first four concern possible modifications of the SEP related to the exhibits we circulated in December. These questions are fairly specific. My hope is that we can make some decisions today that can be implemented in conjunction with the March SEP. I recommend that any new exhibits we decide to add should be published along with all of the material that we already publish in the SEP, on the principle that it would be unwise to remove information we've provided to the public in the past. The Chairman can then decide which exhibits from this expanded set are most useful to include in his press conference. The fifth question, on modifications to questions concerning our asset purchases, is more tentative, and it's more open ended than the first four. The subcommittee is of the view that communications concerning the outlook for our balance sheet policies, as Stacey noted, are very complex, and we're uncertain what role, if any, the SEP should play in this effort. Because my subcommittee has not agreed on recommendations to bring to the FOMC, in the remainder of my comments, which will pertain to the specific questions, I will now be speaking only for myself.

On question 1, I feel it would be quite useful to publish medians of the economic variables that we project—namely, GDP growth, inflation, and unemployment. A single-point forecast is easier than a central tendency for the public to understand, and over time, the medians do seem to move in ways that are consistent with the collective assessments that inform our

policy decisions. In October, I argued in favor of publishing the medians of nondissenting voters, on the grounds that the Committee's decisions are ultimately taken by those members supporting the statement at any given meeting. On further reflection, my preference is now to break out only voters from other participants. Medians of the voters come close enough to the ideal of an economically coherent forecast based on similar views about appropriate policy. So, to be quite specific, I suggest that we add two figures to the current SEP. The first would show the medians and ranges for voters for three variables—GDP growth, unemployment, and inflation. This corresponds to the top three panels shown in figure 1 of the staff memo that was distributed. The second new figure would show identical information for all participants. Now, with respect to the federal funds rate, I consider it particularly important to distinguish between voters and all participants. The tables included in the staff memo illustrate that the median projections of voters and all participants have been quite similar for GDP growth, unemployment, and inflation. But on a number of occasions, there have been notable disagreements about the associated policy paths. I would not convey information on the federal funds rate, however, by showing medians and ranges, as in the bottom panel of figure 1 in the staff memo. Instead, I would just stick with the current display pertaining to the federal funds rate—namely, figure 3 in the staff memo—which gives the dot plot and bars showing views of the likely liftoff date for the funds rate. So my second specific recommendation is that, in this existing figure—the dot plot and the bars—we now color the dots and bars of voting members to distinguish the views of these groups pertaining to appropriate funds rate policy; this is illustrated in figure 3 of the staff memo.

A distinction between voters and nonvoting participants is an institutional fact of life, and it is recognized at every meeting in the write-up of the minutes. In all of my years of service on

this Committee, I have not found that this distinction has undermined collegiality. On reflection, I do not think we should distinguish among nondissenting and other voters, because voters who dissented from a decision taken at one particular meeting frequently choose to support the continuation of a policy at subsequent meetings. It would thus be difficult for the public to understand the link between the projections and support for a given policy.

The addition of fan charts could, I think, improve the public's understanding of the uncertainty around our projections. As the staff memo discusses, one particular advantage of this approach relative to the measures of historical forecast uncertainty we now publish is that in principle, such fan charts could convey the substantial asymmetries in the probability distributions at the current juncture, especially for the future path of the federal funds rate. These asymmetries, in my view, are critical for understanding our policy decisions. I don't feel strongly about the specifics of how to construct these intervals, except that I think any method that would involve asking participants to provide subjective assessments of forecast uncertainty is a total nonstarter. I would be comfortable using stochastic simulations of FRB/US for this purpose, including simulations of the future funds rate path based on the current staff procedure of implementing the thresholds and the simulations with the inertial Taylor (1999) rule following liftoff. Insofar as the Committee would like to convey a somewhat different risk assessment from that shown in the fan charts, we could use the minutes to do so, and the Chairman could, in his press conference statement, make further qualitative comments about whether we view these asymmetries as possibly more pronounced at a particular time. I would definitely include the panel for the federal funds rate in a figure showing forecast uncertainty, even though, because of the highly asymmetric distribution of our individual assessments of the appropriate funds rate

path, I would, as I noted, exclude the funds rate panel in the figure showing medians and ranges. The distribution of our funds rate projections is displayed much more effectively in the dot chart.

As I said earlier, I hope that on the matters I've addressed so far, we can reach agreement today and the changes could go into effect in March. Turning now to the question of how to communicate more effectively about our assessment for the likely future course of our asset purchases, I would be very concerned at this stage with incorporating such information into the SEP. Questions pertaining to the likely pace and duration of asset purchases might easily be misleading unless they distinguish the reasons for different assessments: whether they're based on the participants' forecasts pertaining to the progress of the labor market, the participants' judgment about the criteria appropriate for deciding when there's been a sufficient improvement in the outlook, or the participants' views on efficacy and costs. If we decide to take this route, a good deal of time would be needed to develop and test questions. Realistically, it would probably take until next fall before we'd be ready to go live, and the public is hungry for information much sooner. I therefore think we're better off providing such guidance through qualitative statements via the Chairman's press conferences, through speeches and testimony, and through the minutes. In his note to the Committee last week, the Chairman highlighted the importance of the minutes for providing information about LSAPs, and I entirely agree that we should have a structured discussion of the prospective benefits and costs of our asset purchases so as to enable the minutes to provide a fair and comprehensive portrait of our views. In summary, even though I think that at this point the inclusion in the SEP of additional questions pertaining to the asset purchases would carry substantial risks, if there's a desire to engage in thorough experimentation with questions on, for example, our individual probability assessments

of future purchases, or indicators of efficacy and costs, my subcommittee would, as always, be happy to work to propose concrete steps. Thanks.

MR. FISHER. Can I ask a question, Mr. Chairman?

CHAIRMAN BERNANKE. I'm sorry. I saw the two-hander from the Vice Chairman first.

VICE CHAIRMAN DUDLEY. Yes, I wanted to ask a clarifying question. The medians are in addition to the central tendencies, as opposed to replacing the central tendencies?

MS. YELLEN. We currently have central tendencies for all participants in a table. That would remain. Nothing would be removed. All I'm proposing is taking figure 1 in the staff memo, which has medians and ranges, and showing those top three panels for voters and a separate one for all participants. New things; nothing removed.

VICE CHAIRMAN DUDLEY. Okay.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. On question number 3, Governor Yellen, were you talking about fan charts for all participants or just for voters?

MS. YELLEN. I think all participants.

MR. FISHER. Thank you.

CHAIRMAN BERNANKE. All right. If we're ready, we'll go on to the go-round, and I'll turn to another member of the communications subcommittee, President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman, and thank you, Janet, for those opening comments and your views. To echo Janet, these views are mine and not those of the subcommittee, as will become obvious in a few moments. [Laughter] What else is new, right?

All right. I believe that providing the median projections might be and will be a useful addition to the SEPs. I view it as another way of summarizing the central tendencies. It should be the medians of the projections of all of the participants. As Stacey pointed out, the medians are very robust measures, much less sensitive to various groupings of the Committee members, and that was obvious in the tables. I continue to oppose distinguishing voters from nonvoters or dissenting voters from others. A great strength of this Committee is the participation of everyone, and I don't want to do anything to potentially jeopardize that. Moreover, I see very little to be gained by moving in this direction. Table 3 in the staff memo indicates that there is very little difference in the median forecasts of unemployment and inflation across categories of voters and nonvoters or dissenters and all participants.

I continue to favor the SEPs as part of our communications. But the SEP is distinct from our policy statement. Making changes to the SEP in an attempt to make it appear to be more like a consensus forecast strikes me as trying to fit a square peg into a round hole. It doesn't seem to me that difficult to explain the conceptual differences between what the SEP is designed and created for and the statement. And I think that we could explain the differences in a few sentences when discrepancies appear. Any attempt to turn it into a consensus forecast to directly support a particular statement would push us toward doing it at every meeting, and we would run into the same both logistical and conceptual challenges that we ran into when we tried to create a consensus forecast. So I'm not sure we've avoided the problem.

Similarly, I favor including the median funds rate projections for all voters, but, once again, I'm against distinguishing dissenting voters. I don't think that distinction is very useful, and I think the distributions of all voters are actually quite informative. Indeed, rather than clarifying things, this may end up creating more things that would need to be explained. It

would tend to emphasize the distinctions that could add to market volatility when there is voter turnover at the end of the year. I shared a set of charts that we worked up similarly, and I'd like to draw your attention particularly to the November 2011 chart, which distinguishes voters and nonvoters, and to the differences in the way that chart looks. As you see, there were three voters way off in one tail, and if the Chairman had to use that, he would have to explain, or he would probably be asked, "What's going on here, and what are the views of these particular voters that they supported the policy even though their appropriate policy views were quite different?" So you could reach situations in which you would have more to explain rather than less. One can imagine a time when individual paths might differ from the forward guidance suggested in a particular meeting. Perhaps because those individuals have sizable confidence bands around their SEP projections, they would prefer to take that into account when considering changes in forward guidance on the funds rate, for example. Thus, designating voters versus nonvoters in the SEP doesn't resolve the potential differences between the SEP data and the policy decisions in the statement. Making such a distinction also fails to recognize that voters in one year will be nonvoters in subsequent years, which may be particularly pertinent when forward guidance is playing an important role. I think concerns about the SEP—and I made this argument earlier—arose because we had a calendar-date forward guidance in our statement. Now that we have removed the calendar date, I don't think we need to risk undermining the longer-term values of the SEPs by distinguishing voters from nonvoters. In fact, I would prefer that we handle any potential confusion by improving our communications about how the SEP fits into the Committee's deliberations rather than trying to represent it as a consensus forecast.

In looking at the histogram of the dot charts that I've asked to be distributed to the Committee, you can see that—without having to distinguish voters from nonvoters—the charts

convey, over a series of meetings a good sense of the evolution of the views of the Committee. For example, in November 2011, the liftoff dates were fairly diffuse among all participants and across all voters—and supporters, for that matter. Again, as I noted earlier, this could have raised a lot of questions in the press conference if you had to explain where all of these different colored dots came from. By January 2012, if you follow the evolution, the distribution was centered on 2014, both for all voters and for all participants, but it was slightly skewed toward 2015. By April, the histogram became even more concentrated on 2014—again, without specifying voters versus nonvoters. While some disagreement remained, there was in fact less disagreement in April than there was in January. In this sense, the April data, to me, appear less of a puzzle than the January or November data. In June, note that—again, without resorting to distinguishing between voters and nonvoters—the histograms show a growing evolution or growing number of participants who considered moving liftoff toward 2015. And in September, indeed, that’s exactly what we did. The evolution of those pictures shows that evolution quite effectively. And again, it does so without making a distinction between voters and nonvoters. Finally, of course, in December and September, they look very similar—again, supporting the 2015 date. So I see very little additional information in the voter/nonvoter distinction. In contrast, distinguishing between voters and nonvoters between November 2011 and January 2012 is quite a change because of the change in the membership and the changes in the distributions. I think the evolution of the charts is really what we’re getting at with the SEPs. It shows the evolution of participants’ views about how their views on appropriate policy are evolving through time, rather than focusing on it at a point in time.

Most important, I would note that we have switched from calendar-date forward guidance to economic conditions. We want the public and the markets to be more interested in the

projections of unemployment and inflation than in the timing of liftoff, and we would be well served not to stress liftoff dates in our presentations. To this end, I would suggest that we completely eliminate the bar chart in the upper panel that shows the dates of liftoff. Dates of liftoff are not part of our decisions anymore. So we should quit focusing on them as a matter of policy. I think we should stick with just the dot charts, which show the assumptions of appropriate policy, made by all participants. I would just eliminate that chart altogether, and that would help draw attention away from liftoff dates, which is, I think, what our policy wants to do anyway. Now, if we want to add a chart, the public may find value in a scatterplot of participants' views of what inflation and unemployment will be under appropriate policy at liftoff. Although that could be very confusing to explain, it might be more informative, but I'm not completely convinced of that at this point.

Question 3—I support illustrating uncertainty around the GDP growth and inflation projections by publishing fan charts centered on the median projections of all voters. This is a feature that many monetary policy reports have, and I believe it's useful in reminding the public of the uncertainty around our projections. I don't have strong preferences over the methodology used. I agree with Janet that asking for subjective probabilities is probably not the way to go. But I think using stochastic simulations from FRB/US or some of our models is going to be close enough—even though it's not strictly econometrically kosher, so to speak, it'll get us close enough to convey what we need to convey. Note that if we include the fan charts, we should redo the charts that the Chairman shows at his press conference that illustrate central tendencies with things that look like fan charts. I think that sends too much of a confusing signal. People look at fan charts and think of forecast uncertainty, but those are really fan charts of central tendencies, and that can be confusing. I do not favor producing uncertainty bands around the

median fed funds paths included in the SEP. These funds rate paths are participants' views of appropriate policy; they're not forecasts. Yet publishing error bands around the median path suggests that it is a forecast. Now, it may prove to be true that the median funds rate assumption of appropriate policy may be close to the path that is ultimately chosen by the Committee—that's sort of endogenous—but it's really not a forecast in that sense. And I think it would be a mistake to suggest to the public that somehow these are forecasts that we're generating.

I'm inclined to include some information on participants' expectations for the FOMC's balance sheet. Clearly, that's an important question, but as Janet said—and I agree—it will take some experimentation to determine how to formulate that question; we should not jump into that. So I would favor continuing to explore different ways of doing that. But again, I would not focus on liftoff dates. I think we had this discussion a little bit yesterday with respect to the dealer survey. The way the dealer survey did it—where it said, “What do you think the size of the balance sheet might be at some point?” rather than focusing on when it's going to end—is a better way, conceptually, to approach it. But even that's not sufficient, because there are issues of composition of the balance sheet and other things that you'd have to take into account. So it's going to be a little tricky to figure out the right set of questions to convey. I would be supportive of exploring that over time. And, once again, the importance of moving away from messages in the SEPs that focus on liftoff dates would, I think, be an important step forward.

In summary, I favor publishing the medians of all participants. I favor using fan charts to show the forecast uncertainty for the real growth, unemployment, and inflation projections, but not for the federal funds rate path, because that's an assumption that the participants are making. I favor exploring ways of inquiring from the Committee about balance sheet policies, and I think

we should drop the histogram of the liftoff dates and stop asking dealers about when they think liftoff dates are going to be. Thank you.

CHAIRMAN BERNANKE. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. It might be hoped that I would offer some comments to help bridge the gap between Governor Yellen and President Plosser. I'm going to dash that hope for you. I'm going to offer yet a third perspective. I'm not going to try to answer all of the subcommittee's questions. I will provide comments on those issues about which I have a strong view, and as you'll hear, my perspectives are strongest concerning, first, offering forecasts about policy variables or projections of policy variables and, second, what is communicated at the press conference. So those are the two things I'm going to be focusing on. I don't have strong views about the other issues; I'm happy to be led by the bulk of the Committee.

In my view, the way we've changed the December 2012 FOMC statement has really created a significant problem with the fed funds rate projections in the SEP, and this is actually going to echo some of the remarks that President Plosser made. The second point, which I feel a little more tentative about—I feel very strongly about the first point—is that the new problem with the fed funds rate projections really suggests to me that we would be better served by not releasing information about projections of any policy variables, either at the press conference or in the minutes. And what I mean by that is the specific kind of information that we have in the Summary of Economic Projections. The qualitative information that the Chairman offers or that the minutes contain is quite appropriate and important. The third thing I'm going to say is, at the time of the press conference, I really think we should be releasing information only about the projections of the nondissenting voters. When I say “projections,” I mean only projections about

economic variables—inflation, unemployment, and GDP—not information on projections about policy variables. And I wouldn't include fan charts in this release at the time of the press conference.

Let me talk about these three conclusions. First, let me talk about the problem that I see with the fed funds rate projections in the SEP. In December 2012, the Committee switched away from date-based guidance to state-based guidance, and the goal of this is to focus the public's attention on what matters, the economic conditionality underlying our thinking, rather than what doesn't matter, the date. The SEP is still couched in the form of date-based guidance. Now, this is going to serve to vitiate at least some, if not a lot, of the benefits associated with thresholds, and I think this consideration argues strongly in favor of my first conclusion—that we need to change the fed funds rate guidance in the SEP in a fundamental way.

To move to my second point, this is only an example of what's really a general problem. While we're at the zero lower bound, I expect that we're going to be modifying our policy tools in an ongoing and complicated way. For example, President Rosengren has suggested in past meetings that if we decide that the costs of asset purchases exceed their benefits, we should find a new tool as a substitute. Will we immediately need to add projections of that new tool in the SEP in some fashion? This just strikes me as a hugely challenging problem, and leads me to my second conclusion: I don't think we should try to include policy projections in the SEP. Given the various subtleties, the verbal descriptions in the FOMC statement are a better way to capture the views of the Committee about the future course of policy, and the minutes provide a better way to communicate how different participants see the future course of policy.

Let me turn to my final recommendation, which concerns information releases at the time of the press conference. I want to distinguish between the press conference and the minutes

because I think they're serving very different roles in terms of our communication. The minutes are about conveying the range of views among the participants in this meeting. I think that the press conference is quite different. The main goal of the press conference is for the Chairman to explain the Committee's decision and why it reached that decision. Any information released at the press conference should be consistent with achieving that goal. As I articulated earlier, I see the Committee's decision as being about trying to mitigate deviations between projected macroeconomic outcomes and macroeconomic goals. As is discussed in the memo that Stacey and David wrote, it's likely that those who voted for the decision did so because they felt that the decision was appropriate given their outlooks. So I think the public will better understand the thinking behind the decision if they know some summary statistics of the outlooks of the nondissenting voters—and I don't have any strong feelings about medians versus central tendencies. In contrast, the Committee's decision is not based on the outlooks of the dissenting voters or on the outlooks of the nonvoters. At a minimum, those outlooks are irrelevant to the task of explaining the Committee's reasoning. More troublingly, they could distract from the Chairman being able to communicate as effectively about the Committee's own thinking. Sometimes, as President Plosser was suggesting, even without isolating who the nonvoters are, having these extra dots coming from nonvoters could force the Chairman to be spending time explaining the thinking of people who didn't vote for the statement, which I don't see as being his job at the press conference. In a similar vein, I don't see fan charts as being a useful device for the press conference. I don't think the statistical forecast error bands that come out of a FRB/US model really play a big role in Committee decisionmaking on an ongoing basis. I think uncertainty does play a role in decisionmaking, but to the extent that it does, the statement offers an appropriate degree of precision in our thinking about that.

Let me wrap up by summarizing my conclusions one more time. First, I think we need to change the SEP federal funds rate guidance fundamentally. It's date-based, and it's undercutting the value of our state-based guidance in the statement. Second—and this point is related to my first one—given the challenges associated with keeping up with policy innovations at the zero lower bound, I would recommend dropping all policy projections from the SEP, either at the press conference or in the minutes. Finally, at the time of the press conference, I would release information only about the projections of the nondissenting voters for inflation, output, and unemployment, and I would not include fan charts. Thank you, Mr. Chairman.

VICE CHAIRMAN DUDLEY. Can I ask a quick question?

CHAIRMAN BERNANKE. Vice Chairman.

VICE CHAIRMAN DUDLEY. How do you think the market would react to us no longer providing this information that we were providing in the past. There's a path-dependency issue here, I think.

MR. KOCHERLAKOTA. Mr. Chairman, if I might try to address his question—I think that we should address this by saying that we have changed the way we're communicating about policy in the statement, and we should be changing the way we're communicating about policy in terms of the SEP as well. That would be the way I would be doing it. Now, the question is, does that mean that now we've got to start asking people, what's your unemployment conditionality, et cetera? That would be very hard to do, I admit, but I think the SEP is going against the flow of what we're trying to do through the policy statement.

VICE CHAIRMAN DUDLEY. I take your point about the date-based guidance, but I guess I have a problem with imagining us giving them nothing, just taking this away and having it replaced with nothing. That seems really hard for me.

CHAIRMAN BERNANKE. Okay. Thank you. Governor Stein.

MR. STEIN. Thank you, Mr. Chairman. Let me just go through these questions. On the medians of the projections, I agree that it makes sense. I'm pretty agnostic on whether it should be participants or voters. As Stacey pointed out, as a practical matter, it's very close, so this won't make much difference. On the assessments of appropriate policy, I like the colored dots. I could understand the picture, so I was happy with it. For the reasons that both President Plosser and President Kocherlakota mentioned, I'm not a big fan of the fan charts, especially with respect to the policy variable, the funds rate. In other words, the whole essence of this thing is to elicit a subjective view about appropriate policy. As Janet mentioned, Lord help us if we have to provide the fan chart. That's an objective piece of information that's going to come out of the model; it's a very different kind of information. And with the policy stuff, I worry that it's going to confuse people—that the objective, historically based standard errors will be misinterpreted as our subjective degree of conviction in the policy. I don't think that's all that helpful.

With respect to the balance sheet, I guess I'm going to be a bit of an outlier here. I think this is both important to do and simpler to do than people have made it seem. If we're going to do it, we need to do it in March, and we need to have something simple, because if we wait until September to figure it out, it is probably not very relevant. I would ask one very simple question—and that's the question we ask the dealers—which is, "Under your view of optimal policy, what will cumulative purchases be between now and the end of the program?" The question that they answer \$1.2 trillion to—we would try to answer that as well, and we could do the colored dots and distinguish between the voters and the nonvoters. I think if we're sincere about improving transparency, it's incumbent on us to put this information out there. This is what the market wants to know. Now that we've gone to thresholds, essentially, as you suggest,

we've done a much better job of helping the market think about the funds rate. So the residual uncertainty that people really care about is about the scale of our asset purchases. I believe it's an information gap that we can make some progress on closing, and, if you believe in transparency, I think we ought to make an effort.

I understand there are counterarguments. One counterargument is, it's complicated. It's complicated in the sense that anybody's optimal view of asset purchases reflects a number of factors, more factors than, presumably, a decision about the funds rate. In other words, if you want to raise the funds rate tomorrow, it's either because you're very optimistic about the economy or because you're an inflation hawk. If you want to stop asset purchases tomorrow, it's either one of those two, or you think efficacy is low, or you're paranoid about the size of the balance sheet. So there's just a higher dimensionality. You're absolutely right that you reveal less about the entire set of information. That's a fair point—I get it—but I don't think it's super-relevant in the sense that what market participants want is to be able to make the best forecast they can. And it's hard to argue that, in terms of an unconditional forecast, this extra information will make you worse off. I think it will allow you to predict better. Because you don't have all of the information, it won't allow you to make a perfectly state-contingent forecast, but it will allow you to do better. You could do even better if we could elicit people's ideas about each of these individual things—about how much they worry about the size of the balance sheet and all that. But of course, if we do that, that will take a year for us to figure out, and I'd rather we do something simple.

Now, a second counterargument, which I think is certainly right, is that given the heterogeneity of views among people in the room, a disclosure of this sort would likely amount to an undesired removal of accommodation. I think that's right, but of course, I guess if you're

operating on a transparency principle, it means revealing good news and bad. It so happens that you get to test your fidelity to this principle when you're having to reveal news you don't necessarily want to reveal. Much of our recent innovation in communication strategy has come during a period in which we so happened to be moving in an accommodative direction. So transparency has been helpful in the sense of providing accommodation, but as a general rule, transparency won't always do that. And I think that in some sense, if we believe in that as an overarching principle, we should do it even when it's a little less comfortable. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. I'm going to go a little out of order just to save what I think is the most important issue for last.

I favor adding fan charts. This has been an interesting discussion, and I appreciate President Kocherlakota's comments. I've realized now that there are two ways to view what our Summary of Economic Projections is designed to accomplish. Some of you have mentioned rationalizing our reasoning behind a decision. The other broad thing it does is that it paints a picture of the future for the public. And in doing that broad picture painting, I think we do them a disservice and suggest spurious precision not to fill in the sense of uncertainty we have about the point forecasts we put out there. So I strongly favor putting fan charts in our projections. I think that stochastic simulation is the best way to do it. We should try to be comprehensive, including model uncertainty, a viewpoint that suggests aggregating across several models. I would also view asking participants to roll their own quantitative probability estimates to be something of a nonstarter, so I'm with Governor Yellen on that.

Fan charts for the funds rate is an interesting question. I think that in the spirit of painting a picture for people and letting people know things are contingent suggests including some sorts of fan charts, and that suggests that we don't force ourselves to decide more than we want to decide about the future of the funds rate. I think that suggests using a rule that's not that different from how we've behaved historically. There's this little technical choice. No one has mentioned this. It's very arcane, but you run a model out in the future, and you have endogenous variables and policy variables. When you estimate a model historically, you get equations for all of those, and there are shocks to the endogenous variables. The model gives you an estimate of historical shocks to the policy equation, and you might think of running simulations going forward of those sets of equations. You might think of adding policy shocks to the policy equation as adding unnecessary noise. So you might think that you would run the simulation by just running the policy rule with shocks to everything else in the model but no shocks to the policy equation. But the other way to think about them is that we see, and everybody sees, information that's not captured in the collection of variables that you've used to estimate your model. From that point of view, you're limiting or underweighting the uncertainty around policy and the economy if you don't include those shocks as well. A fine point on this.

The balance sheet is an interesting question. I came in here thinking it was a no-brainer, that when we're at the zero bound, it's an important policy tool we have. And I would gravitate to something simple, like the liability side of our balance sheet or just the size of the balance sheet, rather than some particular purchase program in which other things might intervene between that and the size of our balance sheet. I do appreciate President Kocherlakota's and President Plosser's comments about the complicated nature of our policy tools, and do we ask for composition—projections of how much is MBS, how much is Treasuries, how much is longer

term, etc.? You can go down the rabbit hole on the composition of our assets, which would make this achieve diminishing returns pretty rapidly.

I favor medians—I think it's a great idea—in the SEP. I wouldn't be averse to eliminating the central tendency charts and just going straight to medians with fan charts. But here's what I want to really emphasize. I strongly oppose distinguishing between voters and nonvoters or between members voting for the statement and others. To me, it just does not make logical sense. This year's voters are not a coherent group with regard to next year's policy and policy in the year after that—or three years from now, because Chicago and Cleveland rotate every other year. To state something obvious, our policy statement and projections cut across years in which the lineup changes. I don't think we want people to think that our policy stance is going to change significantly when the voting lineup changes. I think we'd want to emphasize the broader areas of agreement and the broader sense of cohesion among the groups. I recognize that this voting structure we have, which resulted from the compromise between Eccles and Glass, has been something we've accommodated ourselves, and it's recognized in the minutes and recognized in the statements. Despite that, as Janet Yellen commented, we seem to have preserved collegiality, and I very much recognize that. I'd point out, though, that in the minutes, we've moved, in the last few years, away from essentially censoring the policy views of nonvoting participants. We started adding them in; we started including them. To me, that was a constructive step because it represented eliminating a gratuitous and unnecessary differentiation between voters and participants. And that should be our general stance. Sure, the law says this, and we obey that. But for us to highlight in our communications and practices, without any need—gratuitously, as it were—differentiation is, to me, something I just don't think we should do, and I can't think of a coherent interpretation of why we would do it, given the way the voting

rotates. So I believe it's a bad idea. I understand that some people were concerned about the dissonance that was apparent in April 2012. I really don't think that was such a big deal, and I think President Plosser makes the cogent observation that, given that we're not in the game of date-based guidance, the kind of dissonance that arose there is unlikely in the future. Thank you very much, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. Before responding to the specific questions, I'd like to comment on my views of the overall purpose of the SEP and how I think its design follows from my sense of what we're trying to achieve. I've said in earlier meetings that the institutional set-up of the FOMC aims at consensus on the policy decision, not necessarily consensus on the rationale for the policy decision. Member support for the policy action can derive from quite different individual diagnoses of the economic situation, different models, and different policy reaction functions. The Committee isn't built to require or ensure that we all see the reasons for a supported action in the same way. We learned last fall that designing a communication approach to convey the collective judgment of the Committee, speaking in a single voice, is very difficult and probably too ambitious. And in that vein, I think providing the public with a hard sense of the Committee's reaction function may be a reach as well. I favor more modest intentions for the SEP. Even though it's not perfect, I believe there is real value for the public in seeing the range and array of individual forecasts and opinions that inform the policy deliberations. These can be presented as they have been, showing where the individual views coalesce and what represents something like a majority opinion about the outlook and policy path. So my answers to the questions about possible enhancements to the SEP are offered from this perspective. I think all of the proposals under consideration have merit, but I've come

to the conclusion that our goals for the SEP should be modest and we should not let the perfect become the enemy of the good or even the enemy of the serviceable.

Regarding medians, I don't see much to be gained from providing a median in lieu of the central tendency. I do not think median reference points should be interpreted as proxies for the collective judgment of the Committee or the meeting participants more broadly.

Regarding voters versus nonvoters, I perceive that the press focus on who's a voter and who is not has escalated in the last year or so. I don't think we should encourage excessive attention to the voter aviary, speculation about possible dissents, and all that kind of thing. Consistent with a less ambitious concept of the SEP, I prefer staying with a presentation showing only the full 19 participants. If there are material differences between how voters and nonvoters view the policy environment, this information is better communicated in other ways, like the Chairman's press conference or the minutes. Now, this is not a throw-your-badge-on-the-table kind of issue for me. I don't strongly object to tagging voters in some way. There may be a modest contribution to the market's understanding of our policy decisions and projection of a future policy by distinguishing voters and nonvoters. I'll point out that because the composition of the voting Committee changes fairly materially, at least 4 of 12 on an annual basis, the information loses some value as we approach year-end. At the same time, a reader would know the projections of 8 of the 12 voters on an ongoing basis, and that may have some value. Overall, I think there is a limit on how far we go in segmenting the broad Committee. I would not break out dissenters or soon-to-be voters, for example, in the last SEP of the year.

Regarding the fan chart questions, as Governor Stein said, I'm not a fan of fan charts. I do prefer the idea of producing probability bands based on participant-supplied probability estimates that necessarily sum to 100 percent. [Laughter] I don't believe that graphic depictions

of how we would do this have been presented in the write-up, so I'm just reacting to the idea. Support for a policy action on the part of an individual member is often about risk mitigation around the outlook, as opposed to an outright shift in the trajectory of the member's forecast. An assessment of uncertainties is necessarily a participant's judgment at a specific point in time and cannot be represented, in my mind, by historical errors or simulations from models that are not reflective of the participant's methods for judging uncertainties. A probability-bands approach has been tried—successfully, in my view—in various other forecast exercises, like the Philadelphia Reserve Bank's Survey of Professional Forecasters, the New York Fed's capital market survey, and my own Bank's business inflation expectations survey. I don't think the additional effort required of submitters would be too burdensome.

On the question of fan charts for the federal funds rate, I do not recommend that this information be provided. The difficulty of communicating such information is that we as a Committee are not of a common mind when it comes to the appropriate policy rule. Using any particular rule will necessarily be interpreted as the Committee's preferred rule and therefore may create undue confusion when meeting participants try to communicate their individual policy perspectives.

On the balance sheet question, at the moment, balance sheet policy is integral to monetary policy. If the goal is to provide useful information about the spread of individual views on projections of key economic and policy elements, I think it's desirable to provide some information on assumptions regarding the balance sheet and, by inference, the direction of balance sheet policy. There are many moving parts to the LSAP program, and we are continually learning how to balance their efficacy versus costs. These many moving parts and considerations make it difficult, in my view, to convey a lot of detailed information. I favor

adding questions to the SEP, the answers to which can be interpreted and summarized in the minutes. In other words, put the burden on the staff, not us. Questions might address, in some selection that's appropriate to the current context, the duration of purchases, the pace of ongoing purchases, the mix of purchases, the timing of the beginning of unwinding, the sequence of unwinding, and the pace of unwinding. Mix and match according to the context of the questions. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Just for clarity, I believe that the medians were intended to be added to the central tendencies, not substituted. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. I found President Kocherlakota's comments intriguing. If we were to start from scratch right now, we'd probably pick a different set of charts than what we have. And so I think that highlights the challenge: At a time when the strategies we're following are evolving relatively quickly, locking ourselves down on too many variables may not make sense. While I agree with President Kocherlakota's comment, I also agree with Vice Chairman Dudley that taking away particularly the information that people outside of this room find most useful—which is, when is the fed funds rate going to go up?—would be a fairly difficult thing to do. I view it as a constrained optimization problem. And as a constrained optimization problem, what I take from that is a word of caution about how quickly we add more things. But I don't know that we can take too many things away from what we've already provided.

With that caveat, let me just briefly go through each of the five questions. I would highlight that with less than half of the group, we don't have consensus on any one of the questions at this point. I'm not sure I'll help much with that. For question 1, I think the median should be provided for the SEP for all participants. It may be less critical to show the median for

some of the subgroups, as, I believe, the memo highlighted. For question 2, I think it is important for our communication to clearly convey the likely policy path if the economy evolves as we expect. This is best summarized by the assessment of voters supporting the policy decision. So, given that we're showing the interest rates, I would make the distinction. For question 3, fan charts are popular with economists but seem like an awkward way to discuss policy with the public. If we presented fan charts, how much of the discussion of those charts is likely in press conferences or speeches made by participants? I frequently do PowerPoint slides. I've never used a PowerPoint slide that had fan charts in it for the general public. I could do it for economists, but I'm not sure it's that useful for the general public at large. For question 4, I do not believe an SEP fan chart for the federal funds rate would be particularly useful. And for question 5, we've been trying to focus our statement more on economic outcomes. The idea of an open-ended quantitative easing, and then providing a range of forecasts of balance sheet size, will get everyone, once again, to focus on the size of the purchases and calendar dates. So rather than focus on size, we should try to better explain what we mean by substantial improvement in labor markets and to provide a more detailed description of the costs and benefits of asset purchases and how we think those costs and benefits could potentially change over time. That's the purpose of the March meeting, but I don't think that transparency on something that, at this point, we don't have much of an agreed framework on makes much sense. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Williams. Oh, I'm sorry. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. I thank President Rosengren for bringing this up again, because I felt I did not give as sharp an answer as I would have liked to

Vice Chairman Dudley. I think the best that one could do on this dimension is the following.

The statement has thresholds in it. One can point to the projections being offered by nondissenting voters, which will have some time frame for when we hit 6½ percent unemployment and some time frame for—well, we won't have 2½ percent inflation, it is hoped, but it'll have 6½ percent unemployment in it. And when asked, "When does the Committee expect to raise rates?" I think the right answer is, "Sometime after this date." I think that trying to provide more information than that is inconsistent with what the policy goals of the Committee are. We need to be willing to step back from what we're providing in terms of information, if we feel it's undercutting. I think there's a coherent answer that one can give to the question. If the Chairman is asked, "What do you guys expect is going to happen to interest rates?" the answer is, "We don't expect them to rise until after this date, given our expectations for the path of the unemployment rate."

CHAIRMAN BERNANKE. President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. I would also like to thank the staff and the communications subcommittee for their very helpful work on this important issue. The economic projections of FOMC participants have been an integral part of our communications to the Congress and the public for over 30 years now. And as we consider the potential enhancements to the SEP, I think we must take care to protect what we've accomplished and to avoid changes that could either impair communication or interfere with our sense of collegiality and shared purpose. These are qualities of our Committee that have, sadly, become increasingly rare in other parts of the public sphere, outside of the Federal Reserve. I would comment first on what I think is an enhancement to the existing SEP and then move to what I believe is a separate

issue of, how can we better communicate the consensus view of the voters, especially in the context of the thresholds?

In terms of just the existing SEP, I think that a small but meaningful step in the direction of enhancing that would be to include the medians in table 1 of the SEP and in the associated charts, which include all participants' projections. As has been mentioned a number of times—but I'll repeat it—the median is the best robust statistic to summarize the central tendency of the projections. And I think adding the medians to the tables and the charts for all participants will enhance the information we present to the public without taking anything away.

Now, I'd like to respond to President Kocherlakota's point about interest rate projections. I'm strongly opposed to removing interest rate projections from the SEP; I wouldn't make any change in that regard. The unemployment and inflation projections are not, in my view, summary statistics for everything we need to know about monetary policy. The FOMC statement says that an exceptionally low level for the federal funds rate will be appropriate “at least as long as the unemployment rate remains above 6½ percent.” I may personally agree with President Kocherlakota that we shouldn't raise rates until it gets to 5½, but the statement is 6½. So I think that when you start saying, “Well, once we put out the 6½, people can figure out the funds rate,” it sounds a little bit too much like a trigger and not as much like a threshold. I actually like the idea that we're putting out our interest rate projections as part of the SEP; that's just my reaction.

Now, I think the more important issue is thinking in terms of, how can we improve the SEP in order to align it better with the thresholds in the FOMC statements? And, obviously, we're going back to January and April of 2012 and some tensions that occurred back then. Personally, I think that it makes sense, as Governor Yellen suggested, having information just on

the voters. It would actually be pretty simple, or relatively simple, just to have a table that had the medians of the voters. You don't necessarily need all of the ranges and everything there, but it would be an easy way to get the information you want to get out. The median of the voters, in some sense, is a proxy for a consensus forecast. Alternatively, you could just put the fan charts, as Governor Yellen suggested, or you could do other variants on that. I'm perfectly happy with color-coding the dot charts to distinguish between the voters and nonvoters. So while I'm fine with the idea of distinguishing between the projections of voting members and nonvoting participants, in practice, I really don't think this is going to matter that much. The fact is, as the memo shows—as practice shows now, I believe—the medians of the participants, voters, and various subgroups really aren't very different. However, it's very important that we not exclude the dissenters from the voting members' portion of these charts. I agree with Governor Yellen on this now. Doing so, distinguishing between dissenters and nondissenters or voters who voted for the policy action, would damage Committee collegiality and would create a feeling that the dissenters are no longer equals on the Committee, which I think would be damaging. The costs would substantially outweigh any marginal gain in coherence.

Now, turning to fan charts, I'm just not convinced that these will add clarity to our communications right now. I can't imagine that the public is nearly as interested in the forecast uncertainty as they would be in the median range of the forecast. We already do include statistical information on forecast uncertainty. And in fact, I'm concerned that any attempt to emphasize our forecast uncertainty would potentially be a mistake. First, I don't have a lot of confidence in our ability to create reasonable uncertainty bands, especially given that we're in the zero-bound environment. The staff memo, I think, covered that very well. I also worry about getting into another one of these situations in which our SEP and our FOMC statement are

out of alignment. You could imagine a situation in which we say in the FOMC statement that there are significant downside risks to the outlook. But then people look at our fan charts, and they look just as symmetrical as always. And so there's a sense that the SEP is putting out this uncertainty information, but really, it's not consistent with the FOMC statement. When you really think about our FOMC statements around forecast uncertainty and risks to the outlook, these are fundamentally judgmental decisions regarding the bias of the risks, the magnitudes of various risks. I think that we can somehow come to a coherent view on risks in our own discussions in terms of our FOMC decisions; that would be harder, at least using the methodologies that have been proposed, in terms of producing fan charts. And as Governor Yellen suggested, asking all of the Committee members to come up with their own subjective fan charts, I think, is a bridge too far.

Finally, I support investigating further the idea of including balance sheet forecasting in the SEP. I agree with Governor Stein—this isn't that complicated. I would have a slightly different way of doing this. I would just—[laughter]—that's the nature of this group. We could easily produce a dot chart for our forecasts of the size of the balance sheet, or whatever the preferred measure is, at the end of each year—at the end of 2013, 2014, and 2015—so, going further than just what our current purchases are. More generally it would be very much like our funds rate forecast. Importantly, we should do this as a trial run before we think about trying to get this out for March or something. But I actually think that, like many of our trial runs in the past, these are helpful for our own internal discussions because they're a way of communicating within the Committee what people's views are about the future path of the balance sheet. So even if it never goes public, that would serve a useful purpose. I'm not as positive about trying

to get detailed questions and answers about all of the risks and efficacy and other factors that go into that in terms of trying to make that part of the SEP. But thank you.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. All right—just as background, let me repeat what I've said at other times. We're going through this in part because, I personally think, the SEP is a flawed tool for conveying the collective judgments of the Committee. After all, one of the important goals is to aid the Chairman in communicating effectively at his press conference about what the Committee was thinking about in taking its actions. The projections are too widely divergent in their policy assumptions and not coherently linked to the collective policy decision. A consensus forecast could have been a big improvement, but, as we learned in October through a series of trial runs that ended unsuccessfully, we can't agree on how to do one. So instead, the flaws in the SEP, I think, need to be addressed.

Turning to the specific questions, I came in sympathetic to President Kocherlakota's views about identifying the supporting members in the projections, but I can certainly support Governor Yellen's further consideration that medians of the voters convey almost the same information. It's not a big change. So if that aids the consensus process, I have no problems with that.

The figures about the funds rate identified by the voters, as shown in exhibit 2 in the presentation, are much more transparent for understanding the FOMC statement. Again, I think that's what we're after, so I believe that that's useful. In terms of emphasizing the liftoff date for the funds rate, I understand that there are different viewpoints on that, and it's a little uncomfortable. But I don't think this is any different than any other cycle at this point. What the public cares about is changes in the funds rate. They wait for what the change is going to be at

the meeting. Because we're at a zero funds rate, the natural question is, when is the first liftoff? But if you go back to the 1992–93 period, you had exactly the same interest on the part of the public: “When are you going to change the direction? When are you going to start increasing rates?” And so it's really no different; it's every bit as uncomfortable. But if you're going to be in the business of projecting what the funds rate is going to be at a point in time, it's just a natural way to summarize it. So I would continue to do all of that.

In terms of fan charts, I am open minded on that. I don't view fan charts as being particularly informative, especially the graphical displays of those. I wouldn't do it for the policy rate, but for economic growth, the unemployment rate, and inflation, I prefer something like a table, such as table 8 in the memo. We currently have some measure that's buried at the end of the SEP—it doesn't bother anybody. We could continue to keep it buried at the end, and it can be historical errors or simulations—it doesn't matter; they're probably going to be about the same answer. That's a bad research answer, but for policy, I think it's about right.

On the balance sheet for the SEP, I started off with, “I'm willing to do this, and I believe I know how I would go about doing it.” But I do think it's going to be awfully hard, and it's hard to expect that we will be successful in this. I'm extraordinarily sympathetic toward Governor Stein's thought that we could do this out of the box in March. I thought that about the funds rate projections. But it took trial run after trial run, and this is just what we get in the Federal Reserve. There is a whole host of good reasons why we end up doing that very slow process. But I do think that it's going to be more complicated than just calling off a number. As soon as we call off a number, the market reaction could be exactly right, and it's only about the disappointment. But if it's more about, “Well, geez, now what's the path of that going to be? Did that include tapering? Are they going to continue to do this at a very slow pace but for

another 18 months, or is it going to be cold turkey?” And they’re going to really care about that. I think there’s going to be additional fallout that will immediately run into regret. I interpret some of President Kocherlakota’s comments about the policy simulations as regret that we went a bridge too far already, but that’s where we are. Then the other thing is, if you can’t do it in March, then you’re looking at June, best case. In June, there’s potentially a live policy decision at play there, one in which we could be altering the trajectory of that policy—cold turkey, slowing it, or whatnot. We would have put together this expectation of policy, and then at the meeting, we could make a decision, which could be very different than what I would be expecting. And now, all of a sudden, I’d feel very uncomfortable with that being out there in the SEPs and as the basis of the press conference. We ran into that problem with the funds rate and convinced ourselves—or at least I said—“Ah, 25 basis points can’t be that big of a deal. But I think it would be a bigger deal because it’s a future path that’s going to be captured here, unless you’re just saying, “What’s our next monthly pace going to be?” So that gets into the complexity. There are actually much easier ways to address some of the discomfort that some people feel with the policy stuff. Rather than going all the way with doing an SEP, many of us speak in public about what we think is on the path. Now, that’s countercultural in some places. But if you’re going to talk about Committee time and what we can agree on, that would be a simpler way of doing that. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I think I’m going to agree with everyone here, and therefore I agree with no one. I appreciate the staff memo and the communications subcommittee work concerning possible changes to the SEP. In general, I did not see very much here that I thought would improve the SEP report. I think there is considerable risk that tinkering

further with the SEP will simply muddy the waters. So, in that sense, I agree with President Lockhart's characterization of what we need to do here—just be less ambitious for what we can get out of the SEP.

I do support one aspect of the possible changes—namely, the fan charts for the forecasts. I would support this only if we use historical forecast errors. In this sense, I'm agreeing with President Lacker. On this dimension, in contrast to what others have said here, the public needs to be continually reminded of the amount of uncertainty around macroeconomic forecasting. I don't think you can do enough reminding of the public about how much uncertainty is out there. And so every opportunity that we have, it needs to be emphasized over and over again that lots of things can happen, that lots of things do happen. If you just look at history, you'll understand that. I think that that's an important element, and therefore I would support more representation of uncertainty in the SEPs via historical forecast errors.

I also support President Plosser's and President Kocherlakota's comments to the effect that we should deemphasize the liftoff aspects of the SEP. I see this aspect as counterproductive because, again, anytime you're talking about the date of liftoff, you're risking the idea that you're sending this pessimistic signal that you think the economy is going to be bad far out into the future, rather than just saying, "Well, we're hoping for better economic outcomes, and when we see those better economic outcomes, and not before, we will think about tightening policy." So I think that in the spirit of getting rid of that pessimistic signal, I would want to deemphasize the liftoff date aspects of the SEP.

The general difficulty with the SEP is very apparent. It is an aggregation problem across views that are not very amenable to aggregation. In this sense, I agree with what President Evans was just saying. I continue to think that the longer-run solution here is to produce a

monetary policy report, which is essentially a staff forecast blessed by the Chairman. The embedded monetary policy assumption should be the one assumed by financial markets at the time of the forecast. The Chairman is naturally going to choose a forecast in the middle of the Committee views. Committee members would then be free to say which aspects of the forecast they agree with and which aspects with which they find themselves disagreeing. In my view, this method would provide considerably better communication to the private sector. Again, using President Lacker's characterization, we want to paint a picture of the future, and, at least in general terms, describe what the Committee is thinking about and what the Committee envisions. And I think that something like the process I just outlined would do that most effectively.

On giving forward guidance on the balance sheet, I especially wish to avoid anything that would interfere with the open-ended, state-contingent nature of the current policy, and in this sense, I agree with President Rosengren. Giving an indication of the total amount of purchases expected would, in my opinion, be a step backward in this regard because it would deemphasize the state-contingent approach.

On voters versus nonvoters, I don't have a strong opinion, but I will say this: What we are doing a lot here around this table is taking policy actions that include commitments over long horizons, such as several years. If we go in the direction of distinguishing voters and nonvoters, then I think logic requires that the dots reflect those who are going to be voting in that particular year. If we do not do this, then markets are naturally going to ask a lot of questions about, "Well, what have you got highlighted here? And what about the out years in which there might be more action on the policy front—who's going to be voting at that time?" So I want to stress a sentence I wrote down here: Everyone is a voter over the time horizons we're talking about here. We've gotten away from the way this Committee used to operate, with a meeting-by-meeting

approach to monetary policy decisions, when we just did something that day and didn't worry too much about the full continuity of the policy. And one of the hallmarks, I would say, of the Bernanke era is to take the full time path into consideration because that's an important consideration in policy. If we do that, then I think the whole Committee is involved in that process.

Finally, I agree with the intriguing comments of President Kocherlakota that we may just want to take the projections about future policy variables out of the SEP entirely. I do think it has put us in perhaps more of a box than we would like, and maybe it's not served the purposes that we originally intended. It could be done if markets are prepared ahead of time, and I don't really see that as being the biggest problem. If we think that's a better way to communicate, then that's the way we should go. Thank you.

CHAIRMAN BERNANKE. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. I'll abbreviate my comments, given all of the good feedback that's been offered to this point. As a communications tool, it's my sense that the public, at least those who have some interest in these projections, has come to understand both its value and its limitation. So I take the caution that others have mentioned already—that trying to have it do too much in terms of representing the collective judgments of the Committee could be difficult. But that said, I'll just hit on the questions. I would be fine with publishing the medians of the projections. And frankly, notwithstanding the comments about collegiality, I wouldn't oppose publishing the median of the nondissenting members as a way to reflect the governance of our decisionmaking and to characterize, as best we can, the collective judgments of those who vote for an action. On questions 3 and 4, I don't think fan charts would help us communicate with the general public as well as the minutes do, and I think those who regularly

follow the SEP, or are familiar with forecasting, already understand that confidence bands are typically quite large. On the last question about balance sheet policies, like others, I believe that this is clearly the more complicated one. And I think maybe our discussion at the next meeting might be helpful in how we think about this aspect of policy communication. But I do agree with Governor Stein. I would be open to publishing estimates of our purchases in some manner, whether to show we're tapering or stopping. I'm open to that discussion. Thank you.

CHAIRMAN BERNANKE. I congratulate you on your brevity. President Fisher.

MR. FISHER. Is that a hint, Mr. Chairman? [Laughter] Thank you, Mr. Chairman. This is obviously like putting socks on an octopus here. You're getting all kinds of views. That's all I want to say. Thank you, Mr. Chairman.

I look at this, from my perspective, somewhat practically. To me, the most important thing that happens in our communication is your press conference. By necessity, you have to prepare for that in advance. And it is driven by what happens at the Committee and your sense of how the votes are going to work out. So I think both your press conference and the statement we make reflect the voters. I view the SEP, with all of its flaws, limitations, and imperfections—I think President Evans and I are in complete agreement on that—as filling in what otherwise would be a communications gap for those FOMC participants who are not currently voting. That's my way of saying that I would not be in favor of the dot bifurcation that was mentioned. I think Stacey pointed out some of the drawbacks to that. Governor Tarullo has a great phrase when he refers to the Kremlin watchers. Imagine, as we get close to the end of this year—you will perhaps be rotating off, Mr. Chairman, in your chairmanship, and we have Governor Duke, who may or may not be staying—the intensity of focus on who's trying to do what, in addition to the rotation of the vote. Because I think it's a chance for expression, imperfect as it is, I would

like to see this to refer only, in all cases, to all participants and not distinguish among voters, nonvoters, and dissenting voters because that's what comes out in the statement and in your press conference, and because that's already accounted for.

On the five points, I'm in favor of medians—again, all of this for all participants. I am generally in favor of fan charts, certainly for unemployment and inflation. I'm not in favor of it for fed funds. I like the idea of eliminating dates of liftoff and basing ourselves on conditionality. After all, we all know from theory and, I think, from practice that it's what we do after liftoff that really counts. So I'm not in favor of, and I want to get away from, that liftoff projection. Lastly, I've aligned myself fully with Governor Stein on the assets and the balance sheet size. I recommend that we assign Governor Stein and President Williams to figure out a way to express that. Thank you.

CHAIRMAN BERNANKE. And I congratulate you as well, President Fisher.
President Pianalto.

MS. PIANALTO. Thank you, Mr. Chairman. Based on the careful assessment of the SEP enhancements that were provided in the Board staff memo, I concluded that we've enhanced our communication significantly over the past few years and that we're running out of clear opportunities for significant further improvement. And after listening to everyone's comments this morning, I'm even more convinced that we don't have clear opportunities for improvement. So rather than answer each of the questions, I'm just going to comment on two changes that I think might be helpful to make and then on one that I would not be supportive of making. The first of the two changes that I believe would improve our communications and would be worth pursuing is that we publish the medians of projections in the SEP covering all participants' projections to better convey the Committee's collective sense of the outlook.

Second, I would include more information on the views of appropriate balance sheet policy. It should be feasible and helpful to collect and report in the SEP the range of views on the size and composition of the balance sheet at the end of this year. Of the other proposed enhancements, there would be one that I would have difficulty supporting, and that's distinguishing among the views of supporting voters, dissenters, and other participants in the information on appropriate monetary policy. I'm not as troubled by the other enhancements under consideration, but I'm just still not convinced that their benefits are going to be enough to outweigh some of the costs. Finally, if the Committee decides to pursue any of these enhancements, I do think that it would be important to gain some experience with them before going public with any of the changes.

Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you very much. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you. First, I want to talk about President Kocherlakota's point and President Plosser's point that with the date-based guidance no longer in the statement, we shouldn't have the fed funds date guidance in the SEP. I've been sitting here thinking about that, and I guess I see your point, but I still think that you have to have something that you can offer up as a substitute, as opposed to just taking it away. Otherwise, it contradicts everything we've been doing in terms of trying to be more transparent. And, second, even though we don't want to focus people on the date-based guidance in the statement, market participants still care about the date because the date is what drives market valuation. Even if we didn't provide any information on the date, they would try to look at the unemployment data and any other stuff and try to extract what the date is. So I think they care about the date. I think that practically, if we're not going to provide the fed funds data by date, there has to be something

that's in place of it. I haven't heard anything around the table yet that seems to be convincing in that respect.

Now, generally, I'm of two minds about the SEP. I think it's not very good, and so if it's not very good, I don't want to really use it and emphasize it as a communication tool. On the other hand, if we can make it a lot better, then I'm actually willing to push it forward as a communication tool. And I guess, based on what I'm hearing around the table, that I don't feel as though there's a consensus on ways to improve it. So that pushes me back into the view, "Well, let's just keep it as it is, not use it very much, and just deemphasize it a bit."

In terms of the questions, on medians versus central tendencies, medians are fine with me. I don't think it really changes much. On the second question, about the voters versus other participants, I think the color-coded dots make sense, because it's true that the Committee's membership changes meeting by meeting. By color-coding the dots, it gives you some sense of mass in terms of the voters. If you don't color-code the dots, you're essentially overstating the mass of the presidents, frankly, in the SEP. Because I think that's a bit misleading, I would favor color-coding the dots.

On the fan charts, I just don't see that it adds anything. The fan charts will probably not ever change; they'd always look like this [gesture] so it's not obvious to me at all that this would be a very interesting contribution. Also, if you read the memo, the fan charts as proposed had all sorts of problems, because as you deviated away from the central path, the funds rate was modified but the balance sheet was not, which was a little strange. Moreover, if you put in the fan chart for the PCE inflation rate, it would really mislead people about how likely it would be that you'd actually trigger the threshold on the inflation forecast, which would be, I think, a huge problem. You'd make people think that this is highly likely that you're going to trigger a

2½ percent inflation forecast, when in fact, I would imagine that it's been very rare, in the last 15 years or so, for us to project that inflation is going to climb significantly over that type of time horizon.

On evolution of the balance sheet, I don't think it should go into the SEP, because it would be confusing to people. I just don't think it would have the nuance to communicate a lot of good information. But what I would like is for us to take a survey of everybody and for us to know what people actually think about this. It would be nice to know where the Committee is relative to the Tealbook assumption of \$500 billion. I made a statement earlier that I thought the consensus view of the Committee was somewhere around \$750 billion or \$800 billion. I have no idea if that's right or not. I think we should do that for the March meeting, regardless of the SEP. It would be useful to get that information from people. Finally, I want to thank the staff for setting me straight on something. A while back, I basically said, "Look, one of the flaws of the SEP is that it's a central tendency of individual variables, but it's not a central tendency of a forecast." And so I asked the question "Should we actually try to select the median forecast rather than median variables?" I want to thank you for taking that seriously and doing the work, and what you basically showed was that the differences were trivial. So I'm very happy to never bring that up again.

CHAIRMAN BERNANKE. Governor Duke.

MS. DUKE. Thank you, Mr. Chairman. I'm just going to go straight to the questions. First, on the addition of medians, I think the addition of medians for participants could actually be useful for reporters and others who communicate about our actions. When I watch the press conference, CNBC puts up a single number, which is presumably right now the average of the central tendency, and it seems as though, if they had a single number to pick up, that might

actually be helpful. On question number 2, the coloring of the dots or the bars, first of all, I would agree with President Plosser that the dot charts, which will someday communicate a path of policy after liftoff, are actually much more helpful than the date-based, liftoff-focused bar charts. And so I do prefer the dot charts. I generally have the view that was expressed by President Bullard that all will vote over the time horizon, but I'm coming to realize that all will never vote at the same time. So I think there's information to be conveyed by coloring the dots by voters, and besides, it would provide endless hours of entertainment to those who try to identify individuals. I'm not, however, in favor of distinguishing those who voted for this statement from those who did not. I understand the objective of trying to show the closer alignment in the views of those who supported the policy as a way to explain the decisions, but that's not entirely consistent with my view of the appropriate threshold as an individual voter for supporting or not supporting a decision. This choice also assumes a single dissenter or few dissenters. If the votes became closer, then the same decision could argue for a chart of the views of the dissenters, in addition to a chart of the views of those who voted for it. And I see some risk that this choice could actually increase the level of dissent. For myself, as an example, rectification of the confusion that was created in April would necessitate not only distinguishing between those who supported the statement and those who didn't, but also suggesting that perhaps I shouldn't have supported the statement. My view of dissent is that the bar for dissent is very high, and I try to find policy that I can support rather than necessarily look for the policy that I prefer. I also view it as a new decision at each meeting, predicated on the stance of policy coming into the meeting. So, for example, if I disagree with a previous decision to raise the funds rate, I would still view the decision not to change the rate at the next meeting as an entirely separate decision. Moving on to questions 3 and 4, the fan charts, as delighted as I am to finally

have the opportunity to express my personal views on stochastic simulations, I would suggest that the subset of the public that has interest in our future policy and would take important information from the fan charts may be small, and that the subset of those who might misinterpret the information provided by the charts may be larger.

Moving on to asset purchases, I strongly agree with the comments made by Governor Stein, although I would suggest that rather than cumulative purchases, which just focuses on one tool, what we might do is a dot chart similar to the one on fed funds, with the size of the SOMA portfolio at the end of each year, because that would give information not only about purchases but also, ultimately, about sales and what we expected to do there. That would help shape expectations and provide important information. I do think it's true that it could deliver both good news and bad. But for investors and borrowers who are making the decisions through which our policy works, it's the rate changes that matter. It's the timing and the level of rates much more than our rationale. They really don't care why we did it; they're just more concerned about what we did and how it's going to affect them. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Mr. Chairman. Eric, I don't think much has been clarified since your intervention, and so my conclusion here is that it doesn't feel to me as though there's much of a basis for making any changes beyond, possibly, one of the median projection changes, at least at this moment. So rather than go through all of the questions, let me just say a couple of things. First, it's a little hard for me to believe I was once such an enthusiast about the SEP.

MR. ROSENGREN. It was a very brief period.

MR. TARULLO. It was a brief period, and I probably should look at what my diet was during that period to see what led me to think that this could actually be a useful tool. In all

honesty, I think that, in part, it was the concerns about the communications challenges around the thresholds, which we successfully overcame through the interesting device of communicating about them before we actually adopted them; that thereby socialized them and made them successfully launched in December.

It's important, though, to focus on the starting point that Stacy had in her presentation and that was in the memo she and Dave circulated, which is where the crux of the problem really is. It's between the aggregation of individual views that the SEP has, on the one hand, and the statement of a collective—not consensus, but collective—view in the FOMC statement, on the other. So the FOMC statement necessarily requires the voters to choose between a yea or a nay on something that maybe none of them would have written himself or herself, but you've got a binary choice. You weigh it, on balance, and you say, "Okay. On balance, I am for it or against it." The aggregation of the individual items can't be too far out of line with that collective decision, or else it raises questions. I actually don't think, based on the limited sample of discussions I've had, that very many people pay a whole lot of attention to the SEP. The market analysts don't really seem to, at least based on what they've told me. But one thing that we saw after that April meeting is that if there is an obvious discrepancy between the statement and the SEP, then at least reporters jump on it. So, to me, that's maybe the one thing that we should try to correct, even though, as Charlie Plosser, I think persuasively, points out, it's very unlikely to be a frequent occurrence. But it is one thing that caused some problems then, and it could reoccur in the future.

I don't think this is a huge deal—I should say that—so what I'm about to say is not really directed at this issue. But I do think it is dangerous to be so dismissive of the law. The law is something that not only is the source of our authority here—and we can't just say, "Well, we like

this part of it; we don't like that part of it, so we'll disregard it"—but also has functional implications. And the functional implications in this instance are that, as Dennis pointed out, 8 of the 12 voters are actually permanent voters. Now, it's true, Richard, that individuals leave the Board or they leave their presidencies, but that's always going to be the case. Even if someone is a voter two years hence, they might not be here in two years. The voting group does itself make a decision, which is reflected in the FOMC statement, and therefore its judgment now is something that does matter. It's for that reason that I think the coloring in the dots makes sense. It will also give my grandson something to do, unless gray and brown are the two colors, in which case he's not going to be able to distinguish them. The problem that it somehow diminishes the import of the future voters is actually compensated for by the position that I held back when we first started discussing this, which is, we ought to include everybody as well as just the voters. There was a proposal, when we first started discussing this, to have just voters, which I thought was a mistake. But if you don't identify the voters, you're really underweighting the influence of the eight permanent voters because they will have a vote continuously. And thus, at present, I think, we're giving a somewhat distorted view of whose judgments not only matter now, but also are going to matter over time.

The only other point I would make is a general one on all of these other issues. There's sometimes an assumption that any time you give out more information, by definition, that means you're increasing transparency. I think that's a pretty thin idea of transparency. So, what are we trying to do in the present context? There is something that is uncertain—uncertain even to us and certainly to the world—and that is the thinking of the Committee about economic conditions and monetary policy now and in the future. We're trying to give information, beyond an action and even a statement associated with an action, that allows people to make informed inferences

about the path that that policy might take in the future, depending on economic conditions. By definition, whatever conclusions people reach are going to be incomplete and imperfect, and they know that. So the test is not information for information's sake. The test is whether the information is likely to be supportive of people's drawing a more accurate picture of where the Committee is. This is not unlike what the rules of evidence do in a litigation setting. Not every piece of information, even true information, is allowed into a trial, because there are judgments made as to whether that information is more or less likely to move the decisionmakers, in that case, into an accurate picture of what actually happened. I think that should be the test that we apply, and to me, that argues pretty strongly for what Sandy and I guess others have said: Anything we're doing should probably be put into some sort of mock run so that we can try collectively to make that judgment as to whether it really is transparency-enhancing in the strong sense and not just in the literal sense. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. First, some general points about disclosure. A possible litmus test that we should consider for all disclosures is whether the disclosure enhances clarity or reduces confusion. If a disclosure substitutes for something already being disclosed, because it's an improvement in enhancing clarity or reducing confusion, then it passes the litmus test, even if it means a chart is being taken away. We've repeatedly emphasized quality over quantity, and this is Dan's point. We also shouldn't forget that sometimes it takes communication to explain changes in communication. We need to explain why we're throwing out a particular chart or pulling back a particular chart or other disclosures.

In the case of publishing medians, we don't run into the potential risk of adding new information that's confusing. Determined public readers of the SEP can already calculate

medians from the histograms for participants' forecasts of real activity, inflation, and the fed funds rate. So this proposal doesn't involve the release of additional information that's more confusing than clarifying. The publication of median information is simply clarifying. For me, that's fine; there's nothing jarring about its disclosure. The public might wonder why we're highlighting it, and I haven't heard of any plans to disclose to the public its rationale. But if its rationale is to disclose the Committee's collective judgment about the economic outlook and appropriate policy and the public understands this, then I think there's a benefit to such disclosure as a proxy of sorts, although it's an imperfect one, to a consensus forecast. Now, the rationale for going further and excluding from the medians the nonvoters or dissenting voters strikes me as weaker. The theory set out in the staff memo is that what is called the risk of internal incoherence, also known as the problem of the April press conference, is minimized when projections of just members are used as the basis for producing the medians. On this exclusion, I'm just not sure. I think there's a risk of internal incoherence regardless of how we narrow the pool of relevant projections, because many voters, and even "yes" voters have different understandings of how the economy works and how it reacts to policy settings and changes. Against this questionable benefit is the potential set of drawbacks described in the staff memo. Again, what we're asking the SEP to be is a consensus document, but that was never its purpose. Its purpose was to be a vehicle for individual expression of economic views and appropriate monetary policy. And remember, we have this timing issue in terms of the SEP preparation preceding the FOMC meeting, which was part of the reason why we couldn't create a consensus forecast. The SEP will probably never be a consensus document.

To settle this issue in my own mind, the argument I found most compelling was the single sentence in the staff memo that read, "As a practical matter, the differences among these

various options for computing medians may not be all that important.” For example, we see this: Medians for the five 2012 SEP rounds look pretty much the same across participants, members, and nondissenting members for all of the series reported in the SEP. So it’s difficult—for me, anyway—to get exercised over how the medians get constructed. In valuing the spirit of collective decisionmaking within the Committee, I’d want to be cautious about signaling in our SEP communications distinctions that make no difference. Finally, we’re not telling people the purpose of disclosing the medians—that is, that it’s a way to elucidate some kind of consensus forecast. Without describing the purpose—in other words, the avoidance of the risk of internal incoherence—people may not know exactly why we’re excluding nonvoters or dissenters. So, to conclude on question 1, yes, I think the medians of projections could be presented in the SEP, and I have a slight preference, but not a strong one, for thinking that the medians should be constructed using the projections of all participants. If we explain why we’re now disclosing medians and why only a subset of the Committee is being used to calculate the medians, the rationale for the disclosure, for me, does become more compelling.

Regarding the second question, I think that as the time of liftoff approaches, the scrutiny that the public gives to the pace of policy tightening will increase. What we didn’t accomplish with thresholds was any articulation of what happens after the thresholds are reached. We recognize that the thresholds are not a complete reaction function. So the pace of tightening is a meaningful disclosure that could provide some beneficial clarification. The dot plots show the pacing of policy tightening. Again, though, I don’t find there to be a significant benefit in presenting this information in a way that distinguishes voters from all participants, but I don’t feel strongly on this, if distinctions between voters and nonvoters seem to be preferred by the rest

of the Committee. To quote President Lockhart, this isn't a "throw your badge on the table" issue for me.

Regarding the third question and fan charts, I would say that probability bands are good reminders to the public of the imperfection and imprecision of forecasting. Probability bands are standard and interpretable ways to convey the uncertainty that attends the outlook. This uncertainty, and the associated diminishing of hubris that should be associated with it, is worth underscoring, but then, of course, we need to decide on the method by which to construct the confidence bands. Each method has its own advantages and disadvantages, but again, the pragmatist in me is drawn to the fact that any reasonably calibrated set of probability bands can convey the message that uncertainty about the outlook is very great so that the precise method used is not worth a lot of handwringing.

In terms of the fourth question, the desirability of fan-charting the fed funds rate, it might pass the litmus test of enhancing clarity or reducing confusion by illustrating that the actual course of monetary policy over time depends importantly on the uncertain future evolution of real activity and the actual course of monetary policy itself is highly uncertain. But there seems to be this critical difference between producing fans around the federal funds rate and producing fans around economic projections. The federal funds rate is under the direct control of the FOMC, unlike economic growth, over which we have limited control. Our differing fed funds rate projections are in part a result of different projections of economic growth. So the fans around fed funds rate projections seem to be simply a second-order effect of having different projections of economic growth. From this perspective, the fans may not add much in terms of clarity to the public. Alternatively understood, they may just trigger questions and confusion about the fans around projections of real activity and inflation.

Finally, in terms of whether the SEP should produce information about participants' expectations for the evolution of the FOMC's balance sheet policies, I start by noting that the public might benefit considerably from additional information on the Committee's thinking about its balance sheet operations. In particular, limited public understanding about the fiscal implications of asset purchases could create significant reputational risk to the Federal Reserve and could cloud the public's understanding of why balance sheet operations are a tool of monetary policy. If the SEP could be retrofitted to provide the opportunity to elucidate how the Committee thinks about its balance sheet, the SEP, as the vehicle, may be appropriate. It seems to belong, at least conceptually, as part of the SEP because balance sheet operations are a tool of monetary policy and constitute part of the arsenal of an individual's assessment of appropriate monetary policy. So it would be helpful to know whether there are particular questions that could be added to the SEP that would be helpful in illuminating to the public the factors that Committee members find relevant in determining the circumstances under which the balance sheet is deemed to be no longer part of what constitutes appropriate monetary policy. Such a full explication would require drawing information from Committee participants about the factors determining the monthly flow rate of purchases and the mix of securities to be purchased; the stopping rule or the tapering rule and how it depends on economic developments and ongoing assessments of costs and efficacy; and what to assume about exit strategy. In short, I commend the Chairman for proposing a concerted discussion of an assessment of how best to convey to the public some framework for understanding decisions relating to balance sheet operations. This discussion, when it occurs during a later meeting, will itself be communicated in the minutes, which strikes me as an immediate first step in disclosing to the public how the Committee thinks about its balance sheet operations.

CHAIRMAN BERNANKE. Thank you. Governor Powell.

MR. POWELL. Thank you, Mr. Chairman. I'm going to leave broader questions of starting over again and different approaches aside and go right to the five questions. I'm fine with medians; I think there's incremental value there. I'm fine with identifying voters, and I would identify all voters. I would, under appropriate monetary policy, also identify voters. Because we are here today in the Kremlin, I would say that we live in an era of glasnost or transparency, and it seems to me that, in some cases, there is modest additional benefit of information in identifying voters. The arguments against it don't strike me as persuasive, so I would go ahead and do that. In terms of fan charts, I think the benefits are also very modest. What fan charts say is that there's uncertainty and it's asymmetrical. If you think about the kinds of people who look carefully at the SEP, they already read all of our speeches; they know who votes and who doesn't vote; they know that risk and uncertainty are asymmetrical. So I don't have a strong view on that. I certainly would not do a fan chart for the federal funds rate for reasons well expressed.

The one that I do feel strongly about is the last one, and that is disclosure of the direction of the balance sheet. I think, as Governor Stein pointed out and others have echoed, it's actually quite simple. It's one question, and it's the single piece of information that we're not giving to the public that they'd really like to have. It's true that we wouldn't be disclosing our entire objective function, but it's really a spectrum there. We have disclosed, for example, that substantial improvement in the outlook for the labor market is one piece of our objective function. That's a very broad term; it's not clear; it's not precise. The public doesn't have a precise understanding of it, and if they do, I would ask that they get in contact with me here. I think it's a case of letting the perfect be the enemy of the good. So, I would strongly support an

approach that would provide balance sheet projections. And that's what I have to say. Thanks, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you very much. Thank you, all, very much. Obviously, the staff and the Committee will want to review these comments in some detail, but let me just make a couple of preliminary summary comments from what I drew from the discussion, and then we can have lunch. On medians, in general, I think that there was support for providing medians of the economic variables. I believe that information is already implicit in what we release. So the Committee ought to decide whether just a table that makes it explicit would be useful to the press, for example. Let me come back in just a moment to the voters versus nonvoters question. On the funds rate chart, there was a lot of interesting discussion, and some valid points were raised regarding the fact that we're now looking at a state-contingent strategy. Is the time-based picture still relevant? I guess I think it is still relevant, though less so than in the past. The reason, as someone pointed out, is that our contingent strategy is about thresholds, not triggers, and therefore there's at least some information there about what's going to happen after the takeoff date. And indeed, there also are some differences across the participants. I guess what I'm saying here is that I'd like to keep the funds rate chart, and not change it. There's also the argument of not taking away information that is already there.

MR. PLOSSER. Mr. Chairman?

CHAIRMAN BERNANKE. Yes.

MR. PLOSSER. Can I interrupt?

CHAIRMAN BERNANKE. Sure.

MR. PLOSSER. My proposal was to leave the dot chart but eliminate the liftoff part of it because you can infer the histogram from the dot chart. But it focuses on the years, as opposed to the path.

CHAIRMAN BERNANKE. Right. As you say, it's the same information. I don't feel strongly, if the Committee would like to drop it.

MR. PLOSSER. I wanted to clarify that I was suggesting that we drop just the upper portion.

CHAIRMAN BERNANKE. No, but some people were suggesting that we drop the whole picture.

MR. EVANS. It's not precisely the same information, is it?

MR. PLOSSER. Actually there's more information in the dot chart.

CHAIRMAN BERNANKE. It's a subset. It's inferable, is it not?

MR. POTTER. If it's monotonic—unless someone's got a modal path that goes up and down.

CHAIRMAN BERNANKE. I see. I assume it's monotonic. All right. Let's not get into the mathematics of this here. So I think I would like to keep the funds rate chart, leaving for further discussion the question that President Plosser raised. Maybe the Committee would like to talk about that.

The issue of voters versus nonvoters—let me say, first, that there doesn't seem to be support; it's more or less even. Maybe a slight majority were in favor of the distinction. Again, it's worth reviewing further. For example, some people dislike the idea of coloring the dots, so to speak, for broader philosophical reasons having to do with a dislike of that particular diagram, in general, as opposed to the distinction between voters and nonvoters. But I think that at least

it's not evident from the discussion that there's a clear consensus on what to do about that. I guess I would like to express my own preference here: While I understand that distinguishing voters from nonvoters is not perfect, because of the issues that many people raised about turnover, et cetera, I think having only participants is also somewhat imperfect because it gives equal weight to people who are voting and not voting and, in some cases, can give a different picture than what the consensus of the Committee describes. But I acknowledge that there doesn't seem to be support for changing that; I'll come back to that issue in just a second.

To summarize, on these first two questions, all I've heard support for is perhaps adding medians as additional information. I'd like to keep the funds rate bubbles picture. And there should be more discussion of this, whether to add or subtract information, but I guess at this point, I didn't hear, at least, strong support for distinguishing voters and nonvoters, although personally, I think there is some case for that.

On the fan charts, this might be something we should just let go. I didn't really hear any significant support for that. President Plosser actually made a very important point, which is that the federal funds rate, in particular, is a projection of individual optimal monetary policy. It's not even an unconditional forecast from the perspective of each individual. And in fact, that is true also for the economic variables because they're conditional on monetary policy. I guess that, as one simplification, I might suggest that we drop that idea, at least for the time being, although just the educational point of showing people that there is a lot of uncertainty about our policies is useful. But as the Vice Chairman pointed out, the picture would probably be the same every time, and we do have a box that does discuss this uncertainty.

The most interesting discussion, I believe, was on balance sheet policies. There were a number of people who did feel that we should be doing something analogous to the funds rate in

the SEP, and I heard that discussion. I think the majority of people around the table were interested in providing more information about balance sheet policies, but the majority felt that it was not something we should do immediately, that we should at least try to gather more information. In particular, there are many dimensions to this type of policy. I would add also—and let me just be very blunt—that if we’re going to do this in the same way as the fed funds, then I think it is important that we distinguish voters and nonvoters, because the preferences are quite different, and if we’re going to explain that, that would be an important issue. But what I would suggest for now is two things. First, I would suggest that the communications subcommittee put together, with staff assistance, a set of questions that would be circulated to all participants prior to the next meeting, similar to what the Vice Chairman suggested, and that those be submitted and circulated before the meeting. And I would also suggest that, because we will be discussing these issues at the March meeting, people be given a serious opportunity to change their answers after the meeting. That will serve a couple of functions. First, it will obviously provide useful information to us around the table, but, second, I think it will be, in some sense, a dry run that would be informative about whether such information could be provided through the minutes or through a summary discussion in the SEP and about whether or not some of these questions could in fact be quantified to the extent that they could be put into the SEP that is released. So that would strike me as being a reasonable compromise, taking an active step toward gathering this information without putting out these numbers in March. And I would add, of course, that March will be an opportunity for us to discuss the outlook, the efficacy, and the costs of this program, and that the minutes will therefore, after the March meeting, provide, I think, a fairly substantial amount of information—including, I believe, expectations about the duration and extent of the program—to the public. Does that last

suggestion work, particularly for the folks who were eager to provide more information?

Governor Stein, would that work okay? Those are just some thoughts. Any further reactions or comments? [No response] Okay. If not, in a moment, I'll close the meeting. Lunch is available. I would urge those who can stay to get your lunch and come back to the table, and Linda Robertson will provide a short update on congressional developments. The next meeting is Tuesday and Wednesday, March 19 and 20, and the meeting is adjourned. Thank you.

END OF MEETING