

**Meeting of the Federal Open Market Committee on
December 11–12, 2012**

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, December 11, 2012, at 11:00 a.m. and continued on Wednesday, December 12, 2012, at 8:30 a.m. Those present were the following:

Ben Bernanke, Chairman
William C. Dudley, Vice Chairman
Elizabeth Duke
Jeffrey M. Lacker
Dennis P. Lockhart
Sandra Pianalto
Jerome H. Powell
Sarah Bloom Raskin
Jeremy C. Stein
Daniel K. Tarullo
John C. Williams
Janet L. Yellen

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

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

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

David Altig, Thomas A. Connors, Michael P. Leahy, William Nelson, David Reifschneider, and William Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

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

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

James A. Clouse and Stephen A. Meyer, Deputy Directors, Division of Monetary Affairs, Board of Governors; Maryann F. Hunter, Deputy Director, Division of Banking Supervision and Regulation, Board of Governors

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

Ellen E. Meade and Joyce K. Zickler, Senior Advisers, 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; Michael T. Kiley,¹ Associate Director, Office of Financial Stability Policy and Research, Board of Governors

Joshua Gallin, Deputy Associate Director, Division of Research and Statistics, Board of Governors; Jane E. Ihrig, Deputy Associate Director, Division of Monetary Affairs, Board of Governors; Beth Anne Wilson, Deputy Associate Director, Division of International Finance, Board of Governors

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

Jennifer E. Roush, Senior Economist, Division of Monetary Affairs, Board of Governors

Marie Gooding, First Vice President, Federal Reserve Bank of Atlanta

Loretta J. Mester and Daniel G. Sullivan, Executive Vice Presidents, Federal Reserve Banks of Philadelphia and Chicago, respectively

Troy Davig, Mark E. Schweitzer, Geoffrey Tootell, Christopher J. Waller, and Kei-Mu Yi, Senior Vice Presidents, Federal Reserve Banks of Kansas City, Cleveland, Boston, St. Louis, and Minneapolis, respectively

Mary Daly, Group Vice President, Federal Reserve Bank of San Francisco

Evan F. Koenig, Lorie K. Logan, Julie Ann Remache, Alexander L. Wolman, and Nathaniel Wuerffel, Vice Presidents, Federal Reserve Banks of Dallas, New York, New York, Richmond, and New York, respectively

Argia M. Sbordone, Assistant Vice President, Federal Reserve Bank of New York

December 11 Session

CHAIRMAN BERNANKE. Good morning, everyone. As I reported last time, following our rules, Bill English and Scott Alvarez are continuing a review of the leaks that we saw earlier this year in order to recommend further steps. This process is ongoing. I understand they have some interviews this week while people are here. I thank everyone for what I understand is very good cooperation; I appreciate that. The first item on our agenda today is “Financial Developments and Open Market Operations.” Let me turn the floor over to Simon.

MR. POTTER.¹ Thank you, Mr. Chairman. Over the intermeeting period, and especially following the U.S. elections, investor attention turned to the approaching “fiscal cliff” and its possible implications for economic growth. Despite some related volatility in financial markets early in the period, investors appear somewhat confident that a compromise avoiding more severe outcomes will be attained, though perhaps not until the New Year. With advanced-economy central banks expected to continue pursuing highly accommodative policy in the months ahead, sovereign debt yields trended lower and global equity indexes generally rose, despite ongoing concerns about economic growth.

Exhibit 1 begins with a depiction of broad trends in advanced-economy interest rate and equity markets over the period. As seen in the upper-left panel, the increased focus on the fiscal cliff led to notable declines in the 10-year Treasury yield and the S&P 500 index following the presidential election. Some of the equity market decline may also be due to investor selling in advance of higher anticipated capital gains tax rates. Concerns regarding more-severe fiscal tightening outcomes appear to have receded. While the S&P 500 has now retraced much of its earlier losses, the 10-year Treasury yield remains 14 basis points lower on the period, and at 1.6 percent is at the lower end of its three-month range.

These asset-price movements appear to be part of a broader trend in advanced-economy markets. As seen in the upper-right panel, 10-year sovereign yields across a number of countries are lower over the period, reflecting a mixture of concerns about economic growth as well as expectations for a continuation of highly accommodative monetary policy. Risk assets, meanwhile, have been supported by these policy expectations; signs of a rebound in Chinese economic growth; and the passing of key risk events, such as Greek aid negotiations. Other advanced-economy equity indexes are 2 to 6 percent higher on the period. The S&P 500 has underperformed, given uncertainties about future fiscal policy.

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

As seen in your middle-left panel, investors have pushed out the expected timing of increases in the federal funds rate. The market is now pricing a higher likelihood that the target federal funds rate will not begin to rise until late 2015 or early 2016. The outcome of the election reinforced investors' expectations for a continuation of highly accommodative monetary policy.

Investors are also increasingly focused on the possibility that the Committee could introduce economic thresholds in its forward rate guidance. According to the primary dealer survey, the odds for such an announcement at this meeting appear quite low, given that the October meeting minutes noted a number of practical issues that would first need to be addressed. As seen in your middle-right panel, dealers assigned an average probability of about 1 in 10 to thresholds being announced at this meeting. The probability increases over the course of the following two meetings. Of the many dealers who provided estimates for quantitative thresholds, most cited a 6.5 percent unemployment rate and a 2.5 percent inflation rate as the most likely choices.

Returning to fiscal policy, in the primary dealer survey, we asked respondents to assign probabilities to the three fiscal policy scenarios laid forth by the CBO in November. As seen in the bottom-left panel, dealers assigned the highest likelihood to the compromise "Alternative Scenario" and believed that such a scenario would have little effect on 10-year Treasury yields. In contrast, the dealers believe that if fiscal policy were to follow the other two scenarios—"Current Law" or "No Fiscal Restraint"—the effect on 10-year yields would be substantial.

Pricing in the options market does not reflect significant investor expectations for volatility in broader asset prices as fiscal policy negotiations continue. The lower-right panel shows prices of out-of-the-money strangles on the S&P 500 and the euro-dollar currency pair. These structures pay off if there are meaningful moves in the price of the underlying in either direction. However, the current low strangle prices would appear to indicate that investors are not seeking protection against or positioning for a sharp increase in volatility.

Your second exhibit begins with developments in domestic credit markets. As I noted in my last briefing, spreads to Treasuries for a broad range of credit assets have declined steadily in light of recent monetary policy actions as well as sharply reduced perceptions of European tail risk. Despite some credit spread widening after the election, these underlying factors continue to support very strong investor demand for credit assets. Evidencing this strong demand, investment-grade spreads have widened only modestly, even amid very heavy corporate debt issuance. As can be seen in the top-right panel, the pace of investment-grade debt issuance has accelerated recently, and annual issuance through November was already well above last year's pace. Heavy issuance partly reflects a desire to move ahead of any potential market volatility related to fiscal policy negotiations. In addition, some firms expect to use proceeds to finance special dividend payments before possible tax rate increases next year.

Turning to foreign markets, investors are closely following political developments in Japan and their implications for monetary policy. The likely prime minister following the upcoming election has advocated a significantly more accommodative monetary policy. This development has led to a sharp rise in Japanese stocks and an approximately 3 percent depreciation of the yen against the dollar, as seen in the middle-left panel. Intermediate- and longer-dated risk reversals have risen to their highest levels on record, reflecting increased demand for protection against further yen depreciation.

In Europe, two-year German yields have returned to negative levels on growing concerns about the outlook for economic growth in core Europe and increasing expectations that the ECB could lower its policy rates in the months ahead, possibly moving its deposit rate below zero. This change can be seen in your middle-right panel. The increasing focus on economic weakness also pressured the euro lower against the dollar, particularly earlier in the period. Improved sentiment following the passing of several risk events in the periphery, as Steve Kamin will discuss in his briefing, has offset some of this pressure.

The bottom-left panel touches on expectations for money market conditions around the year-end. A number of special factors this year may be causing January and February bills to trade at low rates relative to December bills. First, as discussed in the box “Expiration of Unlimited FDIC Deposit Insurance” in Tealbook A, many investors believe that the year-end expiration of the FDIC’s unlimited guarantee on noninterest-bearing transaction accounts could lead to outflows from these accounts and into money market instruments. The potential for tighter fiscal policy may also be affecting early-2013 bill rates, because spending cuts and higher tax rates could reduce the government’s short-term funding needs. Lastly, the anticipated end of the maturity extension program, or MEP, could also put downward pressure on money market rates. The end of dealer purchases of short-dated Treasuries in the MEP, which tend to be financed in the repo market, could lead to reduced demand for repo funding and a decline in rates for repo transactions and close substitutes, including bills.

Before moving to Desk operations, I would like to discuss Hurricane Sandy’s effect on money markets. As seen in the bottom-right panel, interdealer MBS and Treasury repo rates increased sharply the day the storm made landfall, as dealers sought to lock in funding early. Rates remained elevated for a few days due to staffing and other operational constraints at dealers and interdealer brokers but then declined to more typical levels. In contrast, rates in the federal funds market were little affected. Under the current directive, the Desk could conduct RP operations if it believed that the effective federal funds rate would move above 25 basis points in the absence of such operations. We were alert to this possibility given the spike in general collateral rates but did not act, as the effective rate was expected to remain well within the target range due to the high level of excess reserves. This situation raises the question of whether an unusual level of repo rates alone should warrant Desk operations in some special cases.

Your next exhibit focuses on Desk operations and policy expectations. Under the MEP, the Desk has purchased just over \$635 billion of longer-term Treasury securities and sold or allowed to redeem without reinvestment a slightly larger amount. If directed to complete the MEP, we would have just three sales and nine purchase operations to complete before the end of the year.

The MEP operations have resulted in a significant shift in SOMA holdings of Treasury securities in different maturity sectors, increasing the average duration of the portfolio. As shown in the upper-left panel, SOMA holdings at the completion of MEP (the dark blue bars) will stand at 35 percent of all outstanding securities in the 10- to 30-year sector, compared with about 15 percent before the crisis (as seen in the red bars), and we will have sold out of nearly every security maturing within 3 years. If the FOMC directed the Desk to continue Treasury purchases in January, the staff would propose a purchase distribution with an average duration of approximately 9 years, which is the net duration of the MEP sales and purchases.

We purchased \$110 billion in agency MBS during the intermeeting period. Indicators of market function continue to be little affected by the increased size of our purchases. As described in a memo distributed to the Committee, the staff currently assesses that a continuation of additional MBS purchases at \$40 billion per month through 2013 is unlikely to cause significant market functioning issues. As you can see in the top-right panel, the size of settlements increased from an average of \$27 billion under the reinvestment program to \$64 billion in November. Despite the increase, these settlements went smoothly. Of the expected settlements in December, to date, about \$9 billion have been moved out to January through dollar roll operations. Though this monthly dollar roll amount is our highest since reinvestments began, it represents about 10 percent of expected settlements, which is well within the range of dollar roll activity seen in the last year.

Given the increase in the size of our settlements, we are monitoring indicators of market functioning closely. One such indicator is the implied financing rates on newly produced MBS, which measure, among other things, the expected scarcity of these securities for settlement. As shown in the middle-left panel, the implied financing rates for December and January settlement of the Fannie Mae 3 percent coupon—the main production coupon—have moderated. This could partly be due to financial institutions' desire to manage balance sheet ahead of year-end, along with higher-than-anticipated origination volumes contributing to an increase in the supply of MBS available for settlement in December. Implied financing rates for the 3.5 percent coupon, where we conducted dollar rolls this month, have been more negative, likely reflecting the fact that production in this coupon has begun to wane. If widespread strains were to emerge in production coupons, the Desk is prepared to respond by increasing dollar roll activity to facilitate settlement.

Since the announcement of the additional MBS purchases, production coupon MBS yields and spreads have declined. Primary rates have also fallen and are around record lows. However, MBS option-adjusted spreads on the main production coupon have retraced somewhat in recent weeks, as shown in the middle-right panel, with

market participants highlighting higher origination as a major factor. Faster-than-expected prepayment speeds on higher coupons, such as the 5½ percent coupon, suggest a pickup in new issuance is likely going forward. Some market participants also believe that there is an increased chance of housing policy changes following the election, which would increase refinance activity and origination volumes associated with credit-constrained borrowers.

Turning to expectations for balance sheet policy, primary dealer point expectations for the size and length of the purchases have changed very little since October. In the near term, all dealers expect additional Treasury purchases to continue after the conclusion of the MEP, and almost all assume purchases will be at a pace of \$45 billion. MBS purchases are expected to continue at a \$40 billion pace.

In the primary dealer survey, median expectations are for Treasury and MBS purchases to continue at these paces at least through the March meeting. As seen in the bottom-left panel, at the one-year horizon, slightly more than half of the dealers expect either a reduction in the pace of Treasury purchases or a halt altogether. About 40 percent of dealers expect similar adjustments to MBS purchases at the one-year horizon.

The bottom-right panel shows the average probabilities dealers assign to different levels of the SOMA portfolio at the end of 2014. The most likely outcome remains centered on a level of \$3.5 trillion to \$4.0 trillion, implying between \$0.7 trillion and \$1.2 trillion in future asset purchases. Moreover, dealers assign a higher probability to a portfolio above \$4 trillion than below \$3.5 trillion.

The last exhibit addresses some of the uncertainty and disagreement among investors about future monetary policy. In the top-left panel, we measure the disagreement and uncertainty in dealer forecasts at a horizon of one year since 2007 by converting expectations on the level of the balance sheet into federal funds equivalents. As can be seen by this overall metric, disagreement is currently low. This low level is a result of the effect of forward guidance on expectations about the target rate and relatively low disagreement about the level of the balance sheet. On the other hand, uncertainty is relatively high at this 12-month horizon and above the level of disagreement. Because there is virtually no uncertainty about the target rate 12 months ahead, the uncertainty is driven by the future size of the balance sheet. Unfortunately, we do not have a long history of the balance sheet probability question to compare the current levels of uncertainty with.

We can also use the survey to estimate the expected time between the end of asset purchases and the first rate increase. The histogram in the top-right panel shows that close to 40 percent of dealers estimate this interval at six quarters, a higher proportion than in the October survey. However, the distribution appears quite wide, with a number of dealers expecting liftoff to occur within four quarters of the end of asset purchases. This distribution might suggest some uncertainty regarding the Committee's reaction function once the labor market outlook shows substantial signs of improvement.

Finally, I would like to ask for a vote to approve the resolution contained in the memo that Steve Kamin and I sent to the Committee on November 30 that would extend the existing temporary dollar liquidity swap arrangements with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank through February 1, 2014, and also extend the existing temporary foreign currency liquidity swap arrangements with these central banks through February 1, 2014. I should note that if you vote for approval, the coordinated public announcement will be at 8:30 a.m. EST on Thursday, December 13. Thank you, Mr. Chairman. That completes my prepared remarks.

CHAIRMAN BERNANKE. Okay. Questions for Simon. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. Simon, in terms of chart 19, I'm a little puzzled by what we're trying to get at through that question. If the respondents have a lot of heterogeneity in beliefs about what the course of the economy is going to be, that should translate into their having differences of opinion about how big our balance sheet is going to grow as well, given the way that we stated our policy. So how are you thinking about taking account of those differences?

MR. POTTER. We have the measure for disagreement in their point forecasts, the darker blue line, and that captures different views about the FOMC's reaction function and how the economy might evolve. And then the lighter blue, which you only have two recent observations on because we only just started to ask this question, captures each responding dealer's uncertainty around that point estimate and gives the average of that uncertainty. It's trying to separate out disagreement about how things might evolve in point expectations from uncertainty in terms of the average level of uncertainty that dealers have. If we had a longer history of the balance sheet question, we could see whether this was relatively high or low for the balance sheet. What I wanted to make clear is that this number for what the federal funds rate would be 12 months ahead is relatively high compared with the earlier history, particularly if you look at 2007, 2008—quite turbulent times.

MR. KOCHERLAKOTA. Okay, I think I understood you. Thank you.

MR. POTTER. There's a MarketSOURCE piece that was posted yesterday that goes into more detail. It was the only way we were able to try to capture some of the uncertainty about what the open-ended purchases actually mean rather than just focusing on the point forecast, which I think is somewhat misleading as the size of the program.

CHAIRMAN BERNANKE. President Pianalto.

MS. PIANALTO. Thank you. Simon, I heard this morning in Steve Liesman's CNBC report on the Fed Survey that close to 70 percent of those surveyed are concerned that with our continued asset purchase program, there are going to be both market disruptions and pricing issues. And what was interesting about the survey is that it is a very sharp reversal from the September survey. I know that in our primary dealer survey, we don't ask questions about market disruptions, and in your comments you said that the staff does not believe that our continued asset purchase program would cause market disruptions. But are you hearing any comments from the dealers about concerns about market disruptions?

MR. POTTER. We always get comments and very wide-ranging views about what we should be doing, and what the effects are. I haven't noticed a big switch in the same way that the CNBC survey has. It would be useful to see how precise that question is and whether there's some follow-up. The metrics that we have do not show, really, any strains in the markets right now. We're actually surprised that there haven't been more strains, given the size of our MBS purchases, because we've been running somewhere between \$70 billion and \$80 billion per month. After Hurricane Sandy, we had to make up for one day; we switched very quickly from in the low \$3 billions per day to the high \$3 billions, and we accomplished that with really great ease. So on the MBS side, we've seen very little. What we will follow is the settlements and whether we have to roll. Part of that is the 3½ percent coupon: Because the primary rate is

being pushed down so much, that is becoming a coupon that you're unlikely to produce. That tends to result in some market-functioning issues, but that's really a desirable side effect of the policy if we want to push down the primary rate.

CHAIRMAN BERNANKE. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I want to talk about exhibit 3, chart 17, "Expected Pace of Asset Purchases." I thought your characterization of this was that—and I may be reading the graph wrong, so let me know—all or most of the probability was on \$45 billion. But it looks to me that more than half of the probability is actually on something less than \$45 billion.

MR. POTTER. The question that we ask is about the upcoming meeting, the January meeting, the March meeting, and the one-year-ahead. This chart is the one-year-ahead chart. If I had shown you a chart for this meeting, I think that what you'd see is that 18 of the dealers are at \$45 billion. There are three dealers who are a little bit below \$45 billion, and that might be because they have a different view of the purchase allocation. So in 10-year equivalent space, it's probably the same as the \$45 billion. However, this chart is the one-year-ahead, and it captures the fact that some of the dealers think the open-ended purchases will end sometime in 2013. Also, we're seeing a tapering in here from some of the dealers.

MR. BULLARD. Thank you.

CHAIRMAN BERNANKE. Governor Powell.

MR. POWELL. Simon, in reference to chart 20, do you have a story on what caused the dealers to herd into six quarters between the October survey and the December survey? It seems like there's a real coming together around that.

MR. POTTER. There are three ways this herding could happen: They could fix the date at which the federal funds rate will increase and move the end of the purchases, vice versa, or move both. If you look at those light blue lines, some of the dealers had an expectation that the funds rate would be held close to zero for a very long time. They've tended to move that in closer to 2015 or 2016. And there's still one dealer who believes very strongly that we will be purchasing when rates go up. It's interesting. I'm not sure what to think of that dealer, but that dealer has been quizzed on this topic, and that's what that dealer strongly believes. That's the one at minus 2.

CHAIRMAN BERNANKE. Any other questions for Simon? [No response] If not, may I ask for a vote on open market operations since the October meeting? President Lacker.

MR. LACKER. Thank you, Mr. Chairman. As you know, I voted against extending the swap lines in November, and I remain opposed. They amount to fiscal policy, and we can provide perfectly adequate dollar liquidity through open market operations.

CHAIRMAN BERNANKE. Okay. This vote is on open market operations, and I will give a moment for questions on your issue, but I take note of your comment. So let's do a vote on open market operations. Any opposed? [No response] All right. Let's take that as approved.

The second request is for an extension of liquidity swap lines. You received an earlier memorandum on that. We have both Simon and Steve Kamin here if there are any further questions. Are there any further questions or comments on the swap lines? President Fisher.

MR. FISHER. May I just ask what the status of our swap line with Mexico is? Is it still open?

CHAIRMAN BERNANKE. Well, the extraordinary swap lines that we had during the crisis are no longer extant. What is there is longstanding, NAFTA-based, \$3 billion.

MR. FISHER. Okay. Well, this extension doesn't affect the existing swap lines.

CHAIRMAN BERNANKE. No, it doesn't affect them in any way. We do those separately.

MR. FISHER. Thank you very much.

CHAIRMAN BERNANKE. Any other questions? [No response] All right. All in favor of extending the swap lines, please say aye. [Chorus of ayes] Any opposed?

MR. LACKER. Opposed.

CHAIRMAN BERNANKE. President Lacker. Any other? [No response] Okay. Thank you very much. Again, the coordinated public announcement is not going to be released until Thursday morning. Okay. Our second item is on aspects and options for continuing asset purchases. You received a number of memorandums from the staff in the intermeeting period, including a very substantive one that looked at a number of different scenarios, of which Jane Ihrig was the lead author here at the Board. So I'm going to turn it over now to Jane Ihrig of the Board and Julie Remache from the Federal Reserve Bank of New York to give a brief overview of some of the staff findings on this issue, and then we'll have an opportunity for questions.

Jane.

MS. IHRIG.² Thank you, Mr. Chairman. I will be referring to the handout labeled "Options for Continuation of Open-Ended Asset Purchases in 2013." The Committee received a memo from the staff providing projections of the effects of additional asset purchases on the economic outlook as well as the Federal Reserve's balance sheet and income. I will discuss the various options we considered, how we modeled these programs, and their effects on the macroeconomy; Julie Remache, from the Desk, will continue the presentation by discussing the effect of these programs on the Federal Reserve's balance sheet and income.

For this presentation, we will focus on three purchase program options, as outlined in the top-left panel of your first exhibit. We consider a \$750 billion program that includes \$250 billion in asset purchases from October 2012 through the end of this year and \$500 billion in purchases in 2013 (option 1 in the memo). We

² The materials used by Ms. Ihrig and Remache are appended to this transcript (appendix 2).

also evaluate a program that includes \$1 trillion in purchases next year (option 3) and a program that has no purchases after the end of this year (option 6). We report the results for the programs that assume monthly purchases of \$45 billion in Treasury securities and \$40 billion in MBS. The memo also considered purchase options with different compositions and paces; in general, under our modeling framework, the results are similar for programs of similar overall size.

There are many assumptions that the staff must make in developing these projections, and the open-ended nature of these programs makes the analysis particularly challenging. We start with the projection for the SOMA portfolio, and then we estimate the term premium effect on the 10-year yield from the staff's term structure model. Here we assume that investors correctly anticipate the pace and ultimate size of the programs. With the estimates of the term premium, we then simulate the macroeconomy using the FRB/US model, where the \$750 billion purchase program is consistent with the staff forecast in the October Tealbook. Other models and assumptions, of course, could yield somewhat different results. Our analysis embeds assumptions that are consistent with the exit strategy principles reported in the June 2011 minutes. However, should purchases continue for sufficiently long, the Committee may need to modify this strategy. Julie will discuss one alternative, while the box we included in the December Tealbook B mentioned some additional considerations.

The top-right panel highlights the effects of the purchase programs on the size of the SOMA portfolio. Under the program with \$500 billion in additional purchases (the blue dotted line), the portfolio expands through the middle of next year, peaking at \$3.3 trillion. The program with \$1 trillion of additional purchases (the red dashed line) has the size of the portfolio peak somewhat later and higher. Alternatively, if no additional purchases are made (the black line), the SOMA portfolio peaks near its current level. The portfolios begin to contract around the time assumed for the first increase in the federal funds rate, projected as August 2015 in the memo. Reflecting the staff's exit strategy assumptions, redemptions of securities begin six months before liftoff, and sales of agency securities begin six months after liftoff and proceed at a pace that eliminates agency holdings over five years. Under this strategy, the portfolio size is normalized between late 2018 and late 2019. After this point, the balance sheet begins to expand, matching the assumed growth of Federal Reserve capital and currency in circulation.

The bottom panels present the estimated effects of the purchase programs on the macroeconomy. Estimates by the staff imply that additional purchases will lead to lower longer-term interest rates, higher stock prices, and a weaker dollar. These more-accommodative financial conditions boost aggregate demand, causing the unemployment rate to fall and the inflation rate to rise somewhat. For the \$750 billion open-ended purchase program, the unemployment rate in late 2015 would be 30 basis points below the level projected if purchases were suspended at the end of this year, while core PCE inflation would be boosted about 20 basis points. For the larger program, the simulated effects on the unemployment rate and inflation

relative to the same baseline are about twice as large, implying more rapid progress toward both of the Committee's goals.

MS. REMACHE. Thank you, Jane. Turning now to the income effects of these programs, the top-left panel of exhibit 2 shows the projected path of Federal Reserve remittances to the U.S. Treasury under the three purchase programs discussed by Jane. The contours here are similar to analyses shown to the Committee in the past: Income would be boosted in the near term by the additional interest income from the asset purchases but then damped in the medium term as a result of higher interest expense on larger reserve balances and higher realized capital losses on larger asset sales.

Overall, under the assumptions in the memo, additional asset purchases would result in a lower level of cumulative remittances to the Treasury, and a deferred asset would be recorded during the exit period. As a reminder, a deferred asset is recorded when income is not sufficient to cover expenses, including dividends and transfers to maintain surplus at a level equal to capital paid in. Under the \$750 billion program, as shown in the inset box, the peak level of the deferred asset is small, at \$4 billion, and lasts about two years. Under the larger program, the deferred asset peaks at \$45 billion in 2020 and lasts for five years.

As a purely economic matter, the implications of balance sheet losses, low remittances, and a deferred asset are not obvious. On the one hand, losses would not directly affect the Committee's ability to implement monetary policy except in extreme circumstances. On the other hand, losses would, of course, have fiscal implications for the Treasury. Those implications, however, should be viewed in a broader context that includes the higher tax revenues generated by improved economic performance. Given the macroeconomic effects projected in the memo, we estimate that the overall effect of additional purchases on the federal debt-to-GDP ratio would be a decline of 1½ to 2¾ percentage points by 2025, as shown in the top-right panel.

Nevertheless, participants may be concerned about the possible communication challenges and political repercussions of Federal Reserve losses and so be worried about the risks to the paths of Federal Reserve income and remittances caused by a large and growing portfolio of long-duration assets. To aid in judging these risks, the middle panels show the likely paths of remittances and the deferred asset for the \$1.25 trillion program under alternative interest rate scenarios. In the memo, we considered simple interest rate shocks of plus and minus 100 basis points and a more adverse alternative simulation in which long-term interest rates run approximately 200 basis points above the no-shock interest rate path for a number of years.

Overall, lower interest rates lead to modestly higher cumulative remittances, though remittances will nevertheless fall to near zero for a few years (shown by the blue dotted lines). Similarly, the interest rate paths assumed in the December Tealbook, which were lower than those assumed in the October Tealbook and the staff memo, substantially reduced the deferred asset with the \$1.25 trillion program

relative to the memo scenarios shown here. Higher interest rates have the opposite effect—lower cumulative remittances and a larger and more-prolonged occurrence of a deferred asset. In the most adverse scenario for Federal Reserve income (the solid purple lines), the pace of recovery picks up substantially, inflation rises markedly, and term premiums increase. The resulting higher path for interest rates leads to a deferred asset that peaks at \$180 billion in 2019. However, as noted in the memo, even in this case, the federal debt-to-GDP ratio in 2025 falls because stronger real activity causes the increase in nominal tax revenues to outpace the growth in nominal outlays.

In the memo, we also highlight some additional risks that could be associated with exit. For example, if the interest rate paid on Federal Reserve liabilities was to exceed the interest rate on excess reserves, interest expense could be larger than what is assumed in the projections covered thus far. Likewise, if asset sales were to prompt a distinct widening of the MBS–Treasury basis, capital losses could be larger. A partial-equilibrium analysis of these two effects suggested that each could reduce cumulative remittances by about \$40 billion.

Finally, in addition to the uncertainty regarding rates, income projections are highly dependent on assumptions made regarding exit. As noted by Jane, the results presented here reflect the exit strategy principles laid out in June 2011. Using our assumed five-year sale pace for MBS, the larger purchase program will not normalize the size of the portfolio by the end of the three-year window noted in that strategy. The portfolio has evolved considerably since June 2011, and the Committee may at some point wish to revisit this exit strategy. While the memo does not undertake a full assessment of alternative strategies to normalize the portfolio and the balance sheet, we do provide an illustrative example in which the portfolio is reduced only through redemptions, without the use of sales.

The bottom-left panel shows the path of SOMA holdings in a “No Sales” scenario under a \$1.25 trillion program, compared with the staff’s standard exit assumptions. With no sales (the solid green line), it takes just a little more than a year longer to reach the steady-state size of the portfolio, and, as shown in the bottom-right panel, annual remittances to the Treasury are higher in the medium term. In total, cumulative remittances are boosted by \$50 billion as the elimination of realized capital losses and the added coupon income from retaining the MBS more than offset the added interest expense of higher reserves before the portfolio is normalized. Indeed, the peak deferred asset in this case is just \$6 billion. Again, this example is just one of the ways in which the exit strategy could be altered.

To summarize, the staff models indicate that additional asset purchases will boost aggregate real activity and inflation moderately. The programs will also significantly increase the size of the Federal Reserve’s balance sheet, which affects income. All the projections, of course, rely on many assumptions and are subject to uncertainty, but our hope is that these projections provide some sense of the effects of additional purchases on the economy and on our balance sheet. Thank you, Mr. Chairman. Jane and I are happy to take questions.

CHAIRMAN BERNANKE. Thank you, and let me thank Jane and Julie and the staff for the work on this memo. This effort was very labor-intensive because it involved analyzing the effects on the balance sheet. They went CUSIP by CUSIP; they looked in great detail at what we hold. It was a lot of effort, and we appreciate the work. Obviously we'll have plenty of time to discuss these issues more broadly, but at this point, does anyone have any questions for our presenters? Governor Duke.

MS. DUKE. I just have one question, and you may not have the answer with you in your notes, but you mentioned that the deferred asset would still be larger than the capital. What about the unrealized losses in the portfolio? Where would they be?

MS. IHRIG. It depends on the scenario you look at. For example, in the very extreme case, we have unrealized losses of more than \$300 billion. That's going to be greater than our capital stock, but for option 1 and option 3—go ahead, Julie.

MS. REMACHE. They would be approximately \$200 billion under a \$500 billion program and \$240 billion under a \$1 trillion program.

CHAIRMAN BERNANKE. Assuming what interest rate scenario?

MS. REMACHE. These are revised under the Tealbook scenario, which is a little bit more favorable than what we looked at in the memo, and those peaks occur sometime in about mid-2016.

MR. POTTER. That would be above capital.

MS. REMACHE. Yes.

MS. IHRIG. Total capital stock around that time is \$100 billion.

VICE CHAIRMAN DUDLEY. Can I have a two-hander?

CHAIRMAN BERNANKE. Yes, go ahead.

VICE CHAIRMAN DUDLEY. But in the past I would imagine that we've had many periods of time where the capital losses on the portfolio were far bigger than our capital—for example, back in the early 1980s.

MS. REMACHE. That's right. We did some preliminary looking at some of those figures and found that in the early 1980s, the unrealized loss position on the portfolio was approximately 7 percent of the size of the portfolio at that time. Our projections are similar to that but just a bit larger.

VICE CHAIRMAN DUDLEY. So they're comparable.

MS. REMACHE. Yes.

CHAIRMAN BERNANKE. Sorry to interject one other thing. I guess these capital losses, of course, are offsetting the remittances that we are now sending to the Treasury. In the last four years, we have sent \$280 billion to the Treasury, and obviously they would be larger over the lifetime of the security.

MR. POTTER. These are the unrealized ones.

CHAIRMAN BERNANKE. Unrealized, yes.

MS. IHRIG. Also, one important point to make is that we would never sell the entire portfolio. You would want the size of your SOMA portfolio to be at least as large as your currency in circulation, which is your big liability and which is more than \$1 trillion right now. You would never actually recognize all of those unrealized losses.

MS. REMACHE. Let me add that if we considered the amount of the portfolio that is in excess of the level of currency at the time of these losses, under the \$500 billion scenario we project unrealized losses to peak at about \$240 billion, but \$130 billion of that is associated with the portfolio that is larger than currency.

CHAIRMAN BERNANKE. Governor Raskin.

MS. RASKIN. When you look at tax revenues, do you look at actual collectability, or do you take what would be optimal and assume that everything is collectible that could be?

MR. REIFSCHNEIDER. The model includes equations for tax revenues, tax rates, and the income bases for various major federal taxes. Those factors are all endogenous with the state of the economy. The model starts off with our baseline assumption for the average tax rate that's going to be applied to the personal income tax received by households going forward. The scenarios then assume that if the economy was growing stronger, you would have the tax base increasing more rapidly causing tax revenues to rise relative to the baseline. In addition, there's a certain sensitivity of average tax rates to the state of the economy. For instance, if the economy is doing better, you're getting higher personal capital gains and things like that that boost the average tax rate. So the model tries to model the endogeneity of tax revenues and the state of the business cycle.

MR. WILCOX. It's fit to actual data.

MR. REIFSCHNEIDER. It's the actual tax revenue; it's not any optimized estimate of what tax revenues could be in theory.

MS. RASKIN. So it takes a haircut for the lack of ability to collect fully?

MR. REIFSCHNEIDER. Yes. It's based on the Treasury's actual success in collecting revenues, and not based on some hypothetical collection experience.

CHAIRMAN BERNANKE. President Plosser.

MR. PLOSSER. I have two questions I'd like to seek clarification on, following up on the remittances and on charts 5 and 6, about the difference in the pace of sales and how that affects remittances. I want to go back to the first page on the pace of shrinking the balance sheet

on the SOMA sales and how the “No Sales” options of the green lines on charts 5 and 6 translate into behaviors of both unemployment and inflation in those charts, if at all. How would it change those charts?

MS. IHRIG. If we don’t do sales, then we would think that the SOMA portfolio is larger for a longer period of time. This scenario means we’re not putting duration back into the public’s hands, which would imply we would keep holding interest rates down for a longer period of time.

MR. PLOSSER. And how will that show up in the unemployment and the inflation charts?

MS. IHRIG. That’s a little harder because I would think if you’re not doing sales, then you might want to consider when the fed funds rate will lift off as well because that would also feed into the macroeconomy.

MR. PLOSSER. It’s hard to make a translation between these charts 5 and 6, which look like small changes, into what they might look like in the previous charts.

MR. ENGLISH. I think it’s fair to say that the effects on inflation and unemployment would be relatively small.

MR. PLOSSER. Why?

MR. ENGLISH. Because the effect on our usual calculations of term premium effects would be relatively small. This balance sheet is larger by a relatively modest amount out in 2017, 2018, 2019, and 2020. And those effects, just the way the modeling works on term premiums today, would be relatively small, and therefore the effect on the macroeconomy would be expected to be relatively small.

MR. REIFSCHEIDER. Two other things. First, Bill's point is exactly right. Second—getting back to the point that Jane raised—out there later in the decade the funds rate is moving in response to changes in economic conditions. To the extent that the balance sheet was providing any additional stimulus out toward the second half of the decade, the funds rate would be somewhat higher, which would tend to offset the stimulus from the balance sheet. This outcome is conditional, the way we run it, on people having full confidence in the Fed doing what needs to be done for stabilizing inflation, and so on. I don't know whether you were thinking about it this way or not, but in terms of looking at figure 5 in the second exhibit, if you thought that pushing renormalization out further was going to worry a lot of people, then you could have expectational effects on inflation that aren't taken account of in this scenario.

MR. PLOSSER. Thank you. I have one other question that is kind of related to that. We had a memo from the staff about forecasts of unemployment rates, and if I remember correctly, using FRB/US the root mean squared error on the one-quarter-ahead unemployment rate was about 50 basis points; two-quarters-ahead it was about 80 basis points. So how do I think about that reality versus the notion that we are now, through simulations of the model that is making those forecasts, saying that we are going to accurately predict changes of somewhere around 30 or 40 basis points three years out? How do I think about putting these two memos together and how meaningful it might or might not be?

MR. REIFSCHEIDER. I think you are getting at two different types of uncertainty. One is that in terms of the actual effect of some policy action, like the policy actions that we are talking about here, there is uncertainty about what its marginal effects would be on the economy. We are just giving you point estimates, but as we pointed out, there is a huge degree of uncertainty about what their marginal impact would be on the economy. But the other memo

about the labor market provides a different take on uncertainty, which goes beyond what the marginal effect of policy would be: It is a highly uncertain world; all sorts of unexpected things can hit the economy. Therefore, our ability to forecast where the unemployment rate will be in a year or two, or even a few months, is quite uncertain. But that uncertainty is distinct from uncertainty about the effects of policy.

MR. PLOSSER. These forecasts are in the absence of shocks, so this uncertainty here is about what you believe to be the structure of the marginal effect—this outcome is a model outcome, I understand.

MR. REIFSCHNEIDER. It is a model outcome, and there is a lot of uncertainty around its estimate of the marginal effect. And then, in addition, there is a much wider uncertainty in the world around what will happen to unemployment and other factors.

MR. PLOSSER. So these answers are built into the model—I mean, this answer is about what the model says as opposed to what some other model might say.

MR. REIFSCHNEIDER. Yes. So you could put confidence intervals on that, just on the basis of your uncertainty about the channel—how the policy would affect the economy.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. Mr. Chairman, we are just asking questions here, not giving our opinions?

CHAIRMAN BERNANKE. Please.

MR. FISHER. I do have a question. This time is the first that I remember—and maybe I haven't read everything as carefully as the others at the table—an explicit discussion about the likely tax revenue consequences of our actions. I'm assuming—and this is my question—that this is sort of a way to justify what may be nonremittances or deferred assets. Is that a correct

assumption? In other words, we can say, “Look, this change was a consequence of our policy, but look at what we got for it.” Is that fair?

MS. IHRIG. Well, I think that part of it was to put it in the framework of the entire economy. That is, if we have low remittances, why are we having low remittances, or why are we having a deferred asset? And we wanted to remind everybody that it might be because the macroeconomy is improving.

MR. FISHER. So we got a benefit at this cost.

MS. IHRIG. There is, in the overall macroeconomy, a benefit. I think that was the main point of putting that in the memo.

MR. FISHER. My second question is on the assumption of a one-for-one pass-through of the decline in the 10-year Treasury—not so much to the primary mortgages, but to corporate bond rates, which would have the usual impact on investment spending. These assumptions are imposed. You gave a good speech, Governor Stein, in which you said that declines in longer-term rates from lower-term premiums may not change the hurdle rate for new investments. We have other models—I mean, there are a lot of disclaimers here. Page 7 is like when you buy a prescription drug and you get this long printout: Don’t do this; don’t do that. And it even says that the economic theory underlying asset purchases is only partially developed. So I want to explore that one-for-one pass-through. We are at a point, as Simon pointed out—and by the way, excellent presentation—where we have had this enormous rally, a lot of issuance. Interestingly, yesterday with Brown-Forman’s issue of that one bond—they are the purveyors of Jack Daniel’s whiskey, which is why I paid attention to it—we did break through the record at \$1.025 trillion in investment-grade credits. We passed through the junk mark that you pointed out in your October presentation, I forget in which chart. The net debt-to-EBITDA ratio is now

1.5, which is above pre-crisis levels. So I am just wondering how confident you are in the one-to-one pass-through, and, very importantly, how dependent on that one-to-one pass-through are the conclusions that you drew? Granted, you are very careful to state that there is a lot of uncertainty around the one-to-one pass-through, but how dependent on it is your analysis?

MS. REMACHE. I think, as you correctly point out, we are using just one modeling framework for estimating these effects, and under that framework shifts in the risk of public-sector holdings have an effect on the term premium embedded in interest rates, and then that feeds through to other interest rates. Whether or how the one-for-one pass-through to things like corporates and such affects the results is a modeling question that perhaps Dave could elaborate on. But there are other models in which these purchases may impact markets. If there is segmentation, it may depend more on which assets you are buying and how that works.

MR. REIFSCHNEIDER. So my overall response is: How uncertain am I? I am not very certain at all. In terms of the first thing you focused on, the pass-through into corporate rates, I am less worried about that. There is a lot of evidence that it may not be one for one, but nonetheless the evidence supports a pretty high pass-through into corporate bond rates. However, the evidence on what it does to the exchange rate and the stock market, and going from there to what these various changes in long-term interest rates and other asset financial conditions do to the real economy—there is a tremendous amount of uncertainty about that. These effects could be smaller. It could be that the effects have changed over time because the conditions that existed back in 2009, when we first got into these purchases, are different now. So expectational effects, confidence effects, market functioning effects—these effects may be different now from what they were. So, without belaboring the point, I'd say there is a lot of

uncertainty. There are reasons to think the effects could be smaller than what we are generating with FRB/US.

I should say, though, that one also has to worry that maybe FRB/US doesn't capture all of the relevant channels and that there could be offsets in other directions. For example, we are not taking account of any positive feedback on house prices. In reality, the low-mortgage-rate environment that you have put in place is bumping up house prices. Moreover, maybe that bumping up of house prices is having favorable effects on certain households—increasing their access to credit or the willingness of banks to provide credit, and so on. Anyway, my point is simply that there is a tremendous amount of uncertainty. There are good arguments for why FRB/US's effects may be too large. I think there are also arguments for why FRB/US may be neglecting some things that could be important. It is extremely difficult to tie these forecasts down.

MR. FISHER. But a few certainties come out of these forecasts: The first is the high likelihood of a deferred asset. Second, a possible likelihood of balance sheet impairment—possible, low probability. Third, a possible need for us to change our exit strategy. At least the first and the third I just stated seem like highly likely outcomes under either strategy. Is that correct?

MS. IHRIG. I think in terms of the deferred asset, there are a lot of assumptions that go into the balance sheet and income projections. One of the inputs is the financial market conditions, or the interest rate paths. You can see just by comparing the memo—which used the October Tealbook rates—with those using the December Tealbook—which actually has lower rates because the staff projection is that the economy is a little weaker and the fed funds rate lifts off a little later, and the path is a little lower. The deferred asset for the \$500 billion program is

not there in the December Tealbook, and in the \$1 trillion of purchases next year, the deferred asset went from \$45 billion down to \$4 billion. I don't know if you want to say those are large or modest changes in interest rate assumptions, but with such changes we can have relatively large changes in the size of the deferred asset in the projections. I don't know how you want to think of that in terms of how certain or uncertain we are about our projections. However, they do rely on the financial market conditions we are expecting going forward.

MS. REMACHE. I would just add that the third point about exit strategy does factor importantly into the pattern of income and remittances to the Treasury. Of course, the exit strategy could be changed. We looked at a "No Sale" scenario as sort of an illustrative example of that. There are other variations that I think could be explored. But it was quite notable in the memo that using those higher interest rates had such a substantial effect on the pattern of income and the deferred asset that was recorded.

MR. FISHER. Well, I want to thank you for a very thoughtful, however scary, memo. Thank you very much for your good work.

CHAIRMAN BERNANKE. President Rosengren.

MR. ROSENGREN. My question is, how sensitive are your results to your assumption of what a normalized balance sheet looks like? Think of three different options: one where you return to a T-bill-only balance sheet, one where you hold all of the longest-duration Treasuries, and one where you hold an entirely mortgage-backed securities portfolio. Those are the three extremes. Would there be much difference in what these patterns would look like, or would that not make a big difference?

MS. IHRIG. In terms of the contour, I don't think it makes much difference. What the contour is really reflecting is the exit strategy assumption we have in terms of MBS rolling off,

or if you are only holding MBS, then it would just be the Treasuries rolling off. You would have slightly different contour, but you would first have it declining from whatever peak we have. And then, the normalization to the point where the size of the balance sheet is the normal size, again, that is going to reflect the liabilities we have. The currency in circulation is your biggest liability. So in terms of the contour, not necessarily. In terms of income, it would matter.

MS. REMACHE. I think on that point, ultimately, in the long run, the composition of the portfolio would then affect the overall yield. If the portfolio were fully bills, then the yield would presumably be lower than a portfolio of all longer-duration assets, whether they were Treasuries or MBS.

CHAIRMAN BERNANKE. President Plosser.

MR. PLOSSER. Presumably you've got a starting date for what would be a normal-sized SOMA portfolio—what is the date, and what is your underlying assumption about how fast that is going to grow until you get to 2021 that gives you this trend line?

MS. IHRIG. The date actually isn't a fixed date. We look at the fact that as, say, you do sales of MBS or Treasuries roll off the portfolio, that is going to drain reserves, and we have to hit some normal level of reserves.

MR. PLOSSER. I'm trying to figure out where you come up with the normal.

MS. IHRIG. Yes. In the analysis we do, we assume pre-crisis reserve balances of \$25 billion. That is when we decide normalization is, but at the same time, you have to look at what the currency is in the portfolio at that point in time. So normalization is when reserve balances hit \$25 billion and whatever currency happens to be at that point.

MR. PLOSSER. But you are making some assumption about the growth rate of currency, and that's the question I'm asking. What are you assuming the growth rate of currency is?

MS. IHRIG. Yes. The growth rate of currency is whatever the growth rate of nominal GDP is. If you look at the annual growth rate of currency over, say, the last 20 years, the last 10 years, the last 5 years, it is around 6 percent. So implicitly that is what we have for the long-term trend.

CHAIRMAN BERNANKE. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I'd like to thank the staff for this detailed memo on balance sheet options, which I thought was very good. I have two comments on the memo. One comment is that I would like to see more emphasis on the adjustability of the balance sheet policy and the associated automatic stabilizer effects. The second comment is that I thought that some scenarios seem politically untenable to me, as I think the Congress would reconsider allowing the payment of interest on reserves.

Let me just talk about balance sheet adjustability first. The memo emphasizes the total expected amount of the increase in the size of the balance sheet when discussing the impact of the balance sheet policy in the near term. I see this approach as a practical way of laying down some alternatives for the Committee. However, I think it also tends to deemphasize one of the great strengths of the September 2012 decision, namely, that the program can and should be adjusted as the data on the economy arrive. Committee adjustments would send an important signal to the private sector concerning how the Committee thinks the economy is performing relative to expectations. Private sector expectations about the total size and duration of the program will also adjust according to the relative strength or weakness in incoming data. This is

the automatic stabilizer feature of the current policy. The great advantage of this approach is that we do not have to lay down today exactly what the total size and duration of the program will be—a guess that will likely turn out to be inaccurate as events unfold during the coming quarters. Instead, we can lay down a baseline path in the expectation that the path will likely be adjusted as the data arrive. One implication of this approach to policy is that there is less need to commit to an extensive program today, before we know how the 2013 U.S. economy is actually going to perform. So I thought that, maybe by necessity about the way the analysis had to be done, that part just couldn't be captured; I think it would be too difficult to capture that. But I think it's an important consideration for the Committee.

My second point is about the political feasibility of some of the balance sheet scenarios. The Federal Reserve was granted authority to pay interest on reserves in 2008. The Congress had previously opposed use of this tool for monetary policy for many decades. Some scenarios in the memo have the Fed claiming a deferred asset for purposes of remittances to the Treasury but simultaneously making rather large interest payments to mostly very large banks. My view is that such a scenario is politically treacherous and may result in the Congress reverting to the previous policy of not allowing the payment of interest on reserves to large banks. Losing the ability to pay interest on reserves would, of course, have devastating consequences for the Committee's exit strategy. So I caution the Committee that we probably do not want to be in the situation where the perception is that payments to the Treasury are on hold but payments to banks are substantial. I think that the staff also recognizes political difficulties, but that is up to the judgment of the Committee here. So I just wanted to point that one out because I think it is a glaring one in this particular analysis. Thank you.

CHAIRMAN BERNANKE. Okay. Any other questions?

MR. ENGLISH. One thought for President Bullard. On your first point, we did have a memo back in August that tried to talk about some of these benefits of open-ended, flexible programs that could be adjusted. I think the question we discussed there, but I don't think really resolved, is the potential for a benefit in terms of business and consumer confidence that the Federal Reserve will adjust if there are shocks and keep the economy on track. But we were never, I think, able to figure out how big that effect would be. But it seemed like a potential benefit.

MR. BULLARD. Yes. And I appreciate that previous analysis; I just didn't want to forget it in the discussion here.

CHAIRMAN BERNANKE. Question? President Kocherlakota.

MR. KOCHERLAKOTA. I can phrase it as a question. [Laughter] I will be brief, Mr. Chairman. My brief comment is that when I read this memo—this memo, as you said yourself, is just excellent—I thought the discussion of the negative or zero remittance issue was quite complete, and I appreciated that. This memo really brought home to me more than the previous memos we got from the staff that I think there is a relatively high probability that we may have a period of zero remittances, whatever we choose to be our exit strategy. And I would urge us to think about communicating proactively about this possibility with a number of constituencies: the Congress; our external auditors; and, ultimately, the public. I don't think we should just wait until the time when we have zero remittances to begin that communication. I think we should start planning for that communication now. I think it integrates with restructuring our exit strategy principles, which probably will not be tenable given the size of the balance sheet that we are likely to embark on. I'm not sure the best way to structure that conversation. One idea that struck me as potentially fruitful is to have the hardest working people in central banking, our

communications subcommittee, formulate a plan of attack. But however we choose to proceed, I do think we should be communicating proactively about this possibility.

CHAIRMAN BERNANKE. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. I have a comment and related question, and the comment was inspired by the line of questioning from Governor Raskin and the staff's response. First, a compliment: This memo is exceptionally helpful on a very important issue. Set aside two things: one, that we would run out of assets that we would want to sell to draw down our liabilities; and, two, the political risks of no remittances and a big deferred asset, which are highly consequential. Set those aside. I always thought that the economic argument for the irrelevance of unrealized capital losses and the zero remittances was the fact that on the Treasury's balance sheet there is an equal and opposite sort of capital gain due to the fall in the real market value of their liabilities.

Now, viewed through this lens, this analysis sort of shines a spotlight on a can of worms here that we haven't really talked about. This whole analysis is based on the implications of taking duration risk, and it points out that it doesn't disappear: It flows through our income statement eventually. So the traditional approach to these kinds of things—you know, in some settings you can sort of consolidate the Fed's and the Treasury's balance sheets, and in others it makes sense to keep them separate. But looking at the balance sheet naturally draws you to looking at the government's intertemporal budget constraint, and through that lens, there are going to be ramifications down the road for tax or spending policy. If you truncate your horizon and just look a certain number of years ahead, you have this sort of free variable—debt at the end of the horizon. And I'm assuming that in all your analysis of taking duration out, you haven't really gone through the implications of the government's intertemporal budget constraint; you

just let debt at the end of the period be the free variable. And that is consistent with figure 2 in exhibit 2 up here. I don't know if it is empirically consequential or not, but it suggests that it would be useful to at least check to see that there aren't any implications—especially at a time where many perceive us as getting close to the limits of a debt-to-GDP ratio that we find sustainable. I don't know if you have thought about that or not.

MR. REIFSCHNEIDER. The way we run it in the long, long run, the debt-to-GDP ratio is stable. So tax rates are responding endogenously in the simulations to get back to the same baseline debt-to-GDP ratio.

MR. LACKER. Oh, okay. All right.

MR. REIFSCHNEIDER. Now, that's occurring after 2025, and that is a gradual process.

MR. LACKER. Does that come into play across scenarios here?

MR. REIFSCHNEIDER. Well, agents understand that in the long run, none of these policies will affect the long-run debt-to-GDP ratio. They understand it will affect it out for 10 years, and then tax rates will adjust, and so on, to bring that debt-to-GDP ratio back to where it is in the baseline case.

MR. LACKER. But it is way out past 2025.

MR. REIFSCHNEIDER. It is beyond 2025, yes. Well, it is already starting to occur a little bit. You can't quite see it from the graph, but if you were looking at the simulation results for 2025, you could see tax rates starting to evolve endogenously. A lot of this effect is primarily a residual of that fact that there is a "free lunch" aspect to the current economy, in that the economy is underutilized at the moment. Additional asset purchases bring the economy back closer to potential output. That's a revenue gain that lasts for a while.

MR. LACKER. All right. Well, it sounds like the staff has a clean way of handling it. I didn't know that. Thanks.

CHAIRMAN BERNANKE. Seeing no other questions, why don't we go on to item 3, again, with our thanks to the presenters and the authors for some very helpful work. Item 3 is "Economic and Financial Situation." We will also have commentary on financial stability and on the Summary of Economic Projections. Let me ask David Wilcox to lead off.

MR. WILCOX.³ Thank you, Mr. Chairman. There is a one-page set of exhibits, labeled "Forecast Summary," being circulated. As of 10 o'clock this morning, a Bing search on the term "fiscal cliff" returned 63,179,872 hits. Having checked every one of them individually, I can vouch for the fact that not a single one contained anything the least bit funny. Nor, in the judgment of my colleagues, did my own three earlier attempts to pen a witty opener based on the fiscal cliff. Accordingly, I have decided to dispense with the obligatory opening bon mot and have moved to the portion of my briefing that I will hope will contain a modicum of logic.

Last Friday's employment report largely left intact our view that the labor market has been improving about in line with our expectations or perhaps a little faster. On the establishment side, it now appears that the hurricane left a smaller imprint on job growth in November than we had anticipated, which points to a correspondingly smaller bounceback in published payroll employment over the next couple of months. However, we saw nothing in the report that would lead us to revise our Tealbook forecast that underlying private employment growth will average about 150,000 jobs per month through the first quarter of next year. This pace is a little higher than in our October projection and is basically in line with the recent signal from the statistical model—shown in the bottom-left panel—that I've highlighted in the past and that pools estimates of private employment from the household and establishment surveys, controlling for recession-related distortions to seasonal factors. On the household side, the unemployment rate was reported to have declined two-tenths in November to 7.7 percent, bringing the cumulative decline since the middle of the year to ½ percentage point. Our thinking about how to respond to this surprise is still at a very preliminary stage, so at this point I would only venture to note that the lower unemployment rate may not imply a commensurate narrowing in the margin of unused labor resources; it could be, for example, that the natural rate has begun to decline earlier than we had expected, leaving the resulting unemployment gap closer to our forecast. We will be giving this issue a great deal of thought between now and the January meeting.

In contrast to the better-than-expected labor market data, the spending and income data that we have received since the October Tealbook—taken as a whole—point to a

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

little less momentum in aggregate demand. Although third-quarter real GDP growth came in higher than our October estimate, the upward revision reflected surprises in federal defense purchases and inventory investment—two categories of demand with, if anything, negative signal content for future demand. In fact, growth in private domestic final purchases—generally a better gauge of the momentum in final demand—came in lower than we had expected in October. In particular, real consumer spending surprised us to the downside and now appears to be on a weaker trajectory coming into the fourth quarter than we had assumed. Our more-pessimistic view of near-term consumer spending is reinforced by the weaker-than-expected incoming news on real disposable personal income as well as by December's drop in consumer sentiment, which we received after the Tealbook was closed. Moreover, while the most recent reading on orders and shipments of capital goods was somewhat better than we had anticipated, we expect the pace of capital expenditures to remain subdued in the near term as concerns about the macroeconomy and the policy environment damp firms' enthusiasm for undertaking additional investment.

The near-term picture for spending and production is obscured somewhat by the effects of last summer's drought on farm output and the more-recent disruptions to production in the Northeast that resulted from Hurricane Sandy. As was the case in our October projection, we expect that the drought will shave about $\frac{1}{4}$ percentage point from real GDP growth in the second half of this year, with the effect on growth unwinding early next year. We also now expect hurricane-related disruptions to hold down fourth-quarter GDP growth by about $\frac{1}{4}$ percentage point; as production rebounds and rebuilding gets under way, output growth should be boosted by $\frac{1}{2}$ percentage point in the first quarter of next year. Absent these two effects, projected growth next quarter would be at an annual rate of just $\frac{1}{2}$ percent.

As you can see from the top-left panel of the exhibit, we have made a modest downward revision to our output growth forecast over the medium term. A portion of this revision reflects our expectation that the recent weakness in consumer spending and disposable income will persist going forward. In addition, in this projection we have assumed slightly less-supportive financial conditions, which in turn reflect both incoming market data and our assumption that financial market participants will gradually come to realize that the eventual size and duration of the FOMC's asset purchase program will be smaller than market participants currently appear to expect. Specifically, in this Tealbook, we have maintained our October assumption that the Committee will purchase securities at a pace of \$85 billion per month through the middle of next year. By contrast, our read of the latest survey of primary dealers suggests that market participants expect purchases to total about \$500 billion more than what we have built into the Tealbook baseline. As market participants' views come into line with our baseline, long rates and the exchange value of the dollar are pushed higher than they would otherwise be, while stock prices are pushed a little lower.

We made essentially no revisions to our other conditioning assumptions. On the foreign side, our views regarding the European situation and the prospects for economic growth in the rest of the world are little changed from October. On the

fiscal side, we continue to expect that federal fiscal policy will exert a substantial drag on economic growth next year but that the fiscal cliff will be addressed in time to stave off the more pronounced fiscal consolidation that is implied by current law.

As we noted in the Tealbook, considerable uncertainty surrounds the question of when and how the Administration and the Congress will resolve the fiscal cliff problem. An important issue for our forecast involves the extent to which this and other types of policy uncertainty have been weighing on consumer and business sentiment and, ultimately, consumer and business spending. To that end, we have been carefully monitoring several indicators that might shed some light on household and business views of government fiscal and monetary policies. The bottom-right panel of the exhibit plots two of these measures, specifically, the net fraction of respondents in the Thomson Reuters/University of Michigan Surveys of Consumers with a poor opinion of government economic policy (the red line), and an index of economic policy uncertainty produced by Baker, Bloom, and Davis that John Stevens discussed in his pre-FOMC briefing yesterday (the blue line). Both measures moved up noticeably last year as policymakers wrangled over raising the debt ceiling. More recently, as the fiscal cliff has drawn closer, the two measures have been sending somewhat different signals: The Baker, Bloom, and Davis index has moved higher, while the Michigan-based measure has crept lower on net. The mixed behavior of these and other gauges has led us to judge that broader pessimism about the economy's prospects, combined with other headwinds, probably is playing a larger role in restraining the recovery than is cliff-related uncertainty, although we admit to a high degree of uncertainty in that conclusion itself.

Turning to the inflation outlook, the incoming data on core PCE prices have been about in line with our expectations, as shown in the middle-right panel. Over the medium term, we continue to project a relatively flat path for core inflation, reflecting our assumption that long-run inflation expectations will remain anchored, price increases for imported goods will remain subdued, and the margin of slack in the economy will narrow only gradually.

Crude oil prices declined a bit further since our last forecast; in response, we have marked down our fourth-quarter projection for domestic energy prices, which results in a modest downward revision to total PCE price inflation (the middle-left panel). Separately, and as expected, we think that the higher crop prices that resulted from last summer's drought are beginning to be passed through into retail food prices. Further out, we have made no material revisions to our forecast for total PCE price inflation and continue to expect that projected declines in crude oil prices will push down retail energy prices and lead total PCE inflation to run just a little below the core. Steve will now continue our presentation.

MR. KAMIN. The incoming data are finally pointing to an upturn in Asian economic growth. Exports from the region appear to be bottoming out; manufacturing surveys are generally up; and over Thanksgiving, the Korean pop hit "Gangnam Style," a critique of nouveau riche materialism set against an infectious dance beat, became YouTube's most watched video. I don't wish to push the

connection between cultural achievement and economic performance too far, but “Gangnam Style” did dislodge “Baby,” by Canada’s Justin Bieber, from YouTube’s top spot. Since then, Canada’s third-quarter GDP was announced to have slumped, and its central bank head, Mark Carney, decided to leave the country altogether. [Laughter]

To back up a little, the data we received since your last meeting indicate that total foreign GDP growth declined to only 1¾ percent in the third quarter; this is ¼ percentage point below our October Tealbook estimate and well below trend growth of approximately 3 percent. This slowdown in our trading partners, along with the rise in the dollar since last year triggered by financial stresses in Europe, has weighed heavily on the U.S. economy. The growth of our real exports slid from a 5 percent pace in the first half of this year to only about 1 percent in the third quarter, with sales to Europe particularly weak. The deceleration in exports subtracted half a percentage point from U.S. economic growth. Although net exports actually made a positive contribution to growth during the third quarter, the reason was that, weak as export growth was, import growth stalled entirely due to weak domestic demand. In fact, data released this morning indicate that nominal exports and imports both dropped in October.

Going forward, real exports are projected to recover to a 5 percent pace next year and 7 percent by 2015, thereby playing an important role in the projected pickup in U.S. GDP growth. The rise in export growth is driven by two central aspects of our forecast. First, the broad real value of the dollar declines at nearly a 3 percent annual pace, reflecting trend depreciation against emerging market currencies as well as an easing of financial stresses in Europe that reverses safe-haven flows. Although the dollar’s path is a bit higher in this Tealbook, because we now assume some upward pressure as markets reduce their expectations for Fed asset purchases, its depreciation still provides important support to our sales abroad. Second, foreign growth recovers to nearly 3 percent next year and then to 3½ percent by 2015 as the recession in Europe ends and U.S. growth accelerates. This trajectory is little changed from the October Tealbook. Since then, however, we’ve received two pieces of good news and one piece of bad news, and these have had offsetting effects on our outlook.

First, as I mentioned earlier, incoming data have strengthened our conviction that economic growth in emerging Asia is picking up. As you may recall, immediately after we finalized the October Tealbook, China’s third-quarter GDP growth came in at more than 8 percent, much faster than we’d expected and well up from the 6½ percent rate in the second quarter. Since then, we’ve received strong data on retail sales, industrial production, and investment, all suggesting that Chinese growth remained quite solid in the current quarter. In contrast to China, economic growth in the rest of Asia stayed subdued in the third quarter, but more recent readings on exports and manufacturing have been encouraging. All told, we now estimate that GDP growth in emerging Asia picked up from a 4½ percent rate in the third quarter to nearly a 5 percent pace in the fourth. We have growth in the region rising to nearly 6 percent by the end of next year, assuming that the recession in the euro area ends and growth in other advanced economies picks up.

This brings me to our second bit of good news, the Greek debt deal. Since European financial conditions began improving a few months ago, markets have focused on prospects for Spain to request an assistance program that would open the door to ECB purchases of its debt, and for Greece to receive an urgently needed disbursement of funds from its official creditors. The decline in sovereign bond spreads since the summer has enabled the Spanish government to hold off on requesting aid. However, two weeks ago, Greece reached an agreement with the EU and IMF that was somewhat more favorable than we'd anticipated. Greece will receive over €40 billion in new loans, allowing it to meet its financial obligations for several months and recapitalize its banks. The deal also eases Greece's debt burden by lowering interest rates on some of its loans, transferring to Greece the ECB's profits from its holdings of Greek bonds, and financing a buyback to reduce Greece's privately held debt. Initially, European leaders had strenuously resisted such concessions, but they were forced to give way at the insistence of the IMF. The agreement not only provides Greece with valuable financing but also signals a greater likelihood that down the road, if and when Greece again fails its adjustment program, European leaders will make further concessions to forestall a messy Greek default and exit from the euro area.

To be sure, the euro area's situation remains precarious, as many of its economies seek to undertake politically difficult reforms while in the middle of a deep recession. Just this last weekend, for example, Italian Prime Minister Mario Monti's announcement that he would resign early in the face of waning political support jarred investors and boosted sovereign spreads in the region. Nevertheless, barring a further unraveling of Italy's political situation, the outlook for European financial conditions now seems a bit less gloomy, and we are looking for the euro-area economy to experience a slightly stronger—albeit still very anemic—recovery next year than we wrote down in October.

However, to get to the bad news, outside the euro area, the economic recovery in the advanced foreign economies looks even less solidly based than we had previously assumed. In the third quarter, Canadian GDP growth stalled in response to declines in exports and maintenance shutdowns in the energy sector; Japanese GDP plunged 3½ percent amid weak exports and waning fiscal stimulus; and although U.K. GDP spiked up 4 percent, that reflected transitory factors such as the Summer Olympics. Weak data for the current quarter suggest less underlying momentum in Japan and the United Kingdom than we had assumed in the October Tealbook. Canadian GDP growth looks set to bounce back in the near term, but the slower U.S. expansion we are now projecting should weigh on our trading partners, especially Canada. Accordingly, we marked down a touch our outlook for the advanced foreign economies outside of the euro area.

Wrapping all this data together, the foreign economy looks set for a gradual pickup from the depressed pace of recent quarters. However, this recovery remains on shaky ground and will likely be too slow to cut significantly into the considerable slack that has accumulated in the advanced economies. Under these circumstances, and against the backdrop of quiescent commodity prices and contained inflation,

monetary conditions abroad will likely remain accommodative for the next several years. Michael will now continue our discussion.

MR. KILEY.⁴ Thanks, Steve. I'll refer to the material titled "Material for Briefing on Financial Stability." This summary is based on our recent Quantitative Surveillance, or QS, report. The most proximate potential shocks we highlighted remain a disorderly resolution of the fiscal cliff and the process of raising the federal debt ceiling, or an intensification of the European sovereign debt crisis. Such adverse developments could be amplified by the perception that some large banks remain weak despite substantial increases in capital and liquidity, by the unstable funding model of global dealer firms, and by the persistent risk of runs on money market mutual funds.

We also continue to monitor the degree to which low interest rates may be encouraging a buildup in duration and credit risk or leverage within the financial system that could raise concerns. While there has been some increased willingness to take on risk since the summer, it is difficult to ascribe these changes to low interest rates rather than to an improvement in investor sentiment, most especially with respect to Europe. Taking a somewhat longer view, indicators of risk-taking or leverage have, on balance, shown only a moderate recovery over the past couple of years. As a result, we see the potential for a move toward excessive risk-taking primarily as a concern to monitor going forward.

Turning to your first exhibit, the private nonfinancial sector has continued to delever, as shown in the top-left panel. In the past, excessive credit growth has been an indicator of potential systemic risk, and recent developments on this front suggest we remain in the hangover, rather than the buildup, phase of the credit cycle. Moreover, nonfinancial corporations have strong balance sheets, in part reflecting efforts on their part to take advantage of low interest rates to refinance their debt and increase the maturity profile of their liabilities. For example (and as illustrated in the top-right panel), firms more reliant on short-term debt have been able to lower this dependence, on average, over the last couple of years.

The remaining panels cover valuations in the equity, residential real estate, and bond markets. Equity valuations suggest essentially no froth in stock prices—indeed the staff estimate of the required return to equity (the middle-left panel) has fallen little, on net, since the initial decline after the end of the financial crisis. As a result, the implied equity risk premium (the difference between the black and red lines) has widened to a value outside that seen in recent decades. Residential real estate valuations (shown in the middle-right panel) also appear, as best we can judge, on the low side of fair value, despite recent signs of improvement in housing markets.

In contrast, Treasury yields have reached historical lows, with estimates of term premiums, such as that produced by Board staff and reported at the bottom left, falling to levels not seen over the past several decades. Low Treasury yields reflect

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

policy actions by the Committee as well as heightened risk aversion and investor demand for the safety and liquidity of Treasury securities. With low prospective returns on safe assets, investors have moved out the credit curve, and yields on corporate bonds have hovered at historic lows (as reported in the bottom-right panel). To date, the yields on corporate bonds continue to reflect above-average spreads relative to Treasuries, and staff models for high-yield bond spreads suggest that investors should be adequately compensated for bearing credit risk.

Nonetheless, there may be indications that some investors may be reaching for yield in a way that could lead to some buildup in excessive risk going forward. Your next exhibit summarizes some of these developments.

In response to unusually low yields, the pace of speculative-grade bond issuance has been rapid over the past few months, as shown by the green part of the bars in the top-left panel. As shown in the top-right panel, most of the speculative-grade issuance has been to refinance debt; refinancing has also been important in syndicated lending, as can be seen in the middle-left panel. Nonetheless, there has been an uptick in some potentially riskier practices in debt markets. For example, the top-right panel shows an increase in use of proceeds for mergers and acquisitions and dividend payments, although the latter may reflect tax planning. Moreover, there is evidence that bond covenants are becoming less restrictive. There have been some similar developments in the leveraged loan market, with strong demand from investors contributing to some erosion in credit terms and deal structures, as suggested, for example, by the pickup in covenant-lite issuance shown in the middle-right panel.

The bottom panel highlights some summary points. Several factors suggest that developments to date may not signal a notable increase in systemic risk. First, market participants report that increased demand for corporate credits reflects, in part, interest on the part of long-term investors such as insurers and pension funds; these investors may be less likely to contribute to a disorderly reversal. In addition, leveraged loan dealers appear to be better managing the pipeline of deals than in 2007, for example, through tight position limits, making a repeat of the 2007 experience, in which commitments pressured underwriters' balance sheets, less likely at this point. More generally, despite the gradual easing witnessed over the past couple of years, market participants continue to characterize market conditions as significantly tighter than those that prevailed at the height of the credit boom in 2006 and 2007, despite the stronger financial condition of businesses.

Even so, some situations bear watching. The potential for a disorderly deleveraging could rise if available borrowing capacity were taken up quickly, particularly if such a shift involved short-term financing or mark-to-market triggers to fund investments. More generally, a sudden and large reversal of inflows into corporate bond and loan funds could strain these markets, with the potential for a sizable decline in prices, given the relative illiquidity of the underlying instruments. We also are on the lookout for the possibility that the low nominal return environment expected to prevail for at least several years may lead some institutions to reach for

yield in new and difficult-to-detect ways; in this regard, it is important to emphasize that the signs of increased risk-taking in the top panels are perhaps best thought of as barometers of appetite for risk, rather than factors that, in and of themselves, would contribute to an increase in systemic risk.

Our overall assessment is that the currently low level of interest rates may be contributing to some increase in willingness to bear risk in a manner that supports the recovery and financial stability. In this sense, we should perhaps be happy to see that at least some investors have begun to join the party and drink from the punch bowl. We'll closely monitor developments to see whether the punch in the bowl needs to be watered down a bit or even, at some point, taken away. Jen will follow up with her remarks.

MS. ROUSH.⁵ I will be talking about the packet “Material for Briefing on the Summary of Economic Projections.”

As shown in the top panel of exhibit 1, under your individual assessments of appropriate monetary policy, you project that real GDP will have expanded only moderately this year but that economic growth will pick up somewhat over the next three years, rising a little above its longer-run value in 2014 and 2015. Accordingly, you project that the unemployment rate, shown in the second panel, will end the year near its average level in October and November and then decline gradually. Nonetheless, most of you see the unemployment rate at the end of 2015 as still noticeably above your individual judgments of its longer-run normal level. Turning to the bottom two panels, your projections for inflation are generally at or somewhat below your 2 percent longer-term objective over the projection period.

Exhibit 2 tabulates the ranges and the central tendencies of your projections, along with those from your September SEP and the September Tealbook. Your projections for economic growth and inflation are unchanged to slightly lower relative to those you made in September. Your near-term unemployment rate forecasts are a couple of tenths lower, with a number of you remarking that the recent labor market data had come in better than you had been expecting. The Tealbook forecast puts economic growth near the middle of your central tendencies for the next two years, and then near the upper end in 2015. Meanwhile, the Tealbook projections for unemployment are near or slightly above the upper ends, and for inflation near or slightly below the lower ends, of your central tendencies throughout the projection period.

Exhibit 3 provides an overview of your assessments of the appropriate path for the federal funds rate. As shown in the top panel, about three-fourths of you think that it will not be appropriate to begin raising the funds rate until 2015 or later. In contrast, five of you—one fewer than in September—now believe that economic conditions will warrant increasing the federal funds rate before 2015. Among the group who saw a later tightening of policy, a majority indicated that they believed it

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

was appropriate to maintain the current level of the federal funds rate until unemployment is less than or equal to 6½ percent. In contrast, a majority of those who favored an earlier tightening of policy pointed to concerns about inflation as a primary reason for expecting that it will be appropriate to raise rates before 2015.

The bottom two panels of the exhibit provide your assessments of the appropriate target for the federal funds rate at the end of each year of the forecast period and over the longer run. For the five participants who see the funds rate leaving the effective lower bound in 2014 or earlier, the median value for the funds rate at the end of 2014 is 1.5 percent. The 13 participants who judge that liftoff in 2015 will be appropriate expect the funds rate at the end of that year to be 1.25 percent or less, while the one participant who favors liftoff in 2016 sees the funds rate at 50 basis points at the end of that year (not shown). Committee participants were about evenly split between those who saw the appropriate path for the funds rate as unchanged from September and those who saw it as a bit more accommodative. Only one of you indicated that the appropriate path for the funds rate had moved higher.

With regard to securities purchases, nine of you indicated that appropriate policy calls for additional purchases of longer-term securities at a pace of \$85 billion per month through mid-2013, as in the staff forecast. Seven of you thought that a higher level of purchases, perhaps continuing through the end of 2013, would be appropriate, while three of you thought a lower level of additional purchases, or none at all, would better foster the Committee's dual objectives.

Exhibit 4 depicts the economic conditions that you anticipate for the year in which you judge that the first increase in the funds rate will be appropriate. Your projected unemployment rates range from 5½ percent to about 7½ percent, with a median of a bit less than 6½ percent, while your inflation projections are in a narrow range of roughly 1½ to 2¼ percent, with a median rate of 2 percent. Most participants who judge that the first increase in the funds rate should occur in 2013 or 2014 (shown by the white diamonds and gray circles) see a higher level of unemployment at the time of the first funds rate increase than do those reporting later firming dates (shown by the dark blue squares and the gray triangle). Altogether, 13 of you project unemployment at or below 6½ percent at the end of the year in which you see the first increase in the funds rate, when most of you in this group also see inflation at 2 percent or below.

The final exhibit reviews your assessments of the uncertainty and risks surrounding your economic projections. As shown in the top two panels in the column on the left, nearly all of you continue to indicate that you judge the current level of uncertainty about GDP growth and unemployment to be higher than the average level over the past 20 years. The corresponding panels to the right indicate that most of you continue to view the risks to GDP growth as weighted to the downside and, accordingly, the risks to unemployment as weighted to the upside. Many of you noted that the downside risks to economic growth from U.S. fiscal policy are considerable and continued to see developments in Europe as a key risk, even as some of you acknowledged that tensions there had eased since September.

Turning to the bottom panels, 10 of you see the uncertainty associated with your projections for total PCE inflation as broadly similar to the average level of uncertainty over the past two decades, while 7 of you see it as higher. Most of you continue to see the risks to inflation, shown to the right, as broadly balanced.

Lastly, I have been asked to remind you that in addition to the regular SEP packet you received last night from the FOMC Secretariat, you received a set of experimental charts from the subcommittee on communications that included possible enhancements to the documents provided to the public. A discussion of the experimental charts is not on the agenda for this meeting, but it is currently planned for the January meeting. Thank you. That concludes the staff presentations.

CHAIRMAN BERNANKE. Thank you very much. Just to reiterate, we've got these experimental charts for consideration. Governor Yellen, we are going to be talking about them in January, correct?

MS. YELLEN. Yes, that is the plan. Our subcommittee developed a few new possible tables and charts for your consideration based on the December SEP. We have distributed them, but we are not planning to discuss them at all today. We do plan a full-blown discussion in January, and, before that, our subcommittee will circulate questions as well as a few additional charts that would be based on the responses of voters today who express support for the policy decision.

CHAIRMAN BERNANKE. Thank you. Okay. The floor is open for questions for the staff. Governor Tarullo.

MR. TARULLO. Thank you, Mr. Chairman. I have a factual one for Jennifer and then more of an open-ended, analytic one for Michael. Jennifer, I don't think it is in the package, but you recounted the varying views on total asset purchases. Would you mind repeating that?

MS. ROUSH. There were nine that agreed with Tealbook.

MR. TARULLO. When you say "agreed with Tealbook," do you mean the presumption of half a trillion extra?

MS. ROUSH. Through mid-2013. That's right. And then, seven thought there should potentially be higher purchases. And there was a range, but some of those continued through the end of 2013. And then, there were three additional participants who saw a lower level of purchases. One of those saw a beginning of tapering, and two of those saw an end of purchases now.

MR. TARULLO. Okay. Thank you. Michael, you were careful in your presentation to talk about risk associated with an observed search for yield and the appropriateness or inappropriateness of risk because at some level it seems a bit odd to worry about people trying to find things that actually yield them money, and you are worried about that only when the risk seems somehow inappropriate. As you do financial stability assessment, how do you distinguish between healthy and unhealthy search for yield, which is to say the risk component: Is it largely based on variance from historical observation, or is there some other metric that you are using?

MR. KILEY. I think we try to look at a broad range of things. You know, that is probably our greatest challenge. We want people to take more risks. That's how people make money; that's how new businesses are formed. But we want people to understand the risks that they are taking and not to take risks that have externalities or systemic consequences that they don't take into account in making their decisions. When we look at individual instruments, certainly we look at the degree to which any development is outside of a historical norm. I think, generally speaking, we also try to look at a lot of information. Certainly we are particularly interested in developments within the financial system and within systemically important institutions, but we also look at overall movements in credit in the nonfinancial sector, like in the first exhibit, because, in the past, that has been one of the indicators of systemic risk. Looking

backward, that is something that we could see clearly in 2006 and 2007. We look for an erosion in credit terms and other things, like we do in those exhibits.

And then we also look for other things that aren't in the exhibits because we just don't see them right now: embedded leverage within the financial system; a lot of short-term funding; maturity transformation going on to finance things that if sentiment were to shift quickly, that financing would disappear and people would have to unwind positions. That was missing from my exhibits because while we have seen an increase in the willingness to bear risk in some places, we haven't seen much appetite for employing leverage. Now our indicators are imperfect, but we haven't seen it in those indicators or in our conversations with market participants. I think, in general, it is really hard. We really would love to be able to identify when risk-taking was excessive. I think we try to be prudent and just look for when there is risk-taking and not think we know too well when it is excessive.

MR. TARULLO. Thank you.

CHAIRMAN BERNANKE. President Pianalto.

MS. PIANALTO. Thank you. I also have a question for Michael concerning financial stability. First of all, I want to thank you for an insightful and important presentation. But one concern I have around financial stability is an unexpected sharp rise in interest rates, and I applaud the work that's being done to see how banks can handle an interest rate shock, as well as our CCAR exercise where there's an adverse scenario that considers such interest rate movements. I think those results will help us understand and give us some insights into how banks will react. But I also think that we should be examining how community banks and other investors will adjust to a sharp rise in interest rates. My contacts report that the FOMC asset purchase programs have led investors to take on more duration and credit risk, and, while, as you

point out, Michael, that may be the FOMC's intention, they are starting to express a number of concerns. Senior officials who I talked to at a large mutual fund company noted that \$1.5 trillion has moved from money market funds into bond funds, making individual investors' portfolios more vulnerable to rate increases when they come. In addition, my contacts have stressed that this current low interest rate environment is unfamiliar and is starting to upset some of the longstanding behavioral patterns of investors. For example, I'm being told that younger people are staying out of the stock market because all they've mainly seen is losses over this period of time, while retirees are moving into the stock market to get the dividends. Given that people may be changing their behaviors and not reacting as they did in the past, I think we should be aware of the unintended and perhaps unexpected consequences of this low interest rate environment. I don't see a sharp rise in interest rates on the list of the risk scenarios that were handed out in the package on financial markets and institutions, and maybe we should consider putting it on that list. The memo that was circulated mentions that such developments bear watching. So my question is, how are we thinking about monitoring and assessing that risk as we think about financial stability in the future?

MR. KILEY. We think it's very important to monitor that risk, and we have done so in a variety of ways related to the CCAR exercise or the exercise you referred to with regard to banks. Let me talk about a few things that we're looking at and doing and a few things about which some people are concerned and some people aren't as concerned yet. As you know, there has been guidance issued over the last several years that banks should be focused on interest rate risk, so certainly, with supervisors going out to smaller banks, not just those involved in the CCAR exercises, it is on their radar screen. In thinking about other investors, certainly we've heard—and we have teams that monitor thinking about developments in pension funds or at

insurers—and there have been signs of some changes, perhaps, in the duration of their assets or in their willingness to take on credit risk at insurers, for example. They are heavily regulated, and they actually do go through quite a few interest rate scenarios as part of their normal stress testing. They're called the New York Seven, and they involve various changes in the shape of the yield curve and movements that can be sizable. That's performed; we don't necessarily see all of those results, but we know that's going on, and it's something we want to be more attuned to. But I don't think we've seen any large changes in the positions at large insurers, for example, over the last several years. There seem to be some gradual shifts, but nothing dramatic.

One thing that some people have talked about is this shift into bond funds from more retail money, perhaps facilitated to some degree by ETFs. And there are staff members who are wondering about the degree to which, if that money were to reverse, it would place strains in corporate bond and loan markets—that those markets just are less liquid, and not especially liquid today. So if there were a large reversal, I think there is potential for concern there. That concern could involve individuals losing a lot of money. There is a question about the degree to which that is a financial stability risk. One might imagine, for example, that some retail investors, to the extent they're driving bond funds, may move out quickly for a retail investor, but they will, perhaps unfortunately for them, have moved out after highly interconnected dealers or others may have moved out. So we are not as clear on the degree to which that is a financial stability risk, but it is something we want to think about.

MR. POTTER. I should add that something Bill did when he started at the Desk was increase our contacts with the buy side, and we are meeting with a variety of people and tracking pretty similar information there. I think from 2005 onward, we would have done well to have listened more to what the buy side was doing.

MS. PIANALTO. Thank you.

CHAIRMAN BERNANKE. President Plosser.

MR. PLOSSER. To shift from financial stability back to the forecast, David, you talked a lot about uncertainty and pessimism and how those two perhaps either interact or differ or are the same, and the slow process by which that is likely to be removed; that represents a big headwind on the economy from the staff's forecast. I actually happen to believe that general proposition, but I have two questions. One is, what does FRB/US tell you without that adjustment about the path of the economy? In other words, how important is that in the nature of your forecast? That would be one question I would have, and I don't know how much light you can shed on that.

MR. WILCOX. I don't think FRB/US speaks to uncertainty per se—I'm looking to Dave Reifschneider. What we've done and what I was describing is a sort of judgmental overlay. It's a modest effect. For example, I think that we've assumed that related to the fiscal cliff, the uncertainty component alone will take something on the order of about $\frac{1}{4}$ percentage point off GDP growth over the first half of this coming year, and then that will lift as a restraining factor. Boy, at this point, our ability to discern those kinds of effects is pretty limited. John Stevens had another panel that I thought was really nice yesterday that showed analysts' mean expectations of earnings and the dispersion among analysts. Now, the dispersion is a rough and imperfect proxy for analysts' true uncertainty, but there's a fair amount of literature suggesting that there is probably something to it as a proxy for true uncertainty. Those two things are very highly negatively correlated. So when pessimism increases—in other words, when the mean expectation comes down—uncertainty goes up, and that reverses pretty reliably on the other side. That suggests that there's quite a lot of colinearity between those two variables.

MR. PLOSSER. Yes. I appreciate that, but I was also noting that, particularly in the bottom-right panel, the blue line representing the policy uncertainty index is actually highly volatile, it seems to me. So the way you described it and the Tealbook described it, you've got this pessimism and uncertainty sort of waning very gradually but continuing to weigh on things for what appears to be a fair amount of time into the future. Yet this index seems to be highly volatile, and it could turn out that it could drop very sharply under some circumstances, right?

MR. WILCOX. It could. Now, I haven't given you enough history here on the panel for you to be able to discern. The main thing that's happened to that blue line is that it's just higher post-2007 than it was before. One of the key points that I was trying to illustrate is that we're getting conflicting readings from these two different gauges, and we're trying to wrestle with this. Our measurement tools are pretty imperfect, and the analytical apparatus itself is a little creaky, too.

MR. PLOSSER. Thank you.

CHAIRMAN BERNANKE. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. I have a couple of quick questions and comments on the financial stability report, and they build, I think, nicely on President Piantalto's remarks. I think she pointed out that we are having a very unusual experience, from at least the postwar experience in the United States, in terms of how long interest rates have been low and are expected to remain low. But there are other countries that have had these low interest rate environments for extended periods: Japan in the past 15 years or so; the United States in the 1930s. I'm wondering to what extent we can look at those historical experiences as guides to what we should be looking for in our current environment to try to build up notions of

financial excesses in these low interest rate environments. They may not be the same as what we experienced in 2006 and 2007; it may take different forms.

Second, President Piana mentioned her concern about interest rates spiking upward, which I think is very much a risk we should be keeping in our minds. But I'm actually also concerned about the possibility of longer-term interest rates sliding down further. Because interest rates are so low, people don't think about this risk as much, which is, I think, a reason to think about it more. If you think about inflation expectations sliding down from where they are right now or, maybe even more possible, a further flight to quality driven by European events, both of those would drive down longer-term yields still further. So I was wondering what would be the effect on financial stability if we had a 50 to 100 basis point fall in longer-term Treasury yields over the course of 2013.

MR. KILEY. On that second point, I think we certainly should acknowledge that interest rates can definitely go lower or higher. In the CCAR exercise, the stress test we're putting the banks through, long-term interest rates fall about 50 basis points further, and the economy is quite weak. So at least we'll have some information from that process on the developments on the banking side, in terms of the credit losses from the very weak economy. In thinking about low interest rates due to a very weak economy, that's where much of the concern will be. In terms of thinking about the international experience, we certainly have looked at Japan, and I know many people throughout the System have. The Japanese had low interest rates for a long time. One hasn't seen them get out of that experience, and one hasn't particularly seen too many issues related to financial stability. There haven't been crises in Japan where you've seen a further leg down. Now, they have had significant strains on some institutions. In the late 1990s, seven large insurers failed. They failed for reasons that perhaps reflect what caused them to get

into a low interest rate environment, rather than the low interest rate environment itself. They actually had much riskier portfolios than insurers in the United States, and the combination of a decline in stock prices with the fact that they competed with a government-run insurer that was able to underprice them and had a government guarantee essentially made them uncompetitive, so they went out of business.

I think we want to look further there. One thing that I, of course, don't want to bet on but that we talk about is that a lot of people are concerned that the risk to financial stability will arise when the economy looks like it's getting better, perhaps quickly, and people start changing their behavior. And that will be the situation where the Committee will be thinking hard about whether interest rates need to go up. I think we want to be attuned to the persistently low interest rate environment creating incentives for people to do new things that they underappreciate, and we're on the lookout for that. Going forward—I guess my bias, and I hope it doesn't drive us too much—we really need to be concerned when people start being really optimistic, not during this current period.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. Mr. Chairman, I wanted to make one quick point to add to Steve Kamin's observations. Having just come back from Germany and taken advantage of the trip that Dennis Lockhart, Christine Cumming, and I took to get some insight into Schäuble's mind—it's a relationship that goes back a very long time. And by the way, he had a full willingness to discuss with me his feelings because I'm not an employee of the federal government, and he knew that I would not pass it on except to this Committee. [Laughter] He does not share his feelings with employees of the U.S. government. First of all—and we reported some of this information back to Steve Kamin—Germany is nowhere near its breaking point politically, in

terms of support for Europe—I think that’s important—and for paying to make the European project work because he said “the guilt is in our bones; we know that.” The opposition to bailouts is stronger than the CDU–CSU coalition. What’s very interesting about seeing him work is that he was the interior minister. He has intelligence on every single one of them, and he’s extremely effective in terms of getting folks to work. So point number one is they are nowhere near a choking point on their willingness to continue, and point number two, for what it’s worth, is he’s certain that another Greek restructuring is more or less inevitable.

Just two other quick points. With regard to financial stability, I thought Michael’s presentation was excellent. You know, one of the rules of thumb has been that when sovereign wealth funds start to buy things, it’s a bottom—that is, you want to get out. And just going through some of the recent issues, I notice that for Disney’s issue—it did a 3-year, 10-year, and 30-year recently—30 percent of the takedown was sovereign wealth funds: Norwegians and others. I don’t know if that’s atypical, but that’s something you may begin to just watch. I don’t know if that’s out of proportion or not, but the rates were extraordinary. It was, along with Texas Instruments, 45 basis points for the 3-year and now to 370 for the 30-year issue. I don’t know if we have a measurement as to how normal that is, but 30 percent seemed a fairly high number to me. I would just suggest that—and maybe it’s not, but it is a general rule that at least most shrewd investors that I know follow—by the time they pile in, it’s time to sell them something. Just an observation. But I do want to thank you for this work. This issue of financial stability is something that President Rosengren and President Kocherlakota and I and other presidents have been deeply interested in; so thanks to you, Nellie, sitting in the back row, and thanks to you, Michael, for your presentation.

CHAIRMAN BERNANKE. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I just have one question on exhibit 1, figure 1, which is “Private Nonfinancial Sector Credit-to-GDP Ratio.” I’m just wondering what your interpretation of this figure is. First of all, is the trend here the trend given by the HP filtered through these data, or is it HP filtered through something else? I think it is through these data. And should I interpret it to mean that, according to this metric, deleveraging is overdone already or something like that, where you’d expect credit to ramp up again, or is that not where you want to go with this picture?

MR. KILEY. Yes. That would be the strong interpretation, which I don’t think we’d want to take.

MR. BULLARD. Okay.

MR. KILEY. We look at this measure because there has been a fair amount of research really emphasizing that credit booms—

MR. BULLARD. So it’s HP filtered through these data.

MR. KILEY. That’s right, and it’s HP filtered through all of these data. We understand that when you do that, you have a real problem with the endpoint: Where does the delevering cycle end? It could be that we still have quite a way to go, and the fact that it is below the trend line could be misleading. My colleague, Rochelle Edge, has done research investigating some of the work by folks at the BIS and elsewhere on the usefulness of these measures in real time, and she’s found that they’re not hugely useful in real time but nonetheless are valuable to look at. So I think we wouldn’t go further than saying it appears that firms and households in total are still delevering—that that process may be advanced, but we’re unsure. So I’d put big confidence intervals around that red dotted line, and I wouldn’t take seriously the idea that we’ve overshot yet.

MR. BULLARD. Maybe I could just suggest an alternative metric to compare this one with: just take a nominal GDP—these are nominal figures, right?—trend and look where it is compared with nominal GDP from 1990 till today. I think credit ramped up dramatically over the decades and has come down some but would still be way above the nominal GDP trend. Maybe that would give you the idea that, yes, there's been deleveraging, but it has still got a long way to go.

MR. KILEY. Yes, I think essentially that's really close to what's here, if not almost exactly.

MR. BULLARD. Oh, is it?

MR. KILEY. I think it's literally a ratio of private nonfinancial sector credit to total nominal GDP, not private nonfinancial GDP. If you don't view there being a secular trend, I think it indicates that we had a long credit boom, and that long credit boom has not been unwound, if you really think there's some sort of stable ratio that we could see if we went significantly further back.

MR. BULLARD. I'm sorry. I'm stating it wrong. It should be flat, according to my notion, and it's not.

MR. KILEY. That's right.

MR. BULLARD. Got you. Thank you.

CHAIRMAN BERNANKE. A two-handed intervention from the Vice Chairman.

VICE CHAIRMAN DUDLEY. The problem with assessing this ratio is determining where you should be. And there are two big drivers: one, the amount of financial intermediation that's going on in the economy, which presumably is increasing over time, and which would tell you that there should probably be a secular uptrend, at least as you get to a higher level of

economic development; and, two, the tax code. To the extent that you have mortgage interest deductibility and 401(k) plans, they're also going to influence where you end up. I think it's very hard to know where we are today relative to where we're supposed to be.

CHAIRMAN BERNANKE. Governor Tarullo.

MR. TARULLO. Michael, can you disaggregate the private nonfinancial sector credit-to-GDP ratio between households and nonfinancial business?

MR. KILEY. We do, and that is in the QS report; I probably won't be able to find the page. It's close to but after page 169.

MR. TARULLO. Just before I stopped reading.

CHAIRMAN BERNANKE. Even the page numbers have standard errors.

MR. TARULLO. That's okay. We can talk at the break if you want.

VICE CHAIRMAN DUDLEY. Corporate America has taken up their leverage ratio on purpose because they view that there is a sweet spot in terms of credit quality.

MR. TARULLO. That's exactly what I was wondering because my impression was that if you extended the trend line for household leverage that ran from 1975 to 2000, we are right now right about where that trend line would have taken you, but it was in 2001 that that line shot up.

VICE CHAIRMAN DUDLEY. Maybe Jeremy has the answer. What's the average rating for the corporate credit today compared with 30 years ago? It's got to be a little lower.

MR. TARULLO. That's why I was asking the question.

MR. KILEY. So there was the danger of looking at a table of contents too quickly. It's on page 153 of the QS report. So it's actually before page 169.

MR. TARULLO. Didn't get to that either.

MR. KILEY. You certainly see a much stronger trend in the household sector over the entire period and over the sample you talked about than you do for businesses.

MR. TARULLO. Thanks.

CHAIRMAN BERNANKE. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. Michael Kiley, on the house price overvaluation, you tell us that you're looking at a metric that is based on the long-run relationship between house prices and rent. What is the long-run relationship between house prices and rent? How do you do that; how have we constructed the long term?

MR. KILEY. Maybe I'll defer to Josh because he's really the expert on this subject.

MR. GALLIN. Okay. Basically the way it works is we take a regression of the rent-price ratio on a time trend and on things like an estimate of the current interest rate to remove their effects; there are various ways of doing it, but that's the basic idea. Sometimes we include a change in the interest rate as well—just sort of a kitchen-sink version of this analysis. And, over time, what we're using is rents from the CPI, rents for tenants; there is an owners' equivalent rent as well, but they basically move roughly in line with each other over long periods of time. The reason we use the tenants' rent is because that series has a longer history, and we can actually estimate the model over a longer period of time.

MS. RASKIN. So do you know offhand what that period of time is? How far back in time do those series go?

MR. GALLIN. Late 1970s—1975, 1977, something like that.

MR. WILCOX. The first quarter of 1975.

MR. GALLIN. If you were actually to have the long-run version, what you would see in the middle-right panel of exhibit 1 would be that there was an increase both in the relationship

and the deviation from trend in the late 1970s. House prices were relatively high in the late 1970s. The way they got back down to trend was largely by sort of getting eroded by inflation—of course, in that time period, inflation was a lot higher. Then you can see the other house price boom was in the late 1980s, and again, in that case, house prices came back into line at the national level, but more through just a long period of not rising while rents increased. Now, there were some cities like L.A. and Boston in the late 1980s and mid-1980s that saw big price declines. The big difference in this episode, as you can see on the chart, is that house prices got much further out of line with rents than they had in the historical period, and obviously this time the correction did not occur through stagnation in house prices and rise in rents: It occurred, as you know, through plummeting house prices.

MS. RASKIN. Thank you.

CHAIRMAN BERNANKE. Okay. In a minute, we can take a break for lunch, but when we come back, there will be the opportunity for participants to comment on financial stability issues. If anyone has any further thoughts on financial stability, that would be the opportunity to do that. And then we will go to the economic go-round. Forty minutes for lunch, say? Come back at 1:55 p.m.? Thank you.

MS. DANKER. I just also wanted to mention that we'll be distributing during lunch a revised version of the statements, where the first paragraph of alternatives B and C is changed just a little bit to take account of the new employment data.

[Lunch recess]

CHAIRMAN BERNANKE. Okay, why don't we recommence? At this point we have an opportunity for participants to comment on financial stability issues, and I have President Rosengren and Vice Chairman Dudley on my list. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. I very rarely have an opportunity to say good things in the financial stability go-round, so when there is good news, I think it is worth talking about. And from my perspective, the actions that the FSOC took related to money market funds actually have had a more positive effect than I might have expected. Officials at some of the money market funds are now discussing floating-rate NAVs. Some of the SEC commissioners are, at least publicly, saying that they now may support additional action, including floating-rate NAVs. I think that's a really big move from where we were just last September, and that's despite the fact that Mary Schapiro has announced that she's leaving the SEC.

Floating-rate NAVs would be a significant improvement over the current situation, where money market funds promise fixed NAVs while holding no capital and taking credit risk. A floating NAV will make clear that prices can fluctuate and that investors need to consider the potential for fluctuations before investing in a money market fund. I would note that even with a floating NAV, there are still run risks at money market funds. Many assets of prime money market funds do not trade or trade very infrequently and include credit risk. In addition, amortized cost accounting can obscure the value of assets. Given that positions are generally not known until the end of each month, there's still the potential for window dressing, which may raise suspicion among investors in a crisis that positions may have changed since the most recent public disclosure. This uncertainty raises the issue of whether pricing of these products will be sufficiently sticky, that investors will run from funds with credit risk not fully reflected in the pricing, potentially causing fire sale prices and leaving the remaining investors with large losses. As a result, we should be open to options in addition to the floating NAV that might address the risk of runs at money market funds. But I would say that the developments, while we're far from

the end, are a substantial improvement over where we were, and I'm greatly heartened. It's a positive sign that the FSOC is initiating actions in a way that looks like it is changing behavior.

So kudos to the Chairman and the FSOC process.

VICE CHAIRMAN DUDLEY. Here, here.

CHAIRMAN BERNANKE. Thank you.

MR. FISHER. Mr. Chairman, can we also give kudos to Eric because all of us have received letters personally attacking him. I kind of feel like that *Far Side* cartoon with the two deer standing next to each other. One has got a big target on his chest, and he's going like this [pointing]. [Laughter] Seriously, President Rosengren has suffered the slings and arrows of standing on principle, and I think we ought to thank him.

CHAIRMAN BERNANKE. Here, here.

MR. FISHER. Good job.

CHAIRMAN BERNANKE. Vice Chairman.

VICE CHAIRMAN DUDLEY. Well, we still need one more commissioner.

MR. KOCOHERLAKOTA. Let's really put him in the target.

VICE CHAIRMAN DUDLEY. We're not quite there yet.

MR. ROSENGREN. Yes, we're not there yet.

VICE CHAIRMAN DUDLEY. A few thoughts on Europe. I'm generally pretty close to where Steve is. I think there are two pieces of good news. The ECB's OMT program promising secondary-market purchases for Spain and Italy if they enter into a formal adjustment program has been effective in settling down sovereign debt markets. And I think that has been important because it kept the bad equilibrium at bay—the equilibrium where debt-to-risk costs go up, which then feed back into bad fiscal performance, which leads to even higher debt service costs.

That's a good development. Second, I think Germany has made a very conscious decision that it doesn't want to kick Greece out of the EU, at least through the October 2013 German elections. I think that's important because if Greece isn't going to get kicked out, then no one else is going to get kicked out in the interim because everybody else looks quite a bit better than Greece. So the risk of a contagion event in Europe, or an expectation that other countries might be forced to exit, is very much reduced at the current time. And that's important because it buys time for fiscal consolidation, structural reform, and pan-European institution building to actually proceed.

In the near term, I am sort of where Steve is. I don't think that Europe is likely to be a source of big instability over the near term. That's the good news. The bad news is that it's not obvious to me, at least, that the time that they've bought themselves is actually going to be spent wisely or that the programs of fiscal austerity are going to soon generate a more favorable set of outcomes in terms of macroeconomic performance and sustainable debt-to-GDP trajectories. Of course, without better performance the political support for austerity may not prove sustainable, and we're already seeing some backsliding in the case of Italy. Also, I think that the reduction in market pressure is leading to backsliding in terms of pan-European institution building, which I think is absolutely essential for this to work in the longer run. The European Deposit Insurance System now seems pretty much off the table completely, and the Europeans are having great difficulty reaching agreement on what the scope of an ECB-led pan-European bank regulator would be. So bottom line for me is that the situation is a long way from being fixed, so I'm not really optimistic about the longer term, but it's probably not going to go off the rails in the near future, which I guess is an improvement relative to where we've been for most of the last couple of years. Thank you.

CHAIRMAN BERNANKE. President George.

MS. GEORGE. Thank you, Mr. Chairman. I just wanted to make a brief observation about the financial stability discussion. First, I want to say that I have found the reports themselves and the discussion around the table very helpful and that it is important to keep thinking about where this tipping point is, if there is one, around risk. I went back and looked at some of the discussion in the 2006 transcripts around housing. And I think about my own experiences as a supervisor, as we saw commercial real estate concentrations growing in smaller banks, and how challenging it is to know where you are in that risk spectrum when it's time to be worried. Like President Pianalto, I'm hearing more concerns in my region, whether it is people trying to manage funds or looking at banks taking on interest rate risk. Again, I think supervisors are reacting to other things, but I'm just reminded that I think this discussion will be helpful, and we have to continue to press for where we are in that risk spectrum. Thank you.

CHAIRMAN BERNANKE. Thank you. Anyone else on financial stability? [No response] If not, we're ready for our economic go-round, and I have President Williams, fresh back from India.

MR. WILLIAMS. Thank you, Mr. Chairman. Looking beyond the near-term effects of extreme weather on the economy, the underlying story of a gradual recovery remains intact. Indeed, my medium-term forecast hasn't changed much over the past few months. I expect the economy will pick up steam over the next two or three years, with real GDP growth of about 2½ percent in 2013 and averaging about 3½ percent in 2014 and 2015. However, this somewhat encouraging outlook hinges on two key policy actions: The first is that the Congress and the President will reach an agreement that allows us to dodge the full brunt of the fiscal cliff. The second is that we continue buying Treasuries and MBS, which I expect we will need to continue well into the second half of next year. Without both of these policy actions, I would expect little,

if any, progress in reducing unemployment next year and a real risk of falling further behind on our maximum employment mandate. Further monetary accommodation is required to offset the stiff headwinds holding back aggregate demand. Households continue to trim debt. Many potential borrowers still face tight credit. Public sector budgets are under pressure, and global economic growth remains sluggish. It seems that every time a signal is about to turn green, the caution light flashes again. In this regard, the sharp drop in December consumer sentiment was a reminder of how quickly households can lose their resolve in the face of contradictory signals over the outlook for fiscal policy and the economy.

Businesspeople are particularly worried and uncertain. This anxiety is undermining the willingness to engage in longer-term commitments, such as investing in capital expenditures and in hiring full-time employees. My staff has studied how uncertainty affects business decisions about both investment and employment. They found that when uncertainty rises, capital spending and full-time employment fall, but part-time employment rises. That is, under heightened uncertainty, employers hedge their bets, adjusting hours rather than jobs to meet output demand. These effects are sizable and consistent with the downshift in business investment and the increase in part-time employment that we've observed in recent months. Indeed, involuntary part-time employment has grown considerably this year, accounting for about 40 percent of civilian job growth since March. The observed pattern of reduced investment and greater use of part-time employment provides additional evidence that heightened uncertainty is playing a significant role in holding back the pace of recovery. And as I mentioned at previous meetings, this research also shows that uncertainty affects the economy like an adverse demand shock, reducing desired investment in employment while also putting

downward pressure on inflation. And these are exactly the kinds of shocks that monetary policy can and should seek to offset.

Of course, the important question is whether the tools that we have left—I think mainly further asset purchases—will still be effective and, in particular, whether further reductions in longer-term interest rates will boost aggregate demand. Certainly, there may be limited returns to pushing down long-term corporate bond rates and stimulating capital investment, especially, as I've said, because many businesses appear nearly paralyzed by uncertainty. But capital expenditures represent only one of the channels through which interest rates affect the economy. Purchases of Treasuries and MBS have also helped lower auto loan rates and mortgage rates, thereby supporting consumer spending and the housing sector. But there's more. The exchange rate is another important channel by which LSAPs affect the economy. For example, according to the FRB/US model simulations, roughly one-third of the effect of monetary policy on real output occurs through the exchange rate channel. My staff—clearly we're at the end of the evaluation period, so I'm getting a lot of research from them at this time [laughter]—recently examined the response of the exchange value of the dollar to LSAP announcements. Using intradaily data, they found that the dollar typically depreciated in response to surprise expansionary monetary policy announcements since the end of 2008. Furthermore, the effects of the announcement surprises on the dollar over this period were similar in magnitude to the effects of similarly scaled surprise movements in the federal funds rate over the period from 1994 to 2008. This analysis suggests that the exchange rate channel of monetary policy is still very much alive and kicking.

Now, so far I've focused on the modal forecast, but there are also important risks to the outlook, notably the fiscal cliff. As I mentioned, I hope that we'll avoid the worst case scenario,

but we can't rule out that negotiations might break down along the lines of the Tealbook alternative simulation, which would result in serious damage to the economy. Moreover, I am worried that the Tealbook analysis may underestimate the potential fallout from going over the fiscal cliff. Recently we had a symposium at the San Francisco Fed, with leading academic researchers from around the world discussing issues around the fiscal cliff. The academic experts found that tax multipliers are significantly larger than typically assumed in models such as FRB/US. In addition, with limited options for increasing monetary accommodation, the tax multipliers are probably even larger than estimated in the recent literature that I'm referring to. Moreover, in a fiscal cliff scenario, there's a danger that households and businesses could lose confidence in the ability of our elected leaders to govern. The potential for a collapse in confidence is clear from the August 2011 brinksmanship around the debt ceiling, which resulted in plummeting consumer confidence. So together, the larger multipliers and indirect effects on confidence imply that going over the fiscal cliff could drag economic activity much more than what is shown in the Tealbook scenario.

Finally, turning to inflation, the recent data have been a little softer than I had anticipated. Compensation data have also been below expectations, suggesting little upward pressure on core or headline inflation in coming quarters, and I continue to expect that both headline and core PCE inflation will remain below 2 percent for the next several years. Thank you.

CHAIRMAN BERNANKE. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. It is a bit daunting to be attempting to forecast the economy at a time when government spending, government tax rates, and the potential for hitting the debt ceiling all could potentially alter the economic landscape quite dramatically in the short term. This elevated period of policy uncertainty is likely acting as a

significant headwind to economic activity. Hence, while monetary policy is trying to reduce the cost of credit to accelerate spending decisions of households and firms, the fiscal policy uncertainty is causing both households and firms to defer decisions. While it is unfortunate these policies are not working in tandem, it is not a reason for us to stay on the sidelines. It is quite important that our actions continue to provide significant support for sectors such as housing and autos to partly offset these headwinds and bolster the economy through this fragile period.

My forecast assumes that fiscal policy muddles through without causing a sharp retrenchment at the beginning of next year and that fiscal policymakers do not postpone the most important decisions, as doing so would, in turn, lead to a longer period of deferred household and firm decisions. My outlook puts a fair amount of weight on these headwinds that are induced by policy paralysis, so that my view of the economy absent these headwinds would be a bit more positive than that of the Tealbook. That does not imply that I see significant underlying strength in the economy, because I am also assuming more monetary policy accommodation than in the Tealbook. Specifically, I assume that we continue significant asset purchases until the unemployment rate falls to 7¼ percent, which under the assumption of a benign end of the fiscal cliff is expected to occur shortly after the end of 2013 in my forecast. I expect economic growth to gradually gain traction over the second half of 2013 and through 2014, with liftoff in short-term rates occurring in the middle of 2015. I expect that we will continue to undershoot our 2 percent PCE inflation target throughout this period.

My forecast anticipates a strengthening in the housing sector and related consumer durable purchases, which will continue to be a source of economic support over the forecast period, in part as a result of our asset purchases. Most housing indicators have been improving, and housing prices have been rising gradually. One week ago, the New York and Boston

Reserve Banks held a joint conference on determinants of the primary–secondary mortgage spread. I highly commend the white paper from the conference, which provides some interesting perspective on why that spread has widened. Panelists at the conference highlighted the role of capacity constraints, which reflects reduced participation in the mortgage market by a number of large banks, in part due to their assessment that mortgage origination is now less profitable due to increased legal risks and the risks from the GSEs' putback policies. Despite these impediments, there seemed to be a consensus that our actions in September had a meaningful impact on mortgage rates of a bit less than 25 basis points.

My staff has also been doing some work looking at prepayment activity in the mortgage market, which has an effect on how quickly our mortgage portfolio might decline for reasons other than refinancing. Using the PSID data, they examined how often people move because of job change, upsizing, increased family size, or young adults starting new households. They found that, on average, 4½ percent of homeowners move to another home in a given year. Considering how many of these moves involve prepaying a mortgage, they calculate that between 12 and 16 percent of mortgages will prepay over five years because of the so-called own-to-own moves. In addition, they find another 2 percent of prepayments that involve own-to-rent moves over a five-year period. Thus, one of the advantages of a larger mortgage portfolio is that many mortgages will naturally be extinguished as people switch homes, regardless of the decline in refinances if rates rise. Looking forward to a time when we normalize our balance sheet, we may want to consider arguments for keeping longer-term assets on our balance sheet, including mortgages. I can imagine that for either financial stability or macrostability goals, we might want to continue to hold some mortgages and longer-duration Treasuries so that we have the ability to tighten as well as ease specific market conditions or the

macroeconomy by selling or buying long-duration assets. This topic may well be worth considering at a future meeting.

In terms of labor markets, the Friday report was better than expected but worse than needed. Relative to the start of the year, my GDP forecast has unfortunately been relatively close. But on the bright side, the unemployment rate is now lower than I had anticipated. My earlier SEP submissions anticipated unemployment rates remaining above 8 percent this year, with only a slight decline by the end of 2013. With the unemployment rate at 7.7 percent in November, it looks like I was too pessimistic. One factor I did not sufficiently consider was how much exits from the labor force would contribute to a declining unemployment rate. In part, that may be because I did not anticipate how quickly states would stop providing the Emergency Unemployment Compensation. With 31 states losing their eligibility for these benefits between January and August of this year, research at the Boston Fed suggests that some of the decline in the labor force reflects recipients dropping out of the labor force when these benefits are not available.

In summary, I see some positive growth in areas most strongly affected by accommodative policy, with weak growth in those areas most strongly affected by the fiscal uncertainty. While my forecast assumes that as fiscal concerns abate we will see more of the underlying strength of the economy, I view the actions we have taken to date to be one reason we have performed better than many other developed countries. As we will discuss more tomorrow, the economic recovery has depended on that support, so now would not be the time to reduce that support. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. Before I relate anecdotal input from my District, I will mention that my baseline outlook for the medium term has not changed significantly from the last meeting or my September SEP. The incoming data have made me mark down a little my economic growth assumption for this quarter and, as a consequence, the full year 2012 as well as the early quarters of 2013. Those changes are modest, and I don't view the basic growth outlook to have changed. I am putting emphasis on this view that little in the outlook has changed since September and October because in the policy round, I will push the argument that the policy decisions I expect we will make at this meeting should be thought of as, and communicated as, a continuation of appropriate policy, not new stimulus.

Now let me turn to some color commentary from my District. In spite of a fixation on the immediate fiscal-cliff-related risks and a continued lack of near-term visibility, we detected an unexpected rise in optimism among our business contacts over the past month. I think this positive sentiment is worth noting, but I don't see it as translating yet into concrete plans to expand business operations and grow payrolls. With some exceptions, businesses remain very cautious in their spending. The unusual circumstances at this juncture seem to have elicited a bimodal approach to business planning. One of our directors, the CFO of the country's second-largest retailer, ordered her budgeting team to put down their pencils—I love that image—until there is some clarity about the outcome of fiscal negotiations. Others, depending on industry, seem to be looking through the possible near-term effects of going over the cliff. Moreover, the front-of-mind uncertainties constraining businesses are not limited to fiscal negotiations. We heard a repeat of cost-related concerns, especially health care. At the same time, a number of our contacts believe there is some amount of pent-up demand on the part of

businesses and consumers resulting from deferred spending, and that this demand could be unleashed by removal of fiscal uncertainties.

On prices, according to our most recent business inflation expectations survey, the year-ahead inflation expectations of business contacts in the Southeast rose a little bit, to a little over 2 percent in November, up from 1.8 percent in October. I don't view this uptick as material, nor do I get any sense of growing anticipation of wage pressures. Even though we hear of pretty significant labor shortages in some sectors, firms seem to be very hesitant to pay up for labor and to assume higher total payroll expenses.

Turning to the balance of risks, I see the GDP growth risks, on balance, as weighted to the downside. Given the shock potential of a failure of federal fiscal negotiations, I see unemployment risks weighted to the upside, and I see inflation risks as broadly balanced. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Fisher.

MR. FISHER. Thank you, Mr. Chairman. I am just going to comment first on my own District and on inflation, and then on what I am hearing from business interlocutors. I thought President Williams made some very good points. I am just going to address the one aspect of intentions to expand payrolls and capital expenditures.

First of all, with regard to the 11th Federal Reserve District, 2012 is likely to go down in the record book as a pretty strong year. We know 98 percent of our output is in one state: Texas. We think jobs grew 3.2 percent; the unemployment rate will likely fall to 6½ percent by year-end. So I am all in favor of the 6½ percent target in alternative B; we have already arrived there. And we think our real GDP likely grew about 3½ percent, so we are in a sweet spot within the country. With regard to our own trimmed mean analysis of inflation, the 12-month run rate

for October is about 1.7 percent, and the 6-month run rate is about 1½ percent, so we are on the same run rate as the headline PCE, as posted in October, with energy mostly a nonfactor.

With regard to my business contacts, President Lockhart and President Williams have mentioned the one thing that is a constant preoccupation, which is the fiscal cliff. It is almost impossible for people to budget around it. If you look at the NFIB survey that came out this morning, it is highly negative. I noted as reported in that survey only 6 percent of small- and medium-sized businesses felt that their credit needs were not being met. That is down another 2 percent from the last survey. Among all of the business leaders that I speak to around the country, the larger businesses—as we talked about earlier today—have really strengthened their balance sheets substantially and are in very good shape. The issue is how they put it to work. And, in essence, the bottom-line report is that their engines are just idling; they're waiting for the rule book. It is not a question of the strength of their balance sheets or the abundance of liquidity, nor is it a question of their ability to compete and put people to work very quickly. I will just mention one specific case, which is a very large company: AT&T. Its board approved \$14 billion in capital expenditures for three years, if it decides to pull the trigger. And the CEO has reported that, in terms of the final plan completion and so on, the company can get that done in 45 days. None of its subs need financing; they are ready to go; everybody is healthy. It is a very remarkable process as to how quickly it can turn that thing on. But it is holding back, at the direction of the board, until it gets some clarity in terms of the fiscal situation.

And if you don't mind, Mr. Chairman, I am going to use a little barnyard analogy here, just to summarize again what I am hearing—for what it's worth, the anecdotal evidence that is coming from those who employ people and try to put people to work. I think as you know, Mr. Chairman, we have a breeding bull on our ranch in East Texas. His name, as you know, is Too

Big to Fail. He is a 2,200-pound two-year old, and he breeds the longhorn cows that we have. If we put a fence between him and the cows, obviously he is quite frustrated. And forgive me, but in the case of this bull, there is no problem with liquidity. He is ready to roll; he is ready to do his job. But what makes him happy is when he can do his business, what we pay him for, with the cows. But we have a fence between the bull and the cows. Then, he can't do what we pay him for. In essence I think that's what we are hearing from business. There is a fence. There is plenty of liquidity; they have plenty of wherewithal. They are strong and well equipped to do what we want them to do, which is create jobs for American workers, to pump up consumption, and to pump up final demand. But until that fence is removed, or they at least understand what the fence line is, then businesses are just not going to go to work creating jobs. So I would say that summarizes it, Mr. Chairman, and that's no bull. Thank you.

CHAIRMAN BERNANKE. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. The most recent information from the Fifth District hasn't changed my view that economic activity is growing, at most, at a modest pace. On the positive side, our diffusion indexes for manufacturing and service-sector activity indicated expanding activity in November. I would note, however, that we saw negative readings on order backlogs in manufacturing and on employment in the service sector.

We hear three themes from our contacts around the District. First, bankers routinely talk of weak loan demand and fierce competition, and it is hard to square what they describe with the notion that their credit standards are overly stringent. Second, a variety of firms continue to report having a hard time finding workers. A resort operator in West Virginia, for example, had a number of positions to fill earlier this year. The resort received 500 otherwise acceptable applicants; 300 of them failed drug tests. And of the 200 who started, only 100 remain on the

job. A large chemical manufacturer needs to replace retiring workers but is not finding replacements with the requisite high school math and reading skills. An automaker facing a shortage of applicants has partnered with local schools to help prepare workers for manufacturing careers. There were reports from South Carolina and elsewhere of difficulties hiring and retaining restaurant managers. And after listing several reasons why it was hard to find workers, a West Virginia firm added that November was especially tough due to deer season, though presumably this factor is picked up in the BLS's seasonal adjustment. It has been a while since I shared so many labor market anecdotes, and I realize that the empirical evidence on labor market mismatch is ambiguous. But for me it just seems worth noting the continuing prevalence of such reports from our contacts.

I also recognize that the notion of drug testing as an impediment to employment sent the Chairman scurrying off to the *Statistical Abstract of the United States* the last time I mentioned it. I would just say that West Virginia, it turns out, has the second-highest age-adjusted death rate from drug overdose in the country, more than twice the average, which may be why we're hearing those reports particularly from West Virginia. So it might be a more prevalent issue there than elsewhere. I would also mention, however, that the prevalence of employer drug testing has increased quite dramatically since the 1990s, when it was below 5 percent. In the last survey, 10 years ago, it was about 50 percent.

A third theme that we continue to hear often is that uncertainty is leading firms to postpone hiring and investment decisions. Representatives from the forestry and oil and gas industries were worried about costly new EPA regulations. An executive with a staffing and recruiting firm in West Virginia said that many of her clients did not understand the new health-care rules, and that even the insurance companies they work with don't know how this

new system will work. She added that some firms were considering shifting to part-time employees to avoid new regulations. We have also heard from employers who expect some of their employees to work fewer hours when the new lower minimum for health insurance coverage comes into effect. And a manufacturer headquartered in North Carolina reported that he was holding off making any new major investments until uncertainty diminished significantly. Of course, the damping effect of uncertainty is not a new idea around this table. It is mentioned prominently in the Tealbook, in fact, beginning with a reference on page 1. And the Tealbook is correct, I believe, to cite broader sources of uncertainty beyond the U.S. tax and regulatory policy, such as the European growth situation. Certainly, the presumed resolution of the fiscal cliff and debt ceiling negotiations will dispel some of the near-term fog restraining business and consumer spending and thus help boost GDP growth in 2013. Significant uncertainty will still remain, however, even when we get past the cliff and the ceiling. Broad regulatory realignments are still in train or in litigation, and the longer-run budget puzzle will still need to be solved.

Since our September meeting, I have come to put more weight on these factors damping the medium-term economic growth outlook. I have, accordingly, lowered my forecast for real GDP growth in the latest submission, now projecting just 2 percent for next year and 2.8 percent for the year after—clearly below the Tealbook forecast and, I think, at the bottom end of the range for both of those years. I have not raised my unemployment forecast, though. Recall that the unemployment rate reached 9.9 percent in the fourth quarter of 2009. Even if it ticks up slightly in December, it would still average 7.8 percent for the fourth quarter. That would mean that the unemployment rate will have fallen 2.1 percentage points over three years, while real GDP growth has averaged just 2 percent. I think few would have predicted that combination three years ago. These data have led me to believe that we may not be that far from a balanced

growth path right now, and we should be cautious about our aspirations for higher real growth. Accordingly, I have marked down my estimate for longer-term real GDP growth to 2.3 percent. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Pianalto.

MS. PIANALTO. Thank you, Mr. Chairman. I have made only small changes to my projection for GDP growth since our September SEP submission. Like others have mentioned, I expect weak growth in the current quarter to pull down economic growth for the year to a little less than 1¾ percent. Looking ahead, I still anticipate a gradual pickup to a GDP growth rate of about 2½ percent in 2013, and slightly over 3 percent in 2014 and 2015. With this pace of growth, I am expecting unemployment to gradually decline by a little less than ½ percentage point per year from 2013 through 2015. Surprisingly, the labor market has shown more progress than I had anticipated earlier this year, and now my projection for the unemployment rate reaches 7½ percent in the fourth quarter of 2013.

I expect inflation to remain close to our objective, at 2 percent or a bit less through 2015. This path of moderate underlying inflation is very consistent with the median CPI over the past year. The incoming compensation and income data also point to stable, low inflation. Of course, energy prices are prone to spikes that may temporarily push inflation above 2 percent, but the medium-term inflation outlook looks to have settled in a bit below our 2 percent objective. Indeed, in the Cleveland Fed's inflation expectations model, which adjusts for inflation risk premiums, inflation expectations are anchored below 2 percent even beyond the 20-year horizon.

I have not incorporated the full consequences that would stem from a fall off of the fiscal cliff into my baseline forecast. As I have noted in recent FOMC meetings, my business contacts, as others have mentioned, are very concerned about the fiscal cliff, and many have reported that

uncertainty surrounding fiscal policy has slowed business investment. As an aside, Warren Buffett visited Cleveland last week. And while a brief meeting probably doesn't qualify him for interlocutor status [laughter], I am including Warren Buffett's comments with those of my District contacts.

As I noted, the looming fiscal policy decisions are damping my contacts' investment plans, but they also are frequently mentioning concerns about the low interest rate environment. Our models point to the benefits of low interest rates on firms' balance sheets and investments, but my contacts are frequently pointing out that there are also some complications of low interest rates, like rising contributions to defined benefit pension plans, which then limit further investments in their businesses. Some of these complications are difficult to capture in our models, especially because we have no historical experience with some of them. I also met with senior officials at some large regional banks in the District, at some insurers, and at a large mutual fund company, to get their perspectives on the low interest rate environment. In addition to highlighting the financial stability concerns that I raised earlier, these conversations helped me think about the appropriate path of monetary policy to underpin my outlook. While the officials at the financial firms that I talked to do not have the sophisticated models that we have to evaluate the benefits of monetary policy, they firmly believe that the first round of asset purchases had a significantly more positive impact than our recent purchases. And as we heard earlier from Board staff, although their analysis continues to show that additional purchases continue to be as effective as our earlier programs, they also acknowledge that predicting the likely effects is very difficult. So based, in part, on some of the concerns that I have heard, I have incorporated somewhat more attenuated effects for additional monetary policy accommodation in my outlook than are implied in the Tealbook.

Until we get past the fiscal cliff, my assessment of the risk to the economic outlook remains weighted to the downside for GDP growth and to the upside for unemployment. Of course, the risks around the current fiscal situation may not all be to the downside. If an agreement that resolves long-standing issues is reached in coming weeks, that could provide a significant impetus for growth, so we can remain hopeful. On inflation, I do continue to see the risks as largely balanced. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. The economic setting for this meeting is not any better than what we faced the last few meetings. Arguably, it's a little worse. Second-half GDP growth seems to be around 2 percent as the familiar host of uncertainties and headwinds continue to take their toll on the economy, as we've already heard around the table. Businesses have continued hiring at a modest pace in spite of large fiscal uncertainties, and that seems like a plus, but they are doing so without meaningful capacity expansion. BFI has been quite weak, and the forward indicators and anecdotal reports from my business contacts don't suggest a change in this anytime soon. In addition, consumption has been softer than expected. Real income growth seems weaker, and the headwinds from household deleveraging continue to be strong.

On the international front, the recent news makes it even clearer that Europe is in recession. The ECB has now projected a contraction for 2013, and the weakness is not limited to the peripheral countries. More of my business contacts with exposure to Germany are finally thinking there will be a downturn there as well. In China, growth has decelerated. One of my largest manufacturing contacts with factories in China told us that on a recent visit he made there 100 percent of his business partners reported what he called positive stories regarding new

economic initiatives throughout China. He said that in the past, such a positive consensus had been a good predictor of a strengthening in the Chinese economy. So this information seems to corroborate the better incoming data on China that were discussed earlier.

Putting all of this together, my national outlook is a bit weaker than it was in our September SEP submission. Our near-term forecast for economic growth is similar to the Tealbook, and those are pretty disappointing numbers. It also seems clear to me that the labor market reports since the October FOMC meeting do not meet any benchmark for a substantial improvement in the labor market outlook. We're a long way from the six months or so of job gains around 200,000 that I would want to see as a condition for concluding our open-ended asset purchases. We are also not close to seeing a GDP growth path comfortably ensconced above potential growth, another reasonable condition for ending the program. In our forecast, we get to this more favorable growth path for output and employment sometime in the latter part of 2013. Indeed, by then we're expecting stronger economic growth than in the Tealbook. But this growth is premised on more-accommodative monetary policy. This policy includes asset purchases through the end of next year and the additional stimulus I think we would get by adopting numerical thresholds into our forward guidance and delivering greater clarity regarding our future intentions. In my opinion, we need this additional accommodation. We have a weak forecast with continuing downside risks.

Now, just as an aside, I've heard many business commentaries, like those President Fisher, President Lacker, and others were mentioning, about how businesses are sort of running on idle, keeping things on hold. And as I listen, I can't keep from thinking that this situation must be symptomatic of the fact that demand is very low in our economy. I mean, it almost reminds me of—maybe there isn't a Monty Python skit of this sort—a scene where there are a

bunch of racers running on a track: They're at the starting line; the starting gun is fired; but there's confusion at the outset, and nobody takes off. They start arguing among themselves. They're on idle; they're not doing anything. Eventually somebody, though, decides that the gun has gone off, and they start running. And after a while people think, "Wait. There are people out there. I have to catch up." I just don't quite understand how businesses can continue to be idle if their competitors are running away from them, which would be the case if demand picked up. But while demand is still low, you can have these types of stories and still be quite profitable. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. In the last two meetings, I've argued that the Committee would be best served by adopting a threshold-based approach to the forward guidance. I'll do so again tomorrow. Given this formulation of what I see to be appropriate monetary policy, in this go-round I'll begin by discussing the medium-term outlook for inflation. Then I'll attempt to translate my preferred threshold-based guidance into date-based guidance. I think it will be clear that this translation has enormous attendant uncertainties, and I'll argue that these uncertainties imply that we will be able to provide considerably more clarity about our reaction function by switching to a threshold-based approach to our reaction function.

In terms of the medium-term outlook for inflation, I'll start locally. By and large, our Ninth District contacts report they have not seen large increases in labor costs and other input prices over the past few months, outside of the relatively small oil boom area in western North Dakota and eastern Montana. These anecdotal reports gibe with the hard data. The Bureau of Labor Statistics reports that the employment cost index in Minneapolis–St. Paul rose 1½ percent

in the past year. Our District contacts also report that the ability of businesses to pass on any input cost or wage increases is likely to remain constrained in the first part of 2013. All told, it seems that underlying inflationary pressures are subdued in the Ninth District, even though the Ninth District unemployment rate is 5.7 percent. So these data suggest that, at least in the Ninth District, the natural rate of unemployment is little changed from its 2007 level. This basic story carries over to the national economy. Compensation pressures remain weak, and the 12-month change in the employment cost index, for example, was 2 percent as of the third quarter. Now, if you go back over the past 15 quarters, this figure has been between 1.4 and 2.2 percent in each of those quarters, which suggests that labor costs are putting relatively little upward pressure on prices. In fact, unit labor costs are now lower than they were four years ago. With that in mind, I would say that we're actually fortunate that the PCE price level has risen by as much as it has: 5.2 percent over the past four years. Of course, over that four-year period, we've fallen short on our price-stability mandate because inflation has averaged only 1.3 percent per year.

Nonetheless, I do remain concerned about the possibility of structural impediments in the labor market. We got the latest JOLTS data this morning, and they show that the pesky shift in the Beveridge curve remains with us. And it continues to suggest to me that firms seem to be finding it surprisingly challenging to find suitable workers, not in the absolute, but given how many workers are unemployed. But the point is that these impediments are not currently giving rise to substantial labor cost pressures. And the information from the Ninth District, where unemployment is currently well below the national average, suggests that we might not see such labor cost pressures nationally even if the U.S. unemployment rate were to fall considerably.

So my current outlook for PCE inflation is similar to the Tealbook's as well as the various DSGE model forecasts. My forecast is that PCE inflation will be at about 1.6 percent in

2013. It would rise to about 1.8 percent in 2014 if the Committee were to adopt the level of accommodation recommended in alternative B. But given how high unemployment is, this inflation forecast of 1.8 percent doesn't seem consistent with the Committee's following a balanced approach to the dual mandate. Under what I would see as being appropriate policy, my inflation outlook would be higher than that, rising above 2 percent in 2015, and that's what you see as my SEP submission. I think there are three submissions that have inflation above 2 percent in 2015.

Let me turn now to the issue of translating my preferred threshold-based commitment into date-based guidance. I gave a speech in September in which I advocated the Committee commit to keeping interest rates low until the unemployment rate falls below $5\frac{1}{2}$ percent or the medium-term inflation outlook rises above $2\frac{1}{4}$ percent. When should we expect to hit one of those thresholds? My own estimate right now would be something close to four years. With this commitment, the unemployment rate would fall faster than is anticipated by the Tealbook, but it wouldn't hit $5\frac{1}{2}$ percent until about the fourth quarter of 2016. They expect a medium-term inflation outlook would rise above $2\frac{1}{4}$ percent a few months earlier. I'm expecting, too, that the Committee would likely initiate liftoff shortly after hitting one of those thresholds.

Now, as President Fisher has cautioned us in the past, and I think quite rightly, it's difficult to forecast two years out. I'm talking about something four years out, and there are obviously huge uncertainties associated with that. For example, the unemployment rate has fallen more than 2 percentage points in the last three years. On one hand, a simple extrapolation would suggest that the unemployment rate could well fall to 6.4 percent, below $6\frac{1}{2}$ percent, by the end of 2014. On the other hand, structural labor market damage could manifest itself in faster wage growth and higher inflation than I'm currently anticipating. I think that we all

recognize that given these uncertainties, the economic conditionality and threshold-based guidance provides a truer picture of what our reaction function is. But I think it's also important to keep in mind that we are often expressing concern about the lack of clarity provided to the economy by fiscal policymakers, and we heard that again today. But our date-based guidance is providing lack of perfect clarity about the future evolution of monetary policy as well, and threshold-based guidance will do a better job on that dimension. I'll have more to say about thresholds, and especially the utility of choosing low thresholds, tomorrow. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. The most significant economic event in the Third District was Hurricane Sandy, especially for New Jersey. Its effects will obscure the underlying recovery for some time. The data we received before the storm suggested that, at least up until the hurricane, regional economic activity was actually beginning to strengthen somewhat from a more subdued pace in the summer. Hurricane Sandy made landfall in southern New Jersey on October 29. The most severe effects were felt along the New Jersey shoreline and beyond our District in northern New Jersey, New York City, and Long Island. Nearly two-thirds of all customers in New Jersey lost power, and a quarter of them lost power for a week or more. We conducted a special survey among our business contacts and survey respondents after the storm. Responding firms reported an average of nearly three days of reduced business activity, including an average of two days of shutdowns. That's about 10 percent of the month's workdays. Some of the lost output is expected to be made up starting in December and extending into next year, but the magnitude of the longer-term effects remains less certain. Sandy has affected some of the intermeeting monthly data as well. The general activity index in

our Business Outlook Survey fell back into negative territory in November, to minus 10. The indexes of new orders and shipments also moved negative.

More-positive news comes from the expectations reading in the survey, which remains a solidly positive territory in November, despite Hurricane Sandy. We also continue to watch labor market trends in the region closely. News from regional labor markets is more positive than it was at the time of our last meeting. Conditions in our three states improved modestly in October before Sandy. One positive indicator is that high unemployment rates in New Jersey were trending down over the three months, again, before Sandy. The housing sector continues to improve, especially in Pennsylvania. Brokers in the Third District report relatively strong sales activity and inventory levels that are lower than a year ago. Nonresidential building has shown less improvement than the residential sector, but business contacts indicated that Class A office space in Philadelphia's central business district is becoming scarcer, and some companies are beginning to look at putting up new buildings. So far, retailers in the area have been positive about this holiday shopping season—and they're usually a pretty gloomy bunch. According to our contact at a company that manages mini-malls and shopping centers in the Third District, their survey of nearly 200 stores indicated that the majority of stores experienced strong Black Friday sales and higher-than-average dollar purchases than a year ago.

Looking forward, the outlook among businesses, though, is mixed. Bankers maintain a more positive outlook, as do contacts from the real estate sector. Manufacturers expect increased activity over the next six months. A number of contacts have expressed increased concern about the looming fiscal cliff, and I don't need to reiterate the kind of anecdotal evidence that's already been brought up. These uncertainties actually cloud the national outlook. In my view, fiscal policy uncertainty has been a tremendous deterrent to business spending and hiring over the last

several months, if not several quarters. Many firms are awash in liquidity but sitting on their hands until there's some resolution of the fiscal policy problem, at least over some reasonable horizon, such as a year or two. Households are still in the process of deleveraging, but as their balance sheets improve, helped by rising house prices, I expect that drag will gradually fade over time. My sense is that if we get some resolution of the fiscal policy uncertainty so that firms can learn what the rules of the game will be, even if only over the next year or two, we could well see a rebound in business fixed investment and business spending.

I've made little change in my baseline forecast since September. I anticipate that economic growth will accelerate to about 3 percent in 2013 through 2015, which I presume is slightly above trend. I think this pace, coupled with a steady or slightly rising labor force participation rate, suggests that unemployment rates will gradually decline and reach perhaps 7 percent by the end of next year and 6¼ percent by the end of 2014. Thus I'm considerably more optimistic than the Tealbook about labor market conditions. To maintain price stability as the recovery takes hold, I believe the FOMC will need to begin the process of normalizing policy considerably sooner than mid-2015. Based on my view of the reduction of headwinds from fiscal uncertainty, I expect we may need to stop purchasing assets and begin raising the funds rate perhaps by the end of next year. Indeed, I see upside risks to my forecast if the uncertainty is reduced substantially. There is upside risk, which is consistent with the risk assessments reported on page 94 of the Tealbook, Book A, from the EDO models and the Bayesian vector autoregressions; both of those indicate substantial upside risk.

Of course, I think we all must acknowledge there is considerable uncertainty around our forecast, especially in the current environment. But sometimes I feel we place far too much weight on our point forecasts and are too willing to make important policy decisions based on

very small changes in those point forecasts. For example, as the Board staff memo indicates, there are large forecasting errors around our unemployment forecast. In univariate models, the staff estimated that the root mean square errors over the last 15 years were about ½ percentage point for just one-quarter-ahead out-of-sample forecasts and 80 basis points for two-quarter-ahead forecasts. Similarly, there are large error bands around our inflation forecast. Over the last 10 years, the Tealbook has tended to underestimate medium-term inflation. You'll recall in previous meetings that people have expressed some surprise that the large gaps we have been estimating have not put more downward pressure on inflation than they have. The estimated coefficient on the gap in the expectations-augmented Phillips curve is now quite small. We need to acknowledge that there is considerable uncertainty about the relationship between unemployment and inflation, and I think we should be skeptical about relying on resource slack to keep inflation subdued going forward.

Inflation expectations, of course, need to remain well anchored, and so far, so good. Of course, if we wait until we are confident that expectations have broken loose, we may be too late and will have lost our credibility. I continue to be concerned that our open-ended asset purchase programs might undermine our credibility and destabilize inflation expectations. Moreover, I don't believe that in the current environment purchases such as we are proposing will have much effect in altering the behavior of firms and consumers, given the uncertainties that they face about the fiscal cliff and other things. And our efforts to continue to accelerate the level of accommodation put us in a very risky position. After all, we can't rule out that things may not move as smoothly or in as continuous a fashion as we approach exit. We might see a jump in inflation expectations. As the time for liftoff approaches, we could see a significant jump in long-term interest rates that could potentially be disruptive to the markets and the economy and

greatly undermine our exit plans. I think we need to consider these possibilities in setting our current policies and communication strategies. I think we are placing a lot of confidence in our ability to manage the exit smoothly, but, as we have learned, the economy and markets do not always cooperate. If things don't go as smoothly as we hope, or we find ourselves behind the curve because long-term interest rates have spiked up and we have to move much faster than we expected, the overhang from our long period of ever more accommodation could be quite painful for the economy. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. Economic activity in the 10th District economy has generally strengthened since the last meeting, following a sluggish summer. The District has seen a strong rebound in employment growth this fall, including growth in most state and local government payrolls. Consumer spending has also picked up, as a number of contacts reported that spending increased before Thanksgiving; expectations for spending over the next three months also increased in November. As in the rest of the nation, the housing sector is contributing to growth in the District, with the number of housing permits and value of construction contracts rebounding sharply over the last couple of months. Despite the drought, 2012 net farm incomes are expected to be near historical highs, roughly 40 percent above their 10-year average. Livestock remains agriculture's biggest challenge, with prices below breakeven as feed costs remain near historical highs. The relatively weaker spots in the District are the state of New Mexico and the manufacturing sector. New Mexico's weakness is related to federal cutbacks due to the state's reliance on defense spending, and District manufacturing activity fell in November for the second straight month. In addition, expectations over the next six months for new export orders and employment growth were somewhat soft, likely reflecting

the global slowdown and uncertainty. However, expectations for production and capital spending have remained positive.

My medium-term outlook for the real economy is essentially unchanged. I expect growth to pick up as we move through next year and into 2014. Assuming constructive resolution of our fiscal issues, I expect we may also see a rebound in business fixed investment as the labor market also continues to heal slowly. Over the course of this year, I had assumed inflation would remain near 2 percent, with only a risk that it could move higher. Now, assuming the Committee continues to ease policy with the proposed alternatives for tomorrow's discussion, I would expect inflation to begin to rise above 2 percent in 2014 and 2015. I would also note that longer-term inflation expectations based on the TIPS market moved higher after the September meeting and have remained near the upper limit of their historical range.

Downside risks to my forecast are largely unchanged. Uncertainty about how the fiscal cliff will be resolved continues to affect business investment and consumer spending. A slowdown in global economic growth and the expectation of higher taxes and more regulation also continue to weigh on economic growth. On the upside, the continued increases in housing activity and auto sales are consistent with a household sector that will be supportive of growth going forward. In addition, economic growth could surprise on the upside over the next few years if there is an effective resolution of the near-term fiscal uncertainty that also improves the longer-term fiscal outlook. Thank you.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I have just a few remarks on the economic outlook. In the Eighth District economy, we continue to expand at a modest pace, with unemployment below the national average on a Districtwide basis. During the autumn, there has

been something of a disconnection between relatively upbeat households and relatively downbeat businesses. I've been increasingly concerned that businesses are holding back planning for three reasons: one, the global slowdown; two, mixed reports on the strength of the U.S. economy; and three, angst about the future policy environment in the United States. A clear, credible deal on the U.S. fiscal situation would go a long way to reducing this angst, but it is unclear at this point whether such a deal will be made. Some of the most recent anecdotal information from the District's transportation sector seems to indicate positive momentum during the holiday season up to now. I continue to be concerned about the global growth situation. Anecdotal information from large District firms with operations in China seems to indicate, on balance, continuing slowdown there—that's a little distinct from earlier reports here—perhaps tied to the deeper-than-expected recession in Europe. Japan has moved back into recession as well.

On the plus side, I've been impressed by the relative calm in the euro zone during the second half of 2012. I was expecting a volatile period during the fall. Instead, the situation in Greece has been papered over, at least for now. In addition, the ECB's threatened intervention through the OMT program has generally managed to put substantial downward pressure on Spanish and Italian yields. The ability of Spain to delay a request for aid and, therefore, to delay the actual implementation of the ECB's OMT program has also surprised me. My view has been that once such a request is made, the ECB may well come under heavy pressure, and volatility in European and global financial markets may return with a vengeance. However, I have now revised down my probability that Spain will be forced to request aid, at least in the near term, such as over the next few months.

A calmer Europe and a U.S. fiscal deal, therefore, seem to point to some upside potential for the United States. In addition, some of the headwinds, especially in housing, that have been a drag on the U.S. economy seem to be dissipating. Our own monetary policy is exceptionally accommodative. On balance, then, I'm relatively optimistic about U.S. growth prospects in 2013. Thank you.

CHAIRMAN BERNANKE. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Mr. Chairman. My view is that you can divorce everything else from the near-term uncertainty about how the fiscal cliff will be resolved and then take all the differences in our forecasts and compare them to the uncertainty. It's interesting, I am the 12th person to speak, and no one has made any forecasts about how that fiscal cliff uncertainty will actually be resolved.

I think that I am very much where President Williams is: If we actually do fall off the fiscal cliff, with no sign of that deadlock being resolved, things would be considerably worse than the Tealbook alternative scenario for the two reasons that he cited. Number one, I think there would be a big effect on confidence. And, number two, I think the multipliers in the current situation—given that monetary policy is at the effective lower bound and financial conditions are accommodative right now—would probably actually lead to tightening because falling off the fiscal cliff would probably cause the stock market to go down by a considerable margin. On the other hand, if we don't fall off the fiscal cliff, I actually can imagine a much more benign outcome. I think the range of outcomes is actually very wide. I mean, I can imagine minus 2 percent, on a Q4-over-Q4 basis, if we fall off the fiscal cliff. But I can imagine plus 4 percent if everything goes swimmingly. It seems to me that the fiscal cliff has been impeding hiring and investment, so there has been some delay in activity or deferral of activity.

And if the fiscal cliff were resolved in a good way, not only would you get the benefit of confidence, but you would also get a recovery of the deferred activity.

In addition, there are a number of other reasons I think that we should become a little bit more positive about the economic outlook, ex the fiscal cliff—which is a big qualification. As some people have mentioned, there are the one-time factors: the rebound in activity following Superstorm Sandy and the fact that the drought will presumably be replaced by a more normal year, and we will get a rebound in agricultural output—at least the BEA will assume a rebound as we go into 2013. Moreover, I think there are other factors that reflect underlying improvement in the economic fundamentals that aren't yet evident in the economic activity statistics. Let me just go through some things that I think are on the positive side of the ledger. First, I do think that, while there is some uncertainty about where we are in the deleveraging process, nobody would dispute the fact that considerable deleveraging has taken place in the household sector. Profit margins in the corporate sector are extremely wide, the sector is awash in cash, and profit margins are high. The banking system is stronger than it was a few years ago, so credit availability is gradually improving. I think there is less uncertainty about policy and regulation, ex the fiscal cliff, given that the election has passed. So you may not like Obamacare, but now you at least know Obamacare is coming, and you can start to plan for that. I also think the innovations in terms of energy costs in the United States are pretty significant, both directly in terms of the rebound in energy output and also in how they have dramatically improved the relative competitive position of the United States in manufacturing. I think we are just seeing the tip of the iceberg in terms of big capital spending projects for things like petrochemicals or LNG export. And the housing sector is clearly on the upswing. On the housing side, the implications for economic growth could also be more important than just

judged by the fact that residential investment is a small share of GDP. Higher home prices will have favorable consequences in terms of reducing the proportion of households that are underwater on their mortgages. And as we reduce the number of households that are underwater on their mortgages, we probably should see more refinancing activity. I think an improving housing sector should also lead to an improvement in credit availability more generally and enable more households to take advantage of historically low levels of mortgage rates.

When I put all of these factors together, I think back to the 2001 to 2003 period. If you remember, back then headwinds were restraining economic activity, and everyone was getting sort of discouraged by the fact that the economy wasn't growing. And then, for some reason, in the third quarter of 2003, the first estimate of real GDP was more than 8 percent at an annual rate—subsequently it was revised down. I went back and looked at the Fed transcripts, and it was interesting. Every meeting for about three or four meetings in a row, there is this big upward revision in terms of how fast the economy is going. Now, I am not forecasting 8 percent GDP growth. I am not even forecasting 4 percent GDP growth. But I think that we can't rule out a meaningful pickup in the economy if all of these factors come together in a meaningful way. And I think the 2003 experience is evidence of how you can occasionally be surprised by things. But until we get resolution of the fiscal situation, I think we are not going to know which of these two paths is more likely, or something in between.

If the fiscal situation was resolved in a good way, I can imagine we could dial back on some portion of our securities purchase program pretty soon. But with a bad outcome, if we go down the wrong path in terms of fiscal cliff, I think the programs would have to remain in place for some time. The bad fiscal cliff scenario also implies that we would need to develop a credible plan B for what we should do in terms of monetary policy over the medium to longer

term because I think we would presumably get to a point at which our balance sheet was uncomfortably large, and the cost of further asset purchases would come to exceed the benefits. And I think if we go down that path, we are going to need something else to move to at that point. I don't think just saying "Well, sorry, we're done; we're out of ammunition" is really a credible policy for us.

On inflation, I am pretty much with everybody else: I don't see any meaningful signs of inflation pressure, either incipient or manifest. I was struck by the third-quarter economic release on productivity and costs. Unit labor costs on a year-over-year basis are essentially flat, up 0.1 percent at an annual rate. We will probably see an upturn in the fourth quarter, because productivity growth will be really lousy due to the drought and the hurricane. The underlying trend for unit labor costs is extremely benign.

Superstorm Sandy obviously had a very meaningful negative effect on activity in the Second District, as it did in Charlie's District. It was a rather different kind of storm, in the sense that it had very large effects in terms of disruptions to economic activity. The Second District, broadly defined, probably accounts for something on the order of 10 to 15 percent of GDP in the country, and a good portion of the District was essentially shut down for a week or more. Even today, we are not really back to where we were. Several million square feet of real estate in Manhattan are still unoccupied, and there are probably tens of thousands of households that still have not been able to return to their homes. Just in downtown Manhattan, about 3,000 households that haven't actually been able to go back into their buildings. So I think the effects are actually going to be pretty large, and they are going to be sufficiently large that we will actually see them in fourth-quarter GDP. It is very hard to add them all up and figure the timing of the depressing effects versus the rebound effects. But I think that the disruption of

activity was large enough that it will probably pull down fourth-quarter GDP about $\frac{1}{4}$ to $\frac{1}{2}$ percentage point, and then we will see a rebound back from that in the first quarter.

The storm has caused tremendous hardship for some: loss of loved ones; loss of property and personal possessions. And using the Atlanta Fed experience with Katrina as an example—we followed their lead—we set up a Liberty Street fund to help aid people who had the greatest hardship with the fewest resources. I am happy to report the fund has grown to more than \$190,000 and is still growing, and I want to thank all of those here within the Federal Reserve System who have spread the word and contributed. And it's still not too late [laughter] to make it grow a little bit further. But thank you for helping us on that.

CHAIRMAN BERNANKE. Okay. Maybe it's time for a coffee break? So we will adjourn until, say, 3:25 p.m.

[Coffee break]

CHAIRMAN BERNANKE. Okay. We're ready to recommence, and I'll ask Governor Yellen to speak.

MS. YELLEN. Thank you, Mr. Chairman. At our last meeting, we discussed the rather puzzling disconnect that had emerged between the household sector's optimism, reflected in upbeat readings on consumer spending and confidence, and the business sector's pessimism, reflected in surprisingly weak indicators of capital spending and reports from our business contacts. This tension has eased somewhat. Unfortunately, the resolution has largely come about through softer data on consumption and diminished readings on consumer confidence rather than a brightening picture for business spending. I agree with the Tealbook's assessment that as a result, the near-term outlook, on balance, is weaker. Last Friday's report from the Michigan survey suggests that consumers are, for the first time, focusing intently on the fiscal

cliff. They are finally recognizing that impending fiscal policy shifts are likely to have negative implications for their own financial situations as well as for the performance of the economy and the labor market. Although an increasing number of households now perceive a more-favorable trend in house prices, households' expectations concerning the outlook for unemployment and for their own personal finances worsened sharply, and their expectations concerning future real income gains stand at rock-bottom levels. This assessment seems all too realistic in light of weak incoming data on compensation and disposable income, and the prospect that even with a successful resolution of the fiscal cliff negotiations, both the payroll tax holiday and extended unemployment benefits will end up on the fiscal chopping block.

With respect to the labor market, I still see nothing in the data that convinces me that it is definitively on the mend. The unemployment rate has declined more than I had anticipated, but as the staff memo on assessing conditions in the labor market emphasizes, even absent the distortions from hurricane effects, changes in the unemployment rate are best interpreted in light of a number of other measures. According to my reading, those measures are not reassuring. Given the staff's best efforts to filter out the weather-related effects, payroll employment was consistent with only modest continued gains. The decline in the participation rate, on the other hand, raises a question of whether the step-down in the unemployment rate actually reflects progress in reducing slack or, instead, signifies that the natural rate of unemployment is falling as discouraged workers, including those completing extended unemployment benefits, leave the labor force. The JOLTS data for October were released earlier today, and they showed that the hiring rate remains far below its pre-recession level, and the quit rate remains very depressed. Such readings on turnover suggest no substantial improvement in the labor market outlook thus far. My projection for the unemployment rate at the end of 2013 is now marginally lower than in

September, reflecting the decline we have seen over recent months. But my outlook, like that of the Tealbook, is for less improvement over the course of next year than I previously anticipated.

In the absence of any significant improvement in the outlook for the labor market to date, and with my expectation that progress during the coming year is apt to be negligible, I see a need for us to maintain our longer-term asset purchases, and I expect that these purchases may be appropriate throughout the coming year. That said, we do need to attempt ongoing evaluation of their efficacy and costs. The assessment of efficacy is challenging. It requires us to identify the partial effect of our policy actions on asset prices, real activity, and inflation, abstracting from all of the various time-varying factors that also affect these metrics. For example, we have not yet observed any noticeable pickup in economic activity, but that hardly proves that our asset purchases are ineffective. I think it is fair, in particular, to attribute the roughly 25 basis point decline in the 30-year mortgage rate since September to our policy, and I anticipate that improved housing affordability will stimulate the recovery going forward.

With respect to costs of our asset purchases, I worry most that a prolonged environment of low interest rates and the yield curve we are intentionally flattening through our purchases may induce an excessive search for yield and a dangerous buildup of leverage. I appreciate the careful efforts of our staff to monitor such threats to financial stability. For now, I agree with their assessment that increased risk-taking has become evident in some sectors, but the use of leverage has not risen to any significant extent. I also share the concern of many market participants and of President Pianaalto that longer-term yields could jump as soon as the FOMC signals the conclusion or a reduction of our asset purchases, or the onset of active tightening, resulting in substantial losses for some fixed-income investors, including financial institutions that are exposed to interest rate risk.

Such concerns seem justifiable, given that we have previously seen sharp movements in longer-term yields when the FOMC has ended or signaled that it would soon end a period of highly accommodative policy. For example, between January and October of 1994, the yield on 10-year Treasuries rose around 200 basis points, triggering steep losses for many fixed-income investors, including municipalities and companies that had undertaken leveraged, interest-sensitive derivative bets. Longer-term Treasury yields also rose in 2004. Between January, when the FOMC shifted its forward guidance from “considerable period” to “measured pace,” and early May, the 10-year yield rose about 80 basis points. One important difference between the two episodes was that the 1994 tightening cycle entailed larger surprises about the path of the federal funds rate than the 2004 cycle. According to the staff’s term structure model, roughly 100 basis points of the movement in the 10-year yield in 1994 reflected shifts in market expectations concerning the path of short-term rates—an expectational shift, it turns out, that was overblown. It far exceeded the actual increase in short rates during that tightening episode. In 2004, in contrast, shifts in the expected path of short rates accounted for only 30 basis points of the movement in longer-term rates. It will probably not come as a surprise that the chair of the subcommittee on communications attributes much of this difference to strides in FOMC communications [laughter] since the early 1990s. That said, staff models attribute a significant portion of the jump in long-term yields in both episodes to upward shifts in term premiums, amounting to 100 basis points in the earlier episode and about 50 in 2004, and we could see such shifts again.

I see no theoretical reason why the entirety of the reduction in the term premium resulting from our asset purchases should rapidly unwind. And I hope that our very considerable efforts to clearly communicate our policy intentions will mitigate disruption in fixed-income markets when

the time arrives to signal the end of our purchases. That said, Treasury yields and term premiums are at unprecedented low levels. Many factors influence them, and we can't have much confidence about how markets will react when they come to anticipate the end of our asset purchases or, for that matter, the approach of liftoff. So while I consider it appropriate to continue our asset purchase program, I also think we should regularly and systematically evaluate its efficacy and remain vigilant to the potential emergence of financial stability risks.

CHAIRMAN BERNANKE. Thank you. Governor Duke.

MS. DUKE. Thank you, Mr. Chairman. For my forecast, I chose the "Robust Housing Recovery" scenario from the alternative scenarios in the Tealbook. I, too, am still worried about the fiscal cliff, but I can't figure out how to include those worries in my projections, so I am willing to accept the staff projections as being as good as any. I also agree with the Vice Chairman about the financial strength of the businesses, the households, and the financial institutions; I actually had that in my earlier notes. In addition, I am quite encouraged by the continued signs of momentum in the housing recovery, helped, I believe, by our MBS purchases. And I think this momentum may have even more potential than the staff baseline assumes. I also believe that rising house prices will have spillover effects in confidence, but I am not sure it goes as far as the "Housing Reverberations" alternative.

House price increases are currently being driven by very low inventories of both new and existing homes for sale, and to some degree by demand from improving household formation. Many analysts, including in the staff forecast, temper house price expectations with concerns about shadow inventory, in particular, an expectation that large numbers of foreclosures have been held back and will be dumped on the market at some point. I think that fear is overblown, as severely past-due loans are increasingly concentrated in a handful of states where legal

impediments are impeding foreclosures. The legal situation doesn't seem likely to change rapidly, but markets are heating up anyway in places like Florida and Las Vegas. The two other states with foreclosure backlogs are New York and New Jersey, and now, adding hurricane damage to the mix, I confess that I don't know how to think about what is going to happen in those markets.

As I said, I think that rising house prices will be a positive influence on consumer confidence and consumer willingness to spend. For a significant number of households, wealth—especially accessible wealth—is concentrated in home equity. Increases in home equity can be tapped for emergency funds or used to invest in education or small business. Young families expect to be able to roll over their equity into larger homes as their families grow, while aging couples may plan to cash out equity for retirement by downsizing their homes. Whatever their financial vision, home equity plays a role, and improving home equity has to make the dream seem more achievable. There is an analogy I was going to use to a holiday movie, and I was a little embarrassed by it, but if President Fisher is willing to make his barnyard analogy [laughter], I'll move ahead with mine. In the movie *It's a Wonderful Life*, they keep saying that every time a bell rings, an angel gets its wings. So to make a somewhat cheesy comparison, I think that every time home prices tick up a notch, a household pops above water on its mortgage and so regains its financial wings.

I also see hope on the residential construction horizon. New home sales are picking up, but, more importantly, the mix of those sales has been steadily shifting from homes already completed to homes not yet started. This shift implies more boost to construction than the sales of standing inventory. When the largest homebuilders were in here last week, I was struck by the nature of their concerns—trouble finding labor, increased delivery times—as these are the

problems of an industry gearing up for more production, and certainly different from the near hopelessness that they projected in previous visits.

I talked before about mortgage lending capacity, and it remains a problem, but I think capacity is beginning to expand. Concentration of lending in the largest originators seems to have peaked, as others are attracted to expand or enter the business. Bankers have strong incentives to increase capacity, lower rates, and ease standards over the next year. They are still working on their 2013 budgets, looking for any revenue sources or cost savings to offset their declining interest margins. From my conversations with them, it sounds like it will take at least 5 percent loan growth just to keep dollar margins even, and mortgage origination is the only business I know of that offers any real potential for fee income growth. Earnings pressure seems, to me, to point to continued easing of credit for all loan types. Admittedly, mortgage credit conditions will encounter additional headwinds as the new regulatory requirements that were contained in Dodd–Frank are finalized in January. It looks like these rules will hit portfolio lending and private securitization especially hard, as there are likely to be carve-outs and exceptions for government-supported loans. So I think the need for banks to produce revenue, along with some resolution of rep and warrant issues, could combine to offset these headwinds and gradually improve credit conditions for borrowers who meet the standards for GSE or government-guaranteed loans.

Low mortgage rates will not, by themselves, compensate for all of the problems still stifling the housing recovery, but they could provide enough momentum for the positive factors to begin to outweigh the negative ones. And a stronger housing recovery is the most likely scenario I can construct for a stronger economic recovery. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Mr. Chairman. Listening to the first 14 of us to speak this afternoon, I think it is pretty clear there is not a significant divergence in expectations for the performance of the economy, at least over the next several quarters. So as I listened, I concluded that to the degree there are differences, there are more differences in what may be holding back further recovery, or an acceleration of the recovery over the next year, year and a half, or two years. And I guess there are three sets of possible reasons. One is that you think that there is a shortfall in aggregate demand, and until that shortfall is filled up, there is still going to be a kind of sluggishness to the recovery. A corollary of that may be the notion that in financially induced serious recessions, the recovery period is longer because policy instruments are a bit more attenuated when there is a balance sheet problem that needs to be overcome. The second kind of explanation is that there are structural problems that have been created by or accelerated by the crisis and the recession, and, therefore, economic growth potential is down. And the third, which we heard a lot more about today than at any time before is, quite apart from those two things, the enormous uncertainty due to the fiscal cliff, which is just holding people back. I just want to make a few observations on each of those explanations with particular reference to the labor market, but with a little bit on consumption patterns and deleveraging as well.

As Janet said, I think for the first time we saw the fiscal cliff concerns rear their head in the consumer–household area. To this point, we have mostly seen the sort of thing Richard was talking about, which is businesses holding back investment. That the fiscal cliff was a factor seemed particularly right when I read beneath some of the consumer surveys and saw that one out of four respondents had spontaneously noted the prospect of higher taxes as a reason why they were nervous about the fiscal cliff. Having said that, though, it seems to me that the recent consumption dip is probably not just about uncertainty. For one thing, it is hard to see sustained

significant increases in consumption until the labor market recovers considerably more and wages start to rise, even if the fiscal situation is resolved sensibly, because it is hard to see where people are going to get the money. The saving rate has already come down 2 full percentage points, and it is not clear how much lower it is going to go. There is a bit of a wealth effect, as Betsy noted, but that is kind of unevenly distributed over households.

Moving to the deleveraging question and to what degree the headwinds are still with us, thereby slowing everything down, I found my own thoughts very closely aligned with what Bill said, which is—I think, Bill, you were saying this—that although deleveraging in the household sector is continuing, we actually may be entering the final turn there. As I mentioned earlier this morning—I maybe didn't say this piece of it—household debt-to-income levels are back down to about the levels they were in 2004. It is hard to judge what the norm should be because the 2001–07 period had so much excess credit, but, as I did say this morning, if you just took a trend line from 1975 to 2000, and extended it out to 2012, that is just about where we actually are now with debt-to-income. Assets, of course, bounce around a good bit more than debt in noncrisis periods, basically because of movements in the securities market. So it is harder to do even a simple projection. But depending on how you measure it, the ratio of assets to income seems to be at least approaching pre-crisis levels, a movement that should be accelerated by the housing recovery that Betsy was just talking about. And, of course, on top of that, you have to look at what people actually have to pay on a monthly basis to service their debt. And with interest rates as low as they are, the household debt service and financial obligations ratios are at very low levels relative to the last couple of decades. So even if you subscribe to the view that it is hard to recover quickly from financially induced recessions, all of these factors suggest that we should be seeing waning effects of arguably the most important ways in which those kinds of recessions

differ from the ones that result when central banks slam on the brakes in order to stop inflationary pressures. One qualification would be that while new foreclosures are creeping down toward pre-crisis levels, serious delinquency balances on mortgages are still elevated well above pre-crisis levels, even though they have come down a lot.

But if things look pretty good, or at least look increasingly better, when you look at household balance sheets, I think that it is still a bit misleading because it is pretty clear that both mortgage and revolving credit are not flowing in anything like the amounts that they were pre-crisis. Now, probably no one around this table would want them to be flowing in the amounts that they were immediately pre-crisis, particularly with respect to mortgages. But it seems almost certain that we are a good ways short of an optimal new normal, and I think that is probably due to some combination of continued caution by lenders; the putback risks, which several people have mentioned; and, as Betsy just said, at least to some degree, new and anticipated regulatory responses. And that, I think, feels as though it is going to take a little bit longer to work its way through. So we probably will be facing at least a nontrivial headwind for a while.

And then there are employment and the labor market, where all of these things come together. It is where I think we are most likely to see structural problems; it is where the output gap may be more manifest; and it is also probably where we have seen some of the uncertainty effects. A couple of specifics first. I would put a qualification on what Jeff said about the 9.9 percent unemployment falling down to 7.8 percent. I mean, one of the things that our staff has emphasized to us is that the very rapid increase in unemployment during 2009—the quickness with which everybody laid people off—was greater than what would have been expected based on even past serious recessions. And as you'll recall, for a while we had our

Okun's law conundrum that was probably a result of what had happened back in 2009. We sort of got paid back with perhaps a quicker reduction in unemployment than might otherwise have taken place.

On this issue of skills and labor mismatch and the like, indexes of mismatch still really do not show very much, if any, structural damage in the economy. For as long as I can remember—certainly going back to when I worked on the Senate Labor and Human Resources Committee—employers have been complaining that applicants are not sufficiently educated, that they are not ready for work, that they don't have quite the skills that they ought to have. I think all of these complaints were probably true in 1987 and are probably more true today, but these are secular problems; these are not problems that have arisen over the last couple of years. U-6, my favorite broadest measure of capacity underutilization in the labor market, has come down a little more than a percentage point in the last year. It is still up at 14.4 percent, very high historically, but it has come down. It is notable that all of the improvement in the last six months is attributable to the improvement in the core unemployment rate, half of which itself is due to the reduced participation rate in the economy. The number of people employed part-time for economic reasons is still about double the level that prevailed pretty consistently for a decade before the crisis, and that, again, I think is a very direct measure of slack because these are people whom the companies want, but they want to keep them part time, at least until they have more confidence about demand. Wage growth is positive, but, as Narayana said, it is at low levels. It is not on an upward trajectory, as is typical during recoveries—not even the relatively weak 1991 and 2002 recoveries, much less those in the mid-1970s and the early 1980s. And there is just no sign of real wage pressures. All of these factors suggest that any structural damage to the labor market is still taking a back seat in importance to the effects of inadequate aggregate demand.

Having said that, though, like Narayana, I keep looking at the Beveridge curve every month, when BLS comes out with the JOLTS report. And I don't want to attribute this observation to Narayana, but it may be that what he was referring to is the fact that although the line now seems roughly parallel to the old Beveridge curve, it shifted up and to the right. And what I think we can't know is whether that is just a slower adjustment back to the original Beveridge curve, because this recession is much more serious than the existing data account for, or whether there has been some structural change in the economy. Similarly, as Janet mentioned, the JOLTS reports have pretty consistently shown that dynamism in the labor market is still not great and that quits declined for a while but have been flat for several months now. Again, I think it is hard to know yet whether these are just the effects of a very prolonged recovery or whether it is the continuation of a reduced dynamism that was observable in labor markets going back a decade or more before the crisis hit.

Finally, there is the participation rate issue, which is sort of our new little labor market conundrum. Is the participation rate decline we've seen this year one that reflects simply some noise because people leaving may have left the labor market a little sooner than we originally anticipated because of what Eric said about the UI benefits going away sooner than they might have thought? Or is the participation rate actually, on a secular basis, declining more than the demographics alone would have suggested a few years ago? Until we have some clarification around that, it is going to be a little hard to figure out what increase in jobs is really showing robustness in the labor market and how many it is going to take to bring the unemployment rate down. I do think we will learn something once those job numbers go up a few months, when things look as though they're getting better, because then we will see whether we get an influx of people who were previously discouraged back into the labor market, which would suggest it is

more same old, same old. Or if that doesn't happen, I think there has been some structural change.

So putting all of that together, it seems to me that the case for insufficient aggregate demand is still a pretty strong one and is likely to be strong regardless of the resolution of the fiscal cliff. And, again, I don't want to discount the possibility of structural damage, particularly in labor markets, but even if that is the case, it is not something that is going to be encountered quickly. It is something that is going to reveal itself as unemployment goes down, as the people working part-time begin to work full-time, and as you begin to see wage pressures—none of which we have seen to date. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. As many around the table have noted, the conundrum of what appeared to be a schism between consumer confidence and business confidence—business confidence was down while consumer confidence was up—is no longer a schism. We now know that both are down, so we have one less puzzle to solve. Looking at the glass as half full, there's the good news. [Laughter] More seriously, aggregate U.S. household net worth is now approaching the level it had reached before the financial crisis cracked the nest eggs of many households. Net worth has been driven up over the past few years by welcome gains in the value of homes and equities, and at the same time that these household assets have increased in value, household debt has been reduced. In particular, home mortgage debt has been on a downward trend. All told, the value of household net worth stood at \$64.8 trillion at the end of the third quarter. Although adjusting these figures for inflation and a rising population diminishes the positive wealth news story to some extent, it is still true that real per capita

household wealth positions appear to have improved somewhat over the past few years, which should bode well for economic growth.

But it's not the whole story, and that's because these are only the wealth effects, and any story about the household sector leans importantly on income, which is a much more significant driver. Income has been pretty lackluster in this recovery. Over the most recent four quarters, real disposable income rose just 1½ percent, following an increase of just ½ percent in the preceding four quarters. The latest data are weaker than the staff had been expecting, and, of course, the anticipated expiration of both the payroll tax cut and the Emergency Unemployment Compensation program at the end of this year will further reduce households' disposable income. The effect this income drop is likely to have on consumption was foreshadowed by the recent drop in consumer confidence, which turned down as households pondered the possibility of repeal of the Bush tax cuts and payroll tax cuts and the accompanying lower monthly paychecks.

The recent weak income is a further symptom of a weak economy. It's taking a long time for the typical household to recover. The typical household, after all, probably has more housing wealth than stockholder wealth. The typical household has been touched, if not brought down, by the effects of unemployment. The typical household has flat real wages, so it is not experiencing a comfort in spending as had been typical for that typical household. I'm very concerned with the slow dynamics of this recovery. In that regard, I found the Aaronson, Fallick, Nekarda, and Wascher memo on assessing labor market conditions particularly illuminating from a perspective of putting these slow dynamics into the context of different employment measures. We need to look at a variety of measures because a given level of unemployment today is translating into lower real wages for the typical household than it would have a few years ago.

One thing we're seeing in this recovery is that more jobs don't always mean jobs that produce enough disposable income that can move us out of the mud. The unemployment rate alone doesn't tell us much about the quality of the employment associated with the job creation. Back in 2007, there was a small difference between the unemployment rate, which was 4.4 percent, and the measure of unemployment that included discouraged workers, which was then slightly higher at 4.6 percent. Back in 2007, the U-6, which also includes marginally employed people seeking full-time work, was 8 percent. Today, as President Williams and Governor Tarullo suggest, the differences in these labor market measures are much wider. The standard unemployment rate is 7.7 percent, but it is higher at 8.4 percent when discouraged workers are included and even higher at 14.4 percent when the underemployed are included. Having such a large set of people underemployed may be a reason that the employed are not generating much income.

If the jobs that are available right now are increasingly low-wage, part-time, dead-end jobs, it will take more time for real disposable income to begin to rise rapidly enough to kick off a more promising recovery. Even if the new jobs themselves are not inherently low-wage, part-time, or dead-end, for those households still in debt and attempting to pay monthly bills, for those households who have experienced a loss of a significant source of repayment for their debts and their bills, for those households looking to find a job with the same income-producing capability as before, with the ability to negotiate a higher starting salary still very much impaired—for those households, there appears to still be no sense of a robust recovery. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Stein.

MR. STEIN. Thank you, Mr. Chairman. Once again, many of my observations about the outlook have been eloquently explicated by others around the table, so I'll be brief in the hope that I can get away with being a little bit more long-winded tomorrow.

In terms of a modal forecast, I may be just a touch more optimistic than the Tealbook. I had forecast unemployment to be about 7.4 or 7.5 percent at the end of 2013 versus the 7.8 percent figure in the Tealbook. The story I would tell is that I expect things, as it sounds like many others do, to be slow over the first half of 2013. And then with some luck, as the uncertainty from the fiscal cliff dissipates, or at least as the worst case outcomes are taken off the table, the underlying positives—again, that many people have mentioned in housing and autos, in credit availability, and in the balance sheets of nonfinancial firms—begin to assert themselves. Businesses get up off the sidelines and step up a bit on hiring and investment spending. So even with the remaining fiscal drag in late 2013 and going into 2014, I would expect economic growth to move up into something like the 3 percent range, which would start to make a dent in unemployment.

But really the only point I'd like to make here is that this scenario, even if it's the most likely case, is not the one that I think is the most relevant for us in terms of thinking about the policy choices that we're actually facing at the moment. I think the scenario we need to be visualizing and wrestling with, and it's one that strikes me as only a little bit less likely, is the *Groundhog Day* scenario. It's where we wake up six months from now, and we wake up again a year from now, and in each case, unemployment is not 7.5 percent and we're not really seeing any clear signs of progress. Rather it is still in the 7.8 percent to 8.2 percent neighborhood, and, as best as we can tell, six months from now and a year from now, the forecast six months further out looks like it's more of the same.

Moreover, in the scenario I have in mind, it's not due to any obvious terrible shocks that we can point to, but just due to some muddled mix of small disappointments. And as Governor Yellen suggested, these kinds of disappointments would be just enough to make inferences about efficacy kind of tricky. There's this little bit of background noise, and we haven't really learned that much about efficacy from the data over the last few years. So it would be a lot to expect that we would learn much more about it in the next 12 months. What would those disappointments be? Perhaps, following on the somewhat disappointing news about consumer sentiment we saw in Friday's release, there will be some lingering pessimism. Even if there's somewhat of a resolution of the fiscal cliff, people will feel incompletely satisfied by that. Or as I think both President Williams and Vice Chairman Dudley alluded to, you could imagine that even with a reasonable resolution, there's going to be some fiscal drag, and maybe the fiscal multipliers associated with that are going to be a little bit higher than we anticipated, or Europe will be a little bit weaker, or something along those lines.

Again, the situation I have in mind is one where it's the end of 2013, and we can't really argue by any reasonable metric that there has been meaningful progress in the labor market outlook, much less the actual state of the labor market. And to the extent that the Tealbook is calling for 7.8 percent as the modal outcome at that point, I think that the scenario I'm sketching is maybe a fraction of a standard deviation on the pessimistic side. So as I said, I think this case is the one we really need to be wrestling with, and at some level, the whole framing of our open-ended asset purchase strategy, to me, hangs on two questions: What do we want to be doing a year from now, if we are in this scenario? And, second, once we figure that out, how do we solve backward from that point and explain it to markets in a coherent and time-consistent fashion? I hope that we'll spend some time on that tomorrow. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Powell.

MR. POWELL. Thank you, Mr. Chairman. My medium-term forecast has not changed a great deal since the last SEP. Like others, I continue to believe that our economy will have a run of above-potential growth that will bring us nearer to full employment and full output. In fact, I thought Vice Chairman Dudley did a great job of giving the case for optimism in the medium term. However, I am increasingly doubtful that this improvement is going to occur during 2013. I suspect that for most of 2013, we will remain in the world of 2 percent economic growth and 2 percent inflation, maybe even a little bit lower in both cases, with modest progress, therefore, on reducing unemployment. Now, when I realized that that put me outside the central tendency in the SEP, I resisted the temptation to change my answer and decided to defend it. I think I'm higher only than President Lacker, and my thinking starts, but does not end, with the fiscal negotiations.

There is every reason to think—and here I'm going to flirt with Bill Dudley's challenge to make a prediction and then ultimately disappoint you—that these negotiations will be as messy as the summer of 2011 debt ceiling standoff. The 2011 situation was really a war of choice: It was about the debt ceiling and, to some extent, about discretionary spending. It wasn't about entitlement spending in a serious way. It was, all in all, kind of a self-inflicted wound, and sort of beside the point. The current exercise is a war of necessity. The expiration of the tax and spending provisions makes it unavoidable, and this time a whole lot more is at stake. As others have said, I think the most likely path will be some kind of a short-term agreement to raise taxes, keep the government open, raise the debt ceiling, and then set in place a legislative process to take place throughout 2013 to reform the tax code and control future entitlement spending. The House majority has made clear that it intends to use the debt ceiling

as a leverage point again. All in all, it could be as much as a full year—and I suppose even more—of very messy negotiations, and that will mean further blows to consumer and business confidence, a global risk-off environment, and a strong dollar. In fact, I actually think that we should both expect and welcome this outcome; the last thing we need is a quick kick of the can down the road. This stuff is very hard and very important, and if it's not painful and messy, that's probably a bad sign.

I think we're already seeing aspects of this narrative. The consumer has been the bearer of our hopes these last few months, and some parts of the consumer story are still intact, particularly around houses and cars, but spending has been weak, as others have pointed out. And then last Friday the Michigan survey showed a really precipitous, broad-based drop in expectations for business conditions one and five years out, for personal financial expectations, and for employment. These are still high confidence levels compared with 2008 and 2009, but the delta, or the change, is remarkable. I know it's only one month, and I wouldn't take too much signal, but at a minimum it's a serious downside risk. And, of course, the interesting question is, what brought this change on? Developments in the real economy do not explain the change. It has to be the fiscal negotiations, but they've only begun. If this blow to confidence is coming in the second week of December, it could be a long year. Although as Governor Tarullo indicated, it may be less about the beginning of negotiations and more about the realization of higher taxes coming, in which case most of the blow could be now. But there are other signs of weakness: I would point to corporate profits, which have been down; guidance has been down across the board; capital spending is down and weak. My industrial contacts report nothing but weakness and significant layoffs in the coming months.

The bottom line is that I don't see a lot of momentum going into 2013. I don't see a 2½ percent growth year without fiscal headwinds, and I certainly don't see it with fiscal headwinds, notwithstanding what I would characterize as my medium-term optimism. I know there's hope for progress in the second half, but I really do think that a successful outcome in the fiscal negotiations is far more important than getting back on track quickly in 2013. And for now, that seems unlikely anyway. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE.⁶ Thank you for that cheerful wrap-up. [Laughter] Thank you all for very constructive and useful comments. As usual, I'd like to give a brief summary of what I heard, and then I'd like to make some comments of my own. I will, by the way, be using a one-page handout, which I think is being distributed; I'll come to that in just a moment.

With respect to the summary, on the whole, for most participants the outlook didn't appear to have changed that much since the last meeting. A gradual recovery appears to be continuing, although near-term activity is likely to be soft, and Hurricane Sandy had a number of severe short-term effects. Importantly, though, the continued improvement is very much contingent on avoiding the fiscal cliff and achieving a resolution of the debt-limit debate. These factors create downside risks to economic growth, according to most participants. Indeed, according to one participant, this conflict could continue for quite a while.

In the household sector, on the positive side, housing indicators are improving notably, with house prices rising. This improvement is a plus for consumer confidence and for consumer spending power. The fear of shadow inventory and its effect on prices is overblown. Moreover, autos and other durable spending are relatively strong. Households have also done a good bit of deleveraging, with debt at 2004 levels and wealth continuing to rise. On the more negative side, many households do still face tight credit. The uptrend in consumer confidence has been hit

⁶ The materials used by Chairman Bernanke are appended to this transcript (appendix 6).

recently by concerns about the fiscal cliff, which now means that consumers are in alignment with businesses in being more pessimistic. And real disposable income has been quite weak, in part due to weak wage growth, constraining consumption in some, but not all, Districts. The end of the payroll tax cut and of UI benefits as well as possible tax increases in 2013 will presumably worsen the disposable income situation.

In the labor market, Friday's labor market report was better than expected, but conditions in the job market remain generally sluggish. The loss of UI benefits may be one reason for lower unemployment, as people are leaving the labor force. Hiring is still weak, as shown by the JOLTS data, and there is still some evidence of a shift in the Beveridge curve. The extent of the decline in unemployment is somewhat surprising, given the relatively slow growth in GDP, although it may have resulted in part from a one-time reversal of the rapid layoffs in 2008 and 2009.

In the business sector, businesses continued to see heightened uncertainty, which leads them to reduce investment and rely on part-time workers. You can also see this attitude in the NFIB survey, which shows that small businesses have also become less confident. Uncertainty shocks are like aggregate demand shocks, depressing economic growth and inflation. Of the sources of uncertainty, as noted, the fiscal cliff is perhaps the most important. In addition, on the fiscal side, with rates close to zero, multipliers may be higher than normal, which may be part of the reason for the angst. Regulatory uncertainties were often cited by participants as well. That said, a few participants reported that their interlocutors were being more optimistic and had a willingness to look through fiscal uncertainties. The resolution of fiscal uncertainty could unleash pent-up demand on the part of businesses and, possibly, households. Business balance

sheets are in good shape, and profit margins are wide, although near-term profit guidance is a little bit weaker.

At the sectoral level, farm incomes are high, notwithstanding the drought. Manufacturing is weaker, perhaps because of a global slowdown. Transportation is strong, suggesting that holiday sales will be good, and the energy industry is poised to be of a long-term benefit to the U.S. economy. Globally, Europe has been relatively calm lately, which is helpful. But Japan is back in recession, and anecdotes about China were mixed.

In the financial sector, bankers are seeing weak loan demand and tough competition for high-quality borrowers. However, banks are financially stronger, and credit conditions may be easing, notwithstanding tougher regulations. Some contacts expressed worries about low interest rates, one of those worries being increased contributions to defined benefit pensions. And there is also a concern about a possible rapid rise in interest rates at some point, when the FOMC exits its easy policy. Exchange rates represent a potentially important channel of LSAP-based policies, but assessing the efficacy and cost of asset purchases, particularly through their financial market effects, remains difficult.

Finally, regarding inflation, inflation remains relatively tame, likely running at or below the Committee's target over the medium term. Trimmed mean inflation is 1.7 percent over the past 12 months; median inflation was also quite tame. There are labor shortages in a few sectors and a lack of qualified workers in some cases, but there is little evidence of wage pressures, broadly speaking. This could be because structural issues are secular rather than cyclical. The four-quarter change in the ECI is around 2 percent, and unit labor costs have fallen. Businesses have limited ability to pass on cost increases, and, so far, inflation expectations have remained anchored. Arguably, an optimal monetary policy would take inflation above 2 percent in the

medium term. That said, forecast errors are likely to be large, making policy calibration difficult, and inflation expectations are not well understood and could rise if the exit is not well managed. Have I misrepresented anyone? [No response] Okay, good.

All right. What I'd like to do with my time here is to try to set up a bit of a framework to talk about our policy choices that we will be discussing in more depth tomorrow. I hope that if I talk a little about how I see those issues and how I plan to communicate about them, assuming we go in that direction, it might sharpen the discussion tomorrow and help make it more productive. One very basic point is that we are well past the point where we are going to use Taylor rules and other simple-minded policy guides. This is a cost–benefit analysis that we have to continually reexamine, and I am actually going to do a little bit of math here, just to keep my hand in. But it is going to be useful in my discussion.

Let me just take a minute—everyone have the handout?—to talk about the cost–benefit framework and what it says about any expansionary policy. So I contemplate benefits, B , and costs, C . Benefits depend on macro outcomes—employment and inflation—which indirectly depend on the amount of stimulus. And I am using x to stand for the size of the balance sheet, so that is my proxy for the amount of stimulus. Costs are a function of the size of the balance sheet. For the marginal benefit, I will assume throughout that we are in a region where the marginal benefit is positive—more stimulus, all else equal, is helpful. But the marginal benefit is declining as we increase stimulus, so B'' is negative. Costs are increasing in the size of the balance sheet, and marginal costs are increasing. So as we move further and further into uncharted territory, the marginal cost, as best we can estimate, is increasing. In other words, the drawbacks are increasing. I will assume that employment, E , which I will take as a proxy for aggregate demand, depends on the balance sheet, which is x , and the efficacy of the balance

sheet policy, which is e . So e times x is basically the effect of our policy, plus g , which—you can think of it as government spending or whatever—is the set of exogenous factors that affect employment. I am suppressing the federal funds rate here, because we are thinking about a period of time where it will be close to zero.

Now, the presumption is that we will learn more about benefit, costs, efficacy, and other factors as x increases, as time passes, but I am not going to assume that we ever have complete information about either benefits or costs. Optimality just says—the next line—that marginal benefits equal marginal cost, and that is what defines x^* , the optimal size of the balance sheet. And the optimal employment level depends on x^* . A key point I want to make here, which I'm going to come back to, is that as we talk about the triggers for modifying or ending our asset purchase program, we don't want to set a fixed number. We want that number to depend on the benefits and costs as they evolve over time, and I will talk a little bit more about how we can do that going forward. Now, I implicitly differentiated the first-order condition there, and there's at least a 50 percent chance I got it right. [Laughter]

MR. KOCHERLAKOTA. Up to a sign error.

CHAIRMAN BERNANKE. Up to a sign error, yes. Those equations say—and I will come back to the interpretation—basically that an increase in exogenous conditions that are favorable to employment means we can do less. So dx/dg is negative; dx/de —that is, changes in the perceived efficacy—turns out to have ambiguous effects on how much we do, because there is sort of a substitution in income effects, and I will come back to that as well.

All right. So what I'm going to do now is two things. The first thing I want to do is just make a number of general points about the case for moving from here: What are the benefits and costs as we assess them at the current point in time? And I just want to make a few observations

about a number of the things that have already been discussed, but I hope to introduce some novelty into that. And I am going to argue, basically, that at this point in time further accommodation is likely to be warranted. But then, in the second part of my remarks, I want to talk about the exit and how we can begin to communicate—and I plan to communicate to the public and to the markets—in a way that will allow us to deal with different cases. In particular, it will allow us to avoid what I consider to be the trap of having a fixed objective for unemployment that would, in the *Groundhog Day* scenario that Governor Stein was talking about, force us essentially to keep buying forever for no purpose, which certainly we don't want to do.

So let me just talk briefly about benefits and costs as I see them currently and make a few observations. Again just looking at the benefits side—holding constant or ignoring for the moment the costs of the policy—there is a clear case that more accommodation is needed. We have expectations of high unemployment and inflation below target for many years into the future. Admittedly, the forecasts are uncertain, but they are our current best guesses of where the economy is going. I think that the forecast makes a clear case that we could improve on both sides of our mandate by providing more accommodation. That's a point we have discussed quite a bit here, and I would just reiterate it—and, again, that's the right way to look at it, not in terms of Taylor rules, for example. I would add a few comments about that. First, while it is true that unemployment has come down quite a bit, I think that the unemployment rate probably understates how weak labor markets are. The way I think about that is, suppose I told you the unemployment rate was 7.7 percent and asked you to guess, based on history, what part-time employment is, what labor force participation is, what wage growth is, et cetera. I think you would give stronger numbers than are actually the case. That is, conditional on the

unemployment rate that we're seeing, many other indicators of the labor market are probably weaker than you would expect. That is something that can be examined, of course, in more detail, and I don't claim to have done that. On the inflation side, we expect it to be stable. While the staff expects inflation to stay around 1.6 to 1.7 percent, I'd just note that the pattern of core inflation has been toward deceleration. That is, the three-month core inflation rate is 0.9 percent at an annual rate, and the six-month rate is 1.2 percent. So, if anything, there is some deceleration. Interestingly, a lot of that is coming from services ex energy and shelter, which is about half of the index, and which is supposedly a high-inertia part of the index. It has declined from a 2 percent rate over the last 12 months to a 1 percent rate over the last three months. So that's the case for more accommodation.

Then, number 2 under "Benefits": "Efficacy Assessment." It doesn't matter if we need more accommodation, if we don't have the tools to do it. Just a few comments. First, the memo that the staff offered on MBS purchases noted that MBS yields and mortgage rates have come down quite a bit since September. There are other channels as well, such as the exchange rate, which was mentioned earlier. So I think that the evidence suggests that we still have the ability to affect financial conditions. The question arises—and it was raised, I think, by President Pianaalto—whether these effects are weaker now than they were in 2009. And perhaps they are, because financial markets were more disrupted at that time. But there are some factors working in the other direction. In particular, to the extent that credit availability is improving, for example, and to the extent that higher house prices make mortgage credit more available, monetary policy might become more effective. Lower interest rates may be transmitted more broadly. As Governor Duke described, higher house prices create more home equity and more spending power. So I think there are some arguments in the other direction for efficacy. Finally,

just one other comment—I would note that the program being proposed has the same duration as the MEP, about a nine-year average duration of purchased securities. That is about double what QE1 and QE2 had, and if you believe in the duration theory of efficacy, that is an argument.

Let me talk a little bit about the costs as I see them at this point, again, just trying to make a few points that may not have been emphasized up to this point. Market function is something we have talked about; I won't say much about that. I think the staff work over the last few meetings has really reduced our concerns there. We are not seeing any signs of market dysfunction. The size of the Treasury market obviously is protection against that issue. And unlike some of the other costs, market dysfunction is something we can see pretty much in real time. And if we see it, of course, we can respond to it. So let me not spend much time on that.

On the fiscal issue, I very much appreciated the presentation that was made this morning on the effects of interest rate changes and so on, on our balance sheet. But I think that looking at the number of years without remittances or looking at the size of the deferred asset really intuitively overstates the economic significance of those effects. For example, according to this memo, in terms of the expected remittances in the baseline over the 14-year period between 2012 and 2025, the \$1 trillion in additional purchases is a money loser because we are assuming a negative NPV on Treasury purchases now because we are assuming that Treasury term premiums will go up. But that being said, the difference between no additional purchases and the \$1 trillion in additional purchases in terms of actual remittances is an average of \$7 billion per year, and you can compare that with the last four years, where we have remitted \$280 billion to the Treasury. These are not large numbers in terms of actual flow rates of remittances. For the 100 basis point shock, the difference between the two cases—the no purchases and the \$1 trillion in purchases—rises to \$13 billion per year. But, still, the averages are well above

historical rates, and we are still remitting at a rate that is quite defensible. I also think, of course, the important point was made—and I won't rehash it—that even in the most adverse cases, including the alternative scenario in which the 10-year yield rises close to 7 percent, the federal debt-to-GDP ratio falls. So, from an actual economic point of view, I think that it is very hard to make the case that this deal is bad for the taxpayer.

Now, admittedly, there are serious communications issues, and I appreciate that point being raised earlier. On that issue, I would just make a couple of comments. One is that, from the point of view of communications, I think we can point out that we have already made \$280 billion in remittances. And any kind of long-term average of our remittances will be quite favorable historically. We also have some ability to affect the pattern of remittances, and, indeed, as was pointed out, by not selling securities, we can avoid long periods of no remittances. All that said, I think that it is a good idea to think about communication. In particular, we might even be able to do something like find a way to smooth the remittances a bit more to avoid both the peaks and the troughs. And there may be ways to do that, which we could manage; I think it's certainly worth thinking about that. But from a fiscal point of view, I find it very difficult to see this problem as a major one, as long as you believe that there is still going to be some benefit for the broader economy. A final observation is that I think we are actually kind of hedged on this issue in the following sense: The scenarios in which interest rates rise and we have capital losses are also most likely the scenarios in which the economy is doing better and, therefore, interest rates are rising. And from a political communications point of view, it is going to be a lot easier to say, "Well, maybe we didn't pay remittances last year, but the economy is doing much better, and our policy has contributed to that."

Let me turn to exit. What I mean by “exit” here is just balance sheet normalization ultimately, which clearly is a legitimate concern. On the issue that President Pinalto and Governor Yellen raised, which is that we might face a situation where interest rates rise sharply at the point of exit—again, certainly a legitimate concern—let me just make a couple of points that might be helpful. First, according to all our plans, we don’t anticipate beginning to tighten at a time, or to sell at a time, when interest rates are as low as they are now. If you look at the Tealbook’s baseline, or if you look at the Blue Chip forecast, as the period of tightening comes closer in time, you would expect to see 10-year yields rising—the baseline here assumes that the term premium is also rising over time. So at the time that we begin to sell or begin to show signs of tightening, a lot of the adjustment will have already taken place, and that reduces the risk somewhat. Second, as Governor Yellen pointed out, communication can certainly help here. In 1994, the problem was that nobody had any idea what the future path of the federal funds rate was going to be after the initial increase. Here we are telling the public presumably under what conditions or on what date rates will start to rise. That has certainly got to provide some comfort that rates are not going to rise more quickly than expected. And, third, just a point made before, which is that we actually don’t have to sell. If we are concerned about that, we can normalize the size of the balance sheet, although not the composition, in about the same amount of time, taking advantage of the fact that we hold lots of Treasury securities and MBS in the five- to six-year expected maturity range, and that they will just roll off without any action on our part. So, again, I think this issue is one of the more serious ones; I don’t want to in any way say it is not a serious issue. But I do think there are some things to take into consideration as we think about that risk. I would like to make one more observation, which is just for your information, that the staff has done some work on reserve requirements. Apparently, the Federal Reserve Act gives

the FOMC the ability to levy emergency reserve requirements at any rate against any liability. So I mention this ability because—should we come to that—it is, potentially, yet another tool that we could use to manage the exit. It is not one I would recommend as a first resort, but it is, in fact, a possibility.

The fourth cost is financial stability, which I think is the most difficult. We had some very good discussion of that. I think we have greatly upgraded our ability to monitor financial stability issues. But that being said, and I am sure Governor Stein will agree, financial instabilities are not necessarily easily observable in real time. You could have something being built up that you don't see until it breaks. So I do think that this potential cost is perhaps the most significant. Again, just a few quick comments. One is that, as Governor Stein has pointed out in speeches, some aspects of LSAPs actually increase financial stability, for example, by increasing liquidity of financial institutions and improving the balance sheets of nonfinancial firms. Some of the financial stability concerns are more about low interest rates, which are a global phenomenon and not about LSAPs per se. I think it is very important that when we hear anecdotes about froth or about easier covenants on bonds, we investigate the quantitative implications of them: Who is at risk? How big are the numbers? Are financial institutions particularly at risk? What are the systemic linkages? I think who bears losses and who is at risk makes a very big difference. It is a very striking fact that the tech bubble collapse destroyed more wealth than the decline in house prices, yet the implications for the economy were much less because it didn't have the same financial implications. I would also note that currently international capital flows, which have come up in terms of stability, have not been an issue this time. And what I think the evidence shows is that when those economies are growing slowly, there is no interest in investing in them, even if the Federal Reserve is doing LSAPs. So I am

glad you're bearing with me; it is not too late, I hope. What I wanted do in the first half of my remarks was just offer some thoughts on the case for further action.

Let me turn now to, I think, the more subtle question, which is the one that Governor Stein alluded to, of how do we talk about the exit? And, again, what I want to be very clear about is that we certainly do not want to put out a number or imply a number or let the markets see a number that is the unconditional level of employment or unemployment at which we will stop purchasing. Instead, we have to do something more subtle. What we need to do, of course, is not only talk about implications of our policy for the outlook for the labor market, but we also have to talk about the ongoing evaluation of efficacy and costs. In my press conference statement, which I shared with a few of you and talked with a number of you about, I have equal time on those two issues: the first being, again, the importance of trying to achieve a better outlook for the labor market; and the second being that the Committee is going to continue to evaluate efficacy and costs as we go forward.

Given that and given the framework that I laid out here, let me just talk about three cases that we might encounter as we go forward, assuming we undertake LSAPs. Case 1 on the handout, "Seeing Progress," is the easiest case. If the fiscal cliff is resolved and if European risks do not materialize, like others, I think there is a good bit of upside here, as the Vice Chairman mentioned. We are seeing firms have a lot of pent-up demand for capital expansion, and perhaps for hiring; consumers are feeling better; and the housing sector is strengthening. All of these things suggest the potential for a stronger outcome if we can avoid some of the hazards that people have talked about. In that case, one that I think is fairly plausible, we don't really have a serious problem. That is the case we hope to have, of course.

As we try to assess why we are seeing the progress, what the math says, first, is it because efficacy is higher than we thought? There is kind of an income effect and a substitution effect. In other words, on the one hand, we feel richer, in some sense, because we were more efficacious—and that would make us do less. But on the other hand, because the return to more action is higher, there is a substitution effect—so those two go in different directions. I would treat them as more or less canceling out. So if you assume that x^* , the amount of asset purchases, is unaffected in this case, what you actually get, looking at the equation for employment, $ex + g$, for a given g , is a higher employment number. So we can be very aggressive on employment and get good outcomes, but we don't have to do more on asset purchases. Likewise, if the reason that we are getting good outcomes is not efficacy but, rather, just because good things are happening in the economy—positive fiscal outcomes, et cetera—what the math says is that you can actually do less in that case, because dx/dg is negative. But even so, what you achieve in terms of employment is going to be higher than you initially thought because you are only partially offsetting the impact of the other factors with less asset purchases. So that is the case where things are positive, either because our policy works well or because other factors are positive. In that case, we can be relatively ambitious about our labor market outcomes, and, in doing so, we don't have to increase our purchases. In fact, we could decrease them a little bit in some circumstances.

A second case, which is the *Groundhog Day* case that Governor Stein mentioned, is the one in which we wake up in six months, we wake up in a year, and we see no progress and no obvious explanation for it, other than maybe a lot of small factors or maybe because the policy isn't working well. I think what we have to do in that case if there is no progress in a year—again, in the context of efficacy and costs—is, first, to presume that efficacy must be low; we

don't know for sure, but that would certainly be my presumption. Second, if the balance sheet is so much bigger, and C'' is positive, the marginal cost of the balance sheet is rising and costs certainly must be higher. So if we are talking about efficacy and costs, then that is the bad case, but I think we can set the predicate for saying we are not going to buy forever; we are going to wind down and try something else, maybe, but not keep beating a dead horse, so to speak.

The third case, I think, is also interesting. A concern I have heard from folks is that, well, suppose the fiscal cliff goes badly—and Governor Powell suggested that. In that case the outcomes next year might be very poor; the labor market might not improve. Are we forced to keep purchasing and purchasing to try to offset that? What the cost–benefit analysis says, basically, is that— dx/dg is less than zero, remember—if g is really bad, you would do more. But it is also the case that you wouldn't do enough to completely offset that. So what I would say, for example, in a press conference would be, “The fiscal situation has been a major headwind. I have said before that monetary policy cannot fully offset that kind of situation. We are going to try to contribute, try to be helpful, but, again, we cannot fully offset that.” And that would imply that, in that case, our objectives in terms of employment would be lower. And that's what the cost-benefit analysis tells you. Now, you might argue that we don't know for sure whether the factor at work is something exogenous or just a lack of efficacy. But in either case, obviously, you are going to be less ambitious in terms of what you are trying to achieve.

So thank you for bearing with me on this topic. I hope that it was helpful. What I'm trying to argue, basically, is two things: First, I think that there is a lot of subtlety to evaluating the benefits and costs of this program going forward. I tried to make some arguments that add some insight to that. Second, we should not think of this program as having a fixed target in terms of employment or unemployment. Rather, if we focus adequately on ongoing evaluation

of efficacy and costs, we will then be able to adjust what we can achieve and what we have to do in a sensible way, according to how things evolve. And that gives me a good bit more comfort about this kind of program. Let me just also say, and I'll stop here, that I think that we need to take very seriously, internally, the review of efficacy and costs. Assuming we go ahead with this program, I would propose now that we put a separate item on the agenda in both March and June that essentially would be a review of the efficacy and costs of the program. We would try to do our best to see where we are and, based on that, make adjustments if needed. As President Bullard has pointed out a number of times, one of the advantages of a flow-rate policy is that you can, in fact, adjust it if the outlook changes or other conditions change.

Again, thank you for bearing with me. Let's see; it's still kind of early. If folks are okay, let me ask Bill English to give the introduction to the policy go-round. Then we'll go have dinner, and tomorrow we will have our policy discussion. Bill.

MR. ENGLISH.⁷ Thank you, Mr. Chairman. I will be referring to the handout that was distributed during the coffee break, labeled "Material for FOMC Briefing on Monetary Policy Alternatives." As I did at the October meeting, I'd like to start off by taking a longer-term perspective, before turning to the specifics of the current meeting's policy statement.

In the exhibit on page 1, the top-left panel provides an update on primary dealers' expectations about when the Committee's asset purchases will end and what the unemployment rate will be at that time. Please bear in mind that the dealer forecasts, as well as the Tealbook balance sheet projections, were put together before Friday's employment report and so do not incorporate that additional information. In the chart, each dealer is indicated by a black dot, and, as you can see, all of them expect purchases to continue for a while. In fact, the median of their expected stopping dates is the first quarter of 2014, and the median expected level of the unemployment rate when purchases stop is a little over 7¼ percent. However, those medians cover a very wide range of views both about the stopping date and the unemployment rate at that time, and, as Simon noted earlier, the dealers put some probability on a very wide range of total purchase amounts. The three red dots in the upper-left panel represent the balance sheet projections under the Tealbook policy alternatives: Under alternative C, purchases of longer-term securities stop at the end of this year; under B,

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

they stop in the middle of next year; and under A, they slow over the second half of next year before stopping at year-end.

The upper-right panel shows total SOMA securities holdings under the staff's balance sheet projections and under the median forecast from the dealer survey. The median dealer forecast (the solid teal line) shows virtually the same trajectory for the portfolio as assumed under alternative A (the dashed red line), notwithstanding the slightly longer period over which the median dealer sees purchases tapering off—into the first quarter of 2014, rather than stopping at year-end, as assumed in alternative A.

The bottom-left panel summarizes information from the SEP on your judgments regarding the appropriate path for asset purchases. Taking account of a late-breaking change in one of your contributions, 8 of you have indicated that your balance sheet projections did not differ materially from the staff's baseline assumption. The other 11 of you were split into 7 who judged that appropriate policy implied a larger volume of purchases than the staff assumed and 4 who judged that purchases should be smaller. So, on balance, your SEP judgments appear to be closer to those in the staff forecast than to the dealer survey responses.

The bottom-right panel offers some thoughts on the discrepancy between market and Committee views of the path of purchases. As noted there, the difference probably cannot be attributed to the dealers having a weaker outlook for the economy; indeed their unemployment forecasts were generally more optimistic than the Tealbook's. Instead, the dealers' larger purchase totals could reflect their belief that the Committee will follow a more-aggressive stopping rule than you yourselves appear to think. Alternatively, the dealers may be more confident than some of you are that concerns about the efficacy and costs of the purchases will not warrant ending the program earlier than would otherwise have been the case. All that said, it's important to remember that the dealers are highly uncertain about the ultimate level of purchases, and they may adjust their expectations relatively flexibly in response to incoming information.

The exhibit on page 2 depicts staff simulations based on the monetary policies envisioned under the three alternatives, including both asset purchases and the path for the federal funds rate. The black solid lines show the results for alternative B, under which the unemployment rate (in the middle panel) falls to about 6½ percent by the end of 2015, with inflation (shown in the lower panel) running somewhat below your 2 percent longer-run objective. The red dotted lines show the results of the more-accommodative balance sheet policy and forward guidance assumed under alternative A. In this case, the unemployment rate falls somewhat faster and inflation runs a little higher than under alternative B. The blue dotted lines show the results of the less-accommodative policy of alternative C; the unemployment rate at the end of 2015 is appreciably higher under this policy, and the inflation rate is lower.

Turning to this meeting's policy decision, alternative B, on page 6, would continue purchases of longer-term securities at about the current pace after the maturity extension program ends. Although the unemployment rate has declined

recently, on balance, it remains elevated, and gains in payrolls have been moderate of late. And while the housing sector has shown further signs of improvement, business fixed investment has slowed. You might therefore feel that the outlook for the labor market has not yet improved “substantially” and that the economy continues to require the support provided by ongoing asset purchases.

The first paragraph of alternative B has been adjusted, since the Tealbook version, to take account of Friday’s employment data. It now refers to the continued moderate pace of employment gains and the decline in the unemployment rate, but it still indicates that the rate remains elevated. More generally, the changes here include the addition of a phrase about the recent “weather-related disruptions” and deletion of the reference to the “depressed level” of the housing sector. The reference in October’s statement to a pickup in inflation has been replaced by an assessment that inflation “has been running somewhat below the Committee’s longer-run objective, apart from temporary variations that largely reflect fluctuations in energy prices.”

In the third paragraph of alternative B, the Committee announces both that it will continue purchasing MBS and that it will purchase longer-term Treasury securities “initially at a pace of \$45 billion per month.” The word “initially” has been included to signal a high degree of flexibility regarding the pace of purchases going forward. The fourth paragraph of alternative B is essentially unchanged.

Alternative B then offers two versions of paragraph 5. The first of these includes threshold-based forward guidance for the path of the federal funds rate. It states that the Committee “currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than ½ percentage point above the Committee’s 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.” These thresholds appear broadly consistent with your SEP projections for unemployment and inflation in the year of liftoff, as Jen described earlier. Policymakers may find this approach attractive because it could promote a more-automatic adjustment of asset prices to changes in the outlook. To clarify the continuity of policy, the statement includes a sentence noting that the Committee sees the thresholds as consistent with its earlier date-based guidance. It also indicates that the Committee will continue to take a balanced approach toward meeting its objectives after a threshold is crossed. To underline the distinction between thresholds and the Committee’s statutory objectives, one variant of the final sentence refers to the Committee’s “longer-run goals of maximum employment and inflation of 2 percent.” But if you see this distinction as likely to be well understood, you may prefer to refer to “maintaining satisfactory progress toward maximum employment in a context of price stability.” Alternatively, some policymakers, while agreeing with the overall settings of policy associated with alternative B, may prefer to retain the date-based guidance for now, as in paragraph 5’.

Market participants appear to expect the Committee to continue asset purchases along the lines of alternative B. However, while the dealer survey indicated that

adoption of numerical thresholds is likely at some stage, respondents did not think it would happen at this meeting. Thus, the numerical thresholds in paragraph 5 would be somewhat unexpected. However, market reaction to the introduction of thresholds would likely be tempered by the indication in the statement that the Committee regards the thresholds as consistent with its earlier guidance. Overall, the response in financial markets to alternative B would likely be relatively small, although investors might see the use of “initially” in paragraph 3 as suggesting a greater readiness to trim purchases if the economy continues to improve, perhaps leading to some rise in longer-term interest rates.

The more-accommodative policy stance of alternative A, on page 4, might be favored by policymakers who regard the medium-term economic outlook as unlikely to yield satisfactory progress in reducing unemployment and expect that overall inflation is likely to remain below the Committee’s 2 percent objective. They may also see the fiscal situation and the euro-area crisis as likely to weigh on economic growth for some time. With core inflation running close to 1½ percent and significant downside risks to the economic outlook, some members may view the consequences of a new adverse shock to the economy in its current state as warranting an even more accommodative policy stance in order to balance the risks to the Committee’s employment and inflation goals.

The first paragraph of alternative A offers a somewhat more subdued assessment of the economic situation. Its second paragraph departs from that for alternative B in suggesting that “further” policy accommodation is required to attain sustained improvement in labor market conditions. Accordingly, in the third paragraph of alternative A, the Committee announces that it will step up purchases of both agency MBS and longer-term Treasury securities to \$50 billion per month, which raises overall purchases of longer-term securities to \$100 billion per month. This alternative doesn’t use the word “initially” when describing these amounts. The fourth paragraph indicates that purchases will continue until the Committee “judges that data on economic activity and labor market conditions are consistent with an outlook for sustained progress toward maximum employment in a context of price stability.” Finally, the fifth paragraph of alternative A offers thresholds-based forward guidance like that in alternative B, but with an unemployment rate threshold of 6 percent.

An announcement like alternative A that raised the pace of purchases would surprise market participants. Moreover, the 6 percent unemployment threshold would be below market expectations. In response, longer-term real interest rates likely would decline, although inflation compensation could increase; equity prices probably would rise; and the dollar depreciate.

Alternative C, on page 8, might appeal to policymakers who see the recent data as suggesting that, smoothing through the temporary effects of Hurricane Sandy, the economic recovery is on a sustainable course that is likely to engender ongoing improvements in the labor market. They may also see the downside risks to economic growth emanating from Europe as having eased further. Some participants

may be concerned that ongoing asset purchases at the current rate could lead to problems with the functioning of the Treasury and MBS markets that would be counterproductive, or that holding down the federal funds rate until mid-2015 could undermine financial stability over time. Moreover, some may be worried about the implications for exit of an even larger Federal Reserve balance sheet.

The first paragraph in alternative C offers a more upbeat characterization of economic developments, and the second paragraph states that the Committee expects unemployment will decline at a pace consistent with the Committee's mandate. The third paragraph announces that asset purchases will cease at the end of the year, and the fourth paragraph indicates a willingness to take further action as needed. There are two variants of the final paragraph: In the first, the Committee introduces qualitative thresholds, and the date reference is dropped; in the second, the forward guidance remains date-based, but the date is moved closer.

A statement like alternative C would be a significant surprise to market participants. Interest rates would likely increase sharply, and stock prices could decline appreciably.

Draft directives for each of the alternatives are presented on pages 11 through 13 of your handout. Thank you, Mr. Chairman; that completes my prepared remarks.

CHAIRMAN BERNANKE. Thank you. Questions for Bill? Vice Chairman.

VICE CHAIRMAN DUDLEY. I have two questions. One, why do you think the “initially” would be taken as one-sided rather than two-sided? I mean, in the context of the fiscal cliff being resolved in a good way or a bad way, you could imagine it being taken more symmetrically. I'm just not sure how the market would take it. And second, in the language that's in brackets in B, “it sees a substantial improvement in the outlook for the labor market, the asset purchase program ends”—where the additional conditions are put in—how do you think the market would interpret the motivation for putting that in? Normally when we change things, we change things for a reason. So I'm just curious what your thought is in terms of what people would draw from that.

MR. ENGLISH. On “initially,” I agree, it could be taken either way. I guess I thought it would be most likely seen as a way of softening the commitment, and, therefore, the direction

might be seen as more likely to be down than up. But I agree that, in part, it just kind of loosens things up and allows for more flexibility, which may be attractive to the Committee.

On the extra words in alternative B, paragraph 5, toward the end of the first sentence, the idea there was to spell out a little bit the timing of the purchases versus when the funds rate would be increased. Because there is a risk that there will be some confusion about the conditions for ending purchases versus the conditions for raising the federal funds rate, those extra words were intended to make it a bit clearer that the Committee will keep monetary policy accommodative for a considerable time after it stops purchasing. So it spells that out: “a considerable time after it sees a substantial improvement in the outlook for the labor market, the asset purchase program ends, and the economic recovery strengthens.” It’s just a way of putting some daylight between the guidance for the purchases and the guidance for the federal funds rate, which we thought some on the Committee might find useful.

VICE CHAIRMAN DUDLEY. So what inference would you think market participants would draw from that insertion—a longer period of time between asset purchases ending and interest rates rising?

MR. ENGLISH. Yes.

MR. ROSENGREN. They’re not both at 6½.

MR. POTTER. I think it will depend on where they are. If it’s the person who thinks we’re still going to be purchasing assets when we raise rates, it might lead them to change their mind. And you know, in the distribution we have some quite short gaps between the ends of asset purchases and raising rates. So this would seem to show some confidence that you would not be raising rates for maybe three or four quarters at least; is that right?

MR. ENGLISH. Something like that, yes.

CHAIRMAN BERNANKE. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. I have a comment and a question. My comment is that I think we could shorten the statement greatly by making more use of the Chairman's ex post optimality condition. [Laughter]

CHAIRMAN BERNANKE. Only if you check the math.

MR. KOCHERLAKOTA. My question is about the penultimate sentence of paragraph 5 in alternative B. This sentence says, "In determining how long to maintain a highly accommodative stance of monetary policy, the Committee will also consider," and so on. I didn't know, and I suspect other readers will be confused, too: Is that sentence intended to be describing the Committee's behavior after the thresholds are hit, or is it intended to describe the Committee's behavior potentially before the thresholds are hit?

MR. ENGLISH. I think it's potentially both. It's saying that rather than just looking at these two variables that we just talked about, unemployment and inflation, we'll be looking at a bunch of stuff and reacting to a bunch of stuff, and I think potentially that could cut either way.

MR. KOCHERLAKOTA. Okay. Thank you.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. Just one small point, although I'm confused by it: In paragraph 2, we talk about a medium-term 2 percent inflation objective; yet in paragraph 5, we talk about a longer-run goal of inflation of 2 percent. Is it longer run or medium run?

MR. ENGLISH. The sentence in paragraph 2 is saying, if you wanted to really spell it out, that inflation over the medium term is likely to run at or below the Committee's 2 percent longer-run objective for inflation. So it's using 2 percent, the longer-run objective, as a benchmark and saying that in the medium term, which is presumably sooner, you're expecting

the inflation rate to be at or below that 2 percent figure. So I think there actually is a distinction being made between a forecast over the medium run in paragraph 2 and the Committee's longer-run objective of 2 percent.

MR. FISHER. I raise that question because I worry that it could create some confusion. And then we talk about “no more than ½ percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.” What I worry about is that we're shifting a little bit here, and particularly when we introduce the ½ percentage point above the longer-term goal.

A lot of this, Mr. Chairman, it seems to me, depends on your press conference. You've already drafted that; it has been vetted. Some of us haven't had the privilege of seeing those drafts. I'm assuming—just to cut to the chase here—that it must be geared toward an alternative, and I would assume that it must be geared toward a variation of this alternative. And if we go down this path, we have to be very, very careful that it be well articulated. The statement itself isn't sufficient, even though we try, by adding these sentences that other people have mentioned. To me this whole thing depends on how you explain it at the press conference, and we got a very good insight into that by this exercise you put us through earlier.

CHAIRMAN BERNANKE. I can tell you what I say about it. I describe it, and then I say monetary policy, however, is not on autopilot. And I make three points: The first is that—I don't say it exactly this way—these are thresholds, not triggers; in other words, it is an “at least” condition, not an absolute trigger. Second, I say that as we consider unemployment in this condition, we'll want to comfort ourselves that the decline in unemployment is associated with higher payrolls, hours, et cetera, as opposed to a weakening of the labor market—withdrawal, participation declines, and so on. And then the third part is about the fact that we're looking at

the projection of inflation, which means that we'll have to make judgments about where inflation is likely to be, assuming we continue the low-rate policy. Moreover, I would add that in my general discussion of efficacy and cost, which is more directed toward the LSAPs than to the thresholds, I mention that financial developments are in the list here because one of those costs obviously is financial stability concerns. So I think I'm more explicit about what we'd be looking at and why there isn't a simple mechanical formula. That's the thinking.

MR. FISHER. Thank you.

CHAIRMAN BERNANKE. Certainly. President Bullard.

MR. BULLARD. I'm looking at the first figure on page 1 of the handout, the dealer survey versus alternative A, alternative B, and alternative C. Alternative B is sitting up here, and all the dots are down to the right and south. It's making me a little nervous that market expectations are a fair amount off from where we are as a Committee or what we're thinking of. Is that how you would interpret this graph, or are you not as concerned about that?

MR. ENGLISH. I think that's correct for what this graph shows, but there was a graph in Simon's briefing earlier today that looked at the average probability distribution of the dealers' assessments of where the balance sheet is going to come out in 2014 when the purchases are done. The distribution there is very wide, all the way from less than \$2.5 trillion to more than \$5 trillion, with a lot of weight on figures that would be consistent with either alternative B or alternative A. As I tried to say at the end of my discussion of this first exhibit, there's a lot of uncertainty in the market participants' minds about where the purchases are going to end up. The top of this exhibit shows their point forecast, but around that is a very wide confidence interval, and I think that means that they will be more likely to adjust what their expectations are in response to incoming information.

MR. POTTER. We haven't seen that yet because the outlook really hasn't changed that much. If the outlook improved a lot, similar to the handout, then if they didn't move their expectation back in, that would suggest they have a different view of what the reaction function is or the cost-benefits.

MR. ENGLISH. Right.

CHAIRMAN BERNANKE. Governor Tarullo.

MR. TARULLO. Bill's answers to some previous questions have answered my question, which has accordingly morphed into a comment, which accordingly belongs tomorrow.

[Laughter]

CHAIRMAN BERNANKE. I'll reread the transcript. Governor Powell.

MR. POWELL. I am following up on Jim's question. If the market were to read the first bullet point in the lower-left corner of page 1—"Eight of you indicated that your balance sheet projections did not differ materially from staff's"—what would that do to the mass of the dealer expectations distribution that Simon talked about?

MR. ENGLISH. I think they'd actually have to read all three of those bullet points. That eight of you were reasonably comfortable with what the staff was writing down; that's alternative B. Seven of you felt there should be more purchases than that, and four of you less. Given that, I think their distribution would move down.

MR. POTTER. They would also be very interested who the seven were as well.

MR. ENGLISH. Yes, of course.

MR. POWELL. Generally, though, it could move the distribution to the left.

MR. POTTER. If they saw that the unemployment rate forecasts that were associated with this alternative were a little bit higher, that would be confusing to them because, as Bill said, they have slightly lower unemployment rates than the forecast that we have.

CHAIRMAN BERNANKE. Do you recall what their unemployment rate for the fourth quarter of 2013 is?

MR. POTTER. I have it; let me see if I can find it.

CHAIRMAN BERNANKE. Okay. Well, while you're looking, President Bullard.

MR. ENGLISH. It would be about 7½ percent.

MR. BULLARD. So, Bill, it seems to me like one of the things that is happening is that we may give more guidance on the policy rates, but we're not giving a similar guidance on the balance sheet, or should I reread alternative B as somehow giving that kind of guidance? Because what we have in mind is: You're going to end one program, then you're going to continue for a while, and then you're going to end the other. What is it about our statement that's meant to give that sort of impression?

MR. ENGLISH. Sorry. Do you mean on the timing or on the size of the purchases?

MR. BULLARD. I mean, what I'm sensing around the table is we have in mind that something goes on for about nine months or a year on the balance sheet and goes on longer than that with the policy rate, but I'm not sure that's being conveyed out there to the market, and that's why we have this kind of a picture in the graph.

MR. ENGLISH. That sense of the relative timing of purchases versus the funds rate is conveyed qualitatively in the words at the very top of page 7 of the handout that Vice Chairman Dudley asked about a few minutes ago.

MR. BULLARD. "The asset purchase program ends," at that point?

MR. LACKER. Paragraph 4.

MR. ENGLISH. Yes.

CHAIRMAN BERNANKE. Did you find the number?

MR. POTTER. It's 7.5 percent. They moved down from 7.6 to 7.5 percent. So they're at the lower end of the central tendency.

CHAIRMAN BERNANKE. Thank you. Governor Duke.

MS. DUKE. Bill, will this information about what all the participants thought about the balance sheet or the size of the program be in the minutes in the discussion of the SEP?

MR. ENGLISH. Normally we have a paragraph in the SEP write-up that goes through the information from the SEP on balance sheet expectations, and something like this information, I think, would be there.

MS. DUKE. So that paragraph would include this information. Okay. Thanks.

MR. POTTER. It was in last time, and they didn't seem to notice an inconsistency.

MS. DUKE. Well, last time it only said that 11 people expected to start purchases. It didn't say anything about the size of the purchases.

MR. POTTER. That's right, but they should be able to do math and work out who those 11 could be.

MR. ENGLISH. But I actually do think—and I'd be interested if Simon agrees—that they'll notice this information when it's in the SEP write-up.

MR. POTTER. Yes, they didn't seem to notice last time.

CHAIRMAN BERNANKE. How are you going to describe the staff benchmark there?

MR. TARULLO. That was my question.

MR. ENGLISH. Only qualitatively.

MR. TARULLO. So seven people think it's going to be higher than some unspecified benchmark.

MS. DUKE. Or you could say seven people think it's going to be 750.

CHAIRMAN BERNANKE. President Rosengren.

MR. ROSENGREN. One of the challenges that President Bullard showed with that figure, I think, is partly the result of the Tealbook being more pessimistic on the unemployment rate than most of the rest of us. The central tendency is 7.4 to 7.7 percent for 2013, and the Tealbook is at 7.8 percent. So if you looked at the central tendency of the voters that are voting for this was, my guess is that that dot would be a good bit lower than the dot that you're showing right now. I can understand why the dealers are coming up with a different answer, which is that substantial improvement in labor markets doesn't look like something higher than where we are now. I think some of the inconsistency is tied to that paragraph 4, and the difference between the Tealbook and some of the rest of our forecasts that are shown in the economic projection. So they're not going to see those three dots for A, B, and C, but I do think that some of that disconnection is tied to the differences in both the forecast and people's reading of paragraph 4.

CHAIRMAN BERNANKE. Any other questions for Bill? We obviously will have plenty of time tomorrow morning to continue. Okay, we will adjourn.

MR. KOCHERLAKOTA. Mr. Chairman. I'm sorry.

CHAIRMAN BERNANKE. President Kocherlakota.

MR. KOCHERLAKOTA. I apologize. I came in late. Is it possible to make your handout available on SDS?

CHAIRMAN BERNANKE. Absolutely.

MR. KOCHERLAKOTA. Thanks.

CHAIRMAN BERNANKE. Okay. We'll reconvene tomorrow morning at 8:30. Obviously, if you have any changes in your SEP projections, please provide those as soon as possible. A reception is now available upstairs, followed by dinner. Thank you.

[Meeting recessed]

December 12 Session

CHAIRMAN BERNANKE. Good morning, everybody. We've had our opening presentation by Mr. English, and so we're ready to begin our policy go-round. Vice Chairman.

VICE CHAIRMAN DUDLEY. Normally I'm at the end; today I'm first. Nobody wanted the first slot, but by the time I usually get to the end we're talking about dotting i's and crossing t's, and I think there are actually much more substantial things to talk about than that. Let me just get some housekeeping out of the way in terms of language. I'll make two comments on language: First, I think "initially" in paragraph 3 is fine. I'm not sure how the market will react to that one way or the other, but it does signal greater flexibility on our part, and that's something worth signaling to the market. And, second, on paragraph 5, we have the bracketed language, "it sees a substantial improvement in the outlook for the labor market, the asset purchase program ends." I would not include that bracketed language—not because I object to it in any substantive way, but because I think it's going to confuse people about why we're adding it. What is special about this meeting relative to previous meetings? They are just going to be confused; they're going to try to figure out why we put this language in now when we didn't have it in before. I don't have a strong objection to it, but my preference would be to exclude that bracketed language.

Let me talk now about substance. The first issue I wanted to discuss is the question of what type of asset purchase, Treasury or agency MBS, has the most bang for buck, and I think the honest answer is that we don't really know the answer to this. If the margin on which market segmentation is the most powerful is the duration margin, then elongated Treasury purchases presumably would have the greatest effect because the duration on Treasuries is higher than the duration on agency MBS. But if the degree of segmentation is greatest across asset classes rather

than duration, then agency MBS purchases may rank higher. Also, segmentation is high in general. This also points toward agency MBS as potentially being more efficacious. After all, if markets were perfectly segmented, Treasury purchases would just push down Treasury yields. Everything else would remain unchanged. In contrast, if the agency MBS market were perfectly segmented, well, that wouldn't really be a particular problem. Instead, the stimulative channel would just be confined to the housing market through the mortgage rate. There's a great difference between being unclear about how much market segmentation there is and the margin by which it is. It creates some question about what is the best asset class. What to conclude from this? It seems to me that because we don't really know which the more powerful margin is, we should be somewhat agnostic. So conducting purchases in both markets may be sensible. It also might be sensible because it reduces the risk of disturbing market function. By splitting the purchases, we can do more without actually affecting market function. That lowers, in my mind, the potential cost of these purchase programs.

Now, I know there's some discomfort with proceeding with the Treasury purchase program at the size of \$45 billion per month, the same rate as the long-term Treasury purchases that we did under the maturity extension program. I know that some people feel that we've been inadvertently backed into a corner where if we don't do this, we'll somehow disappoint market expectations. My own view is that our decision has to rest not on market expectations, but on what course is the best one. And as I see it, \$45 billion per month is appropriate this time because it really follows logically from what we've said in our September and October statements. In those statements, we essentially said that we'd do whatever it takes to generate a more rapid improvement in labor market conditions consistent with our price stability goal. To dial back on that commitment now in the face of tremendous uncertainty about the outlook

would, to me, seem to be reneging on our commitment. Not only would this result in an undesirable near-term tightening in financial conditions, but I think it would also be damaging because it would be taken as a sign that we believe we're close to our limits in terms of our ability to generate additional monetary policy accommodation. After all, we've already demonstrated that we can purchase \$45 billion of long-term Treasuries a month without any negative impact on market function. If we were to go to a lower number at this time, how would we actually explain why we're going with a lower purchase rate? Dialing back on the purchases now because we might be uncomfortable with the size of our balance sheet at a future date strikes me as potentially a self-defeating strategy. In fact, a reduction in the monthly purchase rate might not lead to a lower terminal balance sheet size. The stronger our commitment now, the more likely we will succeed; we'll have a better likelihood of being able to dial back our purchases at a relatively early date. Dialing back today would hurt the economy in a way that might necessitate maintaining our purchases for a longer period with an ultimately higher resulting balance sheet.

Now, at the extremes, there're two broad sets of possibilities in the coming months. On the one hand, the fiscal cliff is resolved in a good way and the economy improves. As this happens, we would be able to dial down the pace of purchases relatively rapidly. In this scenario, reduction in the rate of purchases would be reassuring rather than alarming. The reduction would be taken as a sign that we are becoming more confident about the prospects for sustainable improvement in the labor market. That's a pretty simple scenario. On the other hand, if the fiscal cliff is resolved in a bad way and the economic recovery falters, then we have a problem. How far do we go with our purchase program? I don't know the answer to this, but the right approach might be to replace the Treasury portion of the purchase program with

something new later in 2013. I'm not sure exactly what this would be, but like many others I don't feel comfortable committing to an open-ended Treasury purchase program indefinitely, regardless of the costs and benefits; I think the efficacy and costs really do matter here. As I see it—and I'm very sympathetic with the Chairman's presentation yesterday afternoon—the program costs presumably rise with balance sheet size, and the program benefits presumably fall with balance sheet size. At some point these lines are likely to cross, and when that happens we're going to have to wrap up the program and then proceed with something else.

Another relevant issue in terms of our purchase program is whether we should be concerned about the apparent disparity between market expectations and our own expectations in terms of ultimate balance sheet size. The primary dealer survey indicates an expectation of about roughly another \$1 trillion expansion in our balance sheet, and this figure compares with the Tealbook forecast of \$500 billion ending around midyear. I personally don't think this disparity is big problem that we need to resolve at this time. First, I'm not sure that the difference is really quite that big. The Tealbook assumption is the Tealbook's assumption. If you look at how people responded in the SEP, there were more people greater than \$500 billion than less than \$500 billion, and I think if you actually translate that to voters it would even be more skewed to a somewhat larger number. I don't think the difference is quite as big as \$500 billion versus \$1 trillion. The second thing is that I think this uncertainty may be resolved just by incoming information. I don't think it's important that we eliminate this disparity today; it can be very easily managed going forward. In addition, there might be a low-cost way to manage expectations downward, especially if the economy cooperates. The Chairman in his press conference, for example, could make it clear that the Treasury portion of the program would likely be dialed down first as we became more confident about improvements in the labor market

outlook. So the program wouldn't be \$45 billion and then just stop at zero, but it might be tapered down as economic conditions and labor market conditions improve. And by communicating that, you actually would start to dial down expectations about the total size of the program.

As we've discussed, thresholds have two particular advantages over date guidance, and these are really the primary reasons why I think thresholds make sense. First, they're dynamic with respect to expectations. In response to data, market participants will adjust their expectations about the timing of when the thresholds will likely be reached, and that provides an automatic stabilizer function to the economy. Second, thresholds are better than date guidance because they remove us from the equation on a meeting-by-meeting basis. I don't think we'd want to change our threshold values very often, if at all. So that leaves the timing decision in terms of our exit to market participants rather than putting it on us on a meeting-to-meeting basis. I think that's important because it should enable a smoother exit when the time comes. In contrast, if we stick with the date guidance and then determine at some point that it is time to bring the date in, that's going to be a very big deal for market participants. At that time there would be a risk that the entire series of future tightening steps might be foreshortened, and market participants would bring back everything to the present. This might cause such a decision to have a very large, discrete effect on financial conditions and on expectations, a bigger effect than maybe we might feel comfortable generating. Confronted with that risk and the asymmetry of risk with a monetary policy operating at the zero bound, we could even be in a position where we felt pressured to delay our decision of bringing in the rate guidance, and of course, doing that would just make it a bigger deal when that day arrives. It's better to put it on the markets to solve when we're likely to exit, and I think the thresholds do that in a good way.

Now, arguing against thresholds: Thresholds are clearly not perfect. There are two difficulties. First, I think we all agree that having just two parameters is much too simplistic, and, second, there is the problem of agreeing on what the particular values for those parameters would be. But these problems seem less serious to me. The too-simplistic problem can be dealt with by a press conference and by speeches that make it clear that the thresholds are indicative and are not binding and determinative. In other words, if we were to get strong evidence that the thresholds weren't the right thresholds, then we would change the thresholds or we'd change our behavior. The second problem is one that I think we've already overcome. Going back to our previous conversations, while there was some disagreement about the efficacy of thresholds, when we got down to the detail of what thresholds we would pick, there appeared to be a bit of consensus around 6½ and 2½. So it seems as though that problem is less significant.

Some have argued that thresholds could be construed as a further easing of monetary policy, and some might think that that's not desirable at the current time. My own view is that if we move to thresholds, any effect on the perception of our policy in terms of it being more accommodative would be very tiny. After all, the statement is very explicit that the thresholds are consistent with our earlier date guidance. It's hard to imagine that people are going to view the thresholds as significantly more accommodation. I suppose at the margin you could argue that thresholds might be viewed as slightly more accommodative because they might be viewed as representing a somewhat stronger commitment: We obviously would be very likely to change the date in the future, but thresholds are going to be in some way more timeless. So I accept that there may be a very small change in expectations by moving to thresholds, but even if that were true, I don't see why that's necessarily a bad outcome. The perception of greater commitment

should make the policy more powerful, and, in current circumstances, that strikes me as a good thing, not a bad thing. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I have three comments on policy today: First, briefly some practical concerns; second, some balance sheet comments; and third, comments on thresholds. I'm going to follow the same formula as the Vice Chairman.

On the practical side, my preference is to stay the course today and not draw attention to monetary policy while fiscal policy is being sorted out. I do not think that the private sector really wants or expects major action by the Committee at this meeting. So the key question for the Committee is, what does stay-the-course policy look like, given the current policy configuration?

On the balance sheet, let me attempt to make the case for a go-slower approach to balance sheet expansion. First, I think that outright purchases are a more expansionary policy than the Twist program. I have argued that the Twist program has only minor effects on financial conditions, on balance, but that outright purchases tend to be more potent, especially with regard to inflation expectations and inflation itself. The QE2 program, for instance, dramatically stemmed and reversed the then-insipient deflationary threat during the fall of 2010 and the first half of 2011. Because the QE-style policy is more potent, it stands to reason that we do not need to replace the Twist program one for one with outright purchases if the goal is simply to maintain the aggressively easy policy that we already have. Accordingly, I suggest replacing the \$45 billion Treasury purchase number in alternative B with \$35 billion and ask the Chairman to simply communicate during the press conference that in the Committee's judgment this is the policy-neutral replacement of outright purchases for the Twist program. I would also

maintain it in Treasuries and not go to MBS. If the Committee wishes to maintain alternative B at \$45 billion, then we should claim credit for having taken an even easier policy. Many of the effects of our policy actions come through signaling and expectations effects, and if we are going to take an easing action, it is important not to disguise it as a mere replacement for a less-potent policy.

The go-slow, \$35 billion approach has a great advantage. An open-ended QE program relies on incoming data for cues as to how the Committee might shape the program going forward. A slower approach allows more data to arrive before perceived balance sheet constraints begin to limit the policy. Ideally, we want to find the right moment to taper or end the program in 2013 or the first half of 2014 based on an economic argument that the situation has improved and does not require quite as much accommodation as it did previously. This approach is vastly preferable to the *Groundhog Day* situation described by Governor Stein yesterday in which the Committee is forced to abandon the program even though the macroeconomic situation has clearly not improved. Ending or tapering the program under those circumstances would be quite damaging to the Committee's credibility going forward, and because the world is stochastic, we cannot really be sure what situation we'll find ourselves in even if the program is as efficacious as I describe. The great advantage of the go-slow approach is that the window for incoming information is wider, likely putting the Committee in a much better position to render a judgment that the macroeconomic situation has improved sufficiently to taper or end the program for economic reasons rather than for balance sheet constraint reasons.

Now I'm going to turn to thresholds. I am willing to support the thresholds version of alternative B; I have several remarks. First, the current date approach has problems, but one of the key problems is that it sends a pessimistic signal that is, in fact, counterproductive to our

approach to monetary policy. So it is important to eliminate that. As you know, I've been generally opposed to the use of calendar dates, and I'm happy to see it go in this version of the thresholds argument. As a replacement for the date, the most prudent course for the Committee would be a more-qualitative style as outlined in the corresponding paragraph in alternative C. This option provides considerably more flexibility for the Committee in interpreting events. I can appreciate, however, that some might feel that the qualitative approach does not provide sufficient commitment to the low policy rate and, therefore, want to have quantitative guidance, or they may feel that it provides the wrong kind of commitment to the low policy rate. As part of the adoption of these thresholds today, the Committee should plan to reaffirm in January 2013 the statement that was made in January 2012 to the effect of the inappropriateness of monetary policy attempting to directly target employment levels. I think that will go a long way to reassure markets that this is not an attempt to directly target something that the Committee cannot control over the medium term. I also think that the Committee should recognize and appreciate that these thresholds will, in fact, be regarded as triggers for action and that there's not too much that can be done about that. In effect, the threshold draws a line in the sand. If the line is crossed, something must be changing. What is changing is the probability that the Committee will take action. So even if the Committee doesn't actually act, the probability has gone up. Markets will of necessity have to react to that change in probability, and whether we do anything or not, I think our policy will be tighter at that point. It is important, as the Vice Chairman noted, that we don't get into the trap of saying that monetary policy is a two-dimensional decision. If that was the case, we could vastly reduce the size of the Committee and the staff. So it's important to include the language concerning other variables, which is in alternative B. I definitely think that we do not want to give the impression that this is a two-variable game.

Related to that, I thought that the staff memo on unemployment did a good job of summarizing the idea that the labor market is a multidimensional object, and going forward, the Committee will have to continue to emphasize that perhaps pretty strenuously.

I do not think the formulation as it stands in alternative B represents a balanced approach to thresholds. The unemployment reference is to the actual rate of unemployment while the inflation reference is to a forecast value. No central bank would ordinarily be forecasting inflation to be high several years ahead. I prefer to use actual values for inflation instead of the forecast value. This aspect of the threshold formulation may cause problems for the Committee going forward, and we should be ready for that. Policy has to be chosen in such a way so that the actual inflation forecast makes sense several years into the future. There's a certain circularity here where you say, "Well only when I get a bad forecast will I change policy," but it's the policy change that is supposed to give you the good forecast. That's a difficulty that we haven't talked about and really haven't resolved here. We could resolve it by going to actual values of inflation on the threshold. I think markets, no matter what we say, are also going to be looking at actual values, especially if core PCE inflation went above 2½ percent. The Committee would come under heavy pressure regardless of what the forecast was, and we should be aware of that. Finally, the Committee should be prepared for the possibility that market-based inflation expectations will simply pop up to 2½ percent following this announcement or during the first half of 2013. Actual inflation may then simply follow behind because expected inflation is the major determinant of actual inflation. The threshold approach could be read as saying, in effect, that the Committee is willing to tolerate higher inflation, and markets may simply move expectations to the perceived ceiling. Something like this actually happened during the 2003 period when the FOMC changed language concerning unwelcome declines in inflation. If you

look at the inflation expectations during that period, they simply shifted up on a perception that the Committee was willing to tolerate higher inflation and was going to conduct an easier policy. We should be prepared for that possibility and keep that in mind.

In summary, on the thresholds, getting rid of the date is helpful by removing the counterproductive, pessimistic signal in my view. However, a move to thresholds is far from a panacea, and I expect this will require further refinement going forward. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. Today we are considering two distinct policy actions. The first is to increase accommodation by further expanding the pace at which we are growing our balance sheet. The second action is to change our communications strategy and forward guidance to provide specific numeric metrics that communicate when we may or may not, depending on your point of view about the role of these numbers, act to increase the funds rate. I will address each of these in turn, but I want to emphasize that such a combined initiative requires the markets and the public to absorb a great deal of new information at a time when more important debates are occurring over fiscal policy, not monetary policy. We run the risk of creating added confusion and added uncertainty to an already uncertain environment. In general, I would argue in favor of patience at this point. There is no pressing need at this point to engage in these new and complicated initiatives.

Regarding asset purchases, I noted that the Tealbook seems to suggest that purchases of the same monthly volume of Treasuries entail no change in policy. Like President Bullard, I disagree. Increasing the size of the balance sheet is a relevant tool, as it leads to an increase in the monetary base and an increase in excess reserves. These actions will require us to remove

those assets at some point or permanently face a higher price level and a rising inflation rate until we do so. This policy action is different than simply altering the composition of the long- and short-term securities on the balance sheet. We need to carefully assess whether such a continuously increasing level of accommodation is warranted by economic conditions. Unemployment has fallen 1 full percentage point over the past year and nearly 2 full percentage points in the past two years. Fortunately, inflation has remained relatively stable. This is not an environment that to me obviously calls for continuously increasing accommodation. As I've argued previously, at this stage of the cycle, I think the costs of increasing accommodation outweigh the benefits.

I also believe that, at best, it is premature to adopt the sorts of thresholds that are being proposed today. I do not think we have done adequate analysis of the full implications of such a decision, nor do we have an understanding among ourselves on the Committee as to how this program would be implemented. We should not, in my view, undertake policy actions and language changes without giving enough consideration to the possible longer-term implications of these choices should the economy perhaps evolve in a way that we don't anticipate. I do oppose and have been uncomfortable with the calendar-date guidance; I've been opposed to that from the beginning. I think it's deficient in many ways. However, I do not think the current proposals for thresholds are yet ready for prime time. Thresholds do complicate our communications rather than clarify our policy decisions. I believe the public will fixate on the numbers in the statement rather than the words around those numbers. Indeed, by giving out specific numbers, we are inviting them to fixate on these numbers. The public can very easily interpret our unemployment threshold as a monetary policy goal or objective, and believe that the Fed has the policy tools to achieve that goal. I find this proposition highly dubious, and it

would seem to contradict the Committee's statement in January, which explained why it is inappropriate for us as a Committee to set numerical goals for employment. The public might wonder why we are attempting to target an unemployment rate when history tells us that when the Fed effectively tried to do so in the 1970s, it led to some very poor economic outcomes. Choosing inflation and unemployment thresholds also conveys the idea that we have a good knowledge of the relationship between these two variables, inflation and unemployment, and can predict the outlook for both with some precision. That would be misleading.

I'm also skeptical of the view that forming the inflation threshold in terms of the inflation outlook would serve as a very effective safety valve if we got our unemployment threshold wrong. Again, as I alluded to yesterday, this assumes that we are able to predict inflation with more certainty than I think economic research suggests that we can. There are many details that remain vague and have not been discussed within this Committee, and a number of questions we still need to answer. The specification in alternative B suggests that the unemployment threshold should be in terms of an actual unemployment rate while the inflation should be in terms of an outlook. What are the implications of such asymmetry? Should both thresholds be expressed in terms of outlooks or both expressed in terms of actual values? The Committee has not had a thorough discussion of this point. How do we operationally define these thresholds? Which unemployment measure is relevant: monthly, a quarterly average, a two-quarter average? Which is the number that we're supposed to be reacting to? If the inflation threshold is given in terms of an outlook, whose outlook should it be? Should it be based on the SEPs, the Tealbook, private-sector forecasts? The public will want to know. We need to be able to communicate to them what are the metrics that we're using. If we use the SEPs, what happens if we want to make a decision between quarters when we do SEPs? Whose outlook would we use then? If we

use FOMC forecasts more broadly, how would we handle situations in which our forecast deviates from the private sector? Would such deviations undermine the Committee's credibility and the integrity of the forecast process itself? Would the Committee ever forecast inflation two years out that was substantially above our goal or above the thresholds? If we did so, would we be undermining our own credibility to deliver on the goals that we've laid out for ourselves? If we're not willing to do that and risk our credibility, then the forecast of inflation is no longer a valuable safety valve.

Even more important, the Committee needs to consider how it will react to an inflation rate of 2.6 percent while the unemployment rate might be 7 percent. If the thresholds are forward guidance, what are they telling us to do in that circumstance? Would we take action? I don't know the answer to that question, but the comments by Governor Tarullo and Governor Raskin yesterday talked about the drawbacks of focusing on the unemployment rate and suggested the different measures that may be valuable for assessing our policy. But we have told the public to focus on the unemployment rate. What will we do? Participation rates may be falling. Unemployment rates may be falling for the wrong reasons. Would we be willing to pull the trigger and act? If we choose in those circumstances not to react and not to act when the inflation rate was 2.6, however we choose to measure it, what would we do then? Would we set new thresholds? Would we acknowledge that the old ones weren't the right ones and come up with new ones? Would those new ones have any credibility once we had not acted on the first one? How would this credibility play back onto the Committee? Indeed, the language of alternative B, paragraph 5, highlights that the thresholds are specific points. It then goes on in the next two sentences to explain why we may not react to those points. So why do we need the points in the first place? Why do we want the public to focus on those points when we then turn

around and tell them in what follows that, by the way, it's really bigger than that and we may or may not react to that? I think that's a poor communications strategy and ripe for confusion.

Why signal the importance of these numbers and then explain why they're irrelevant or at least nondeterminative in our policy decisions?

We need to engage in some scenario analysis to see if we ourselves have a common understanding of how we'll react in various situations. If we cannot come to some agreement and shared understanding, it's hard to see what such forward guidance or communication is actually accomplishing, and our communications will be confusing. More generally, we know from theory, as well as simulations from FRB/US and more recently from the DSGE model results that were circulated for this meeting, that the stimulative effect of forward guidance provided is largely determined by the public's expectations about how policy will be conducted after the thresholds are breached. If we don't communicate that post-threshold reaction function, our forward guidance will not deliver the desired stimulus today. But we seem to be unwilling to tackle the specifics of that reaction function. Simultaneously, we seem to want to use the forward guidance to operate a stimulus. We can't have our cake and eat it, too.

We also need to consider how the markets will react as we approach our numeric thresholds. If they believe we will react, they might anticipate tightening as we approach the threshold and rates might begin to rise well before we actually choose to act. This outcome might be a good thing or it might be a bad thing. If we act in response, it might smooth the transition as markets anticipate that we're going to react. Alternatively, that anticipation might force us to raise rates before we are ready. If we don't choose to react, then those anticipatory effects that occur as we march toward the threshold could lead to some instability because then

we don't act and we've created instability in the financial markets. We will have inadvertently created our own version of the cliff.

Market participants do not seem to be misreading our intentions with respect to forward guidance and liftoff of the funds rate. As we've seen yesterday, the liftoff for rates and the forward guidance seem pretty consistent with what we are communicating. If anything, the charts we looked at yesterday suggest that market expectations may be misaligned with our intentions regarding the size of the LSAP program, not about the funds rate. Thus, we may be addressing the wrong confusion in our forward guidance. If we set thresholds for the funds rate, we are going to be asked, should we set a separate set of thresholds for our open-ended asset purchase program? Why shouldn't the public ask and expect such forward guidance? How do we determine those thresholds? We've got some words around them, but I believe that we're going to have a hard time in distinguishing that guidance, and, frankly, that's where most of the confusion is. If we don't know how to do that, how is the public going to understand it? Will they make their own inferences? And will those inferences be consistent with the Committee's intent? I thought we saw some divergence yesterday.

I could go on. My basic point is that there are a number of aspects of implementing a threshold strategy that need to be evaluated, and a common understanding must be reached before we can determine whether adopting such thresholds would be a useful policy approach, and if so, how to best formulate those thresholds. However, I would prefer, and I think the Committee would be better served, if we focused on trying to reach a consensus on how we'll conduct systematic policy when we return to a more normal economic environment and then talk about how we communicate and how we conduct policy at the zero bound. That would make our communications much, much easier.

Finally, we have discussed the negative impacts of fiscal policy uncertainty on economic activities. I do not think we can rule out the case that monetary policy uncertainty may be affecting the economy in a negative way as well. Although we have strived for transparency, we have not explained our policy strategy very well. Rather, we have made changes over time that could be confusing to the public rather than bringing clarity. We use calendar dates, only then to conclude that they were not satisfactory, and we want to employ thresholds. We stress the importance of LSAPs and the stock effects that they have and implemented policy under those premises. Now we've switched to a flow-based method for our purchases. I think we need to ask ourselves, are we prepared to live with thresholds for a long time? Once we take a strategy, sometimes it's hard to get it out. We may even be faced with dealing with it after we exit the zero bound. What is our exit strategy for thresholds? As the fiscal cliff approaches with its inherent uncertainties, I think we would do well not to add uncertainty and confusion by making major changes in our policies or language at this point. I would recommend a more minimalist approach and patience. I would allow the MEP to expire as announced. I would not add more Treasury purchases to our asset program—that would be confused with fiscal policy—and I would use the simpler paragraph 5' and not adopt the threshold language, and we could stress qualitative natures of our reaction function rather than the specifics. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Fisher.

MR. FISHER. Thank you, Mr. Chairman. I apologize to my colleagues for missing dinner last night. Inspired by President Evans, I rushed back to my room to watch Monty Python clips on YouTube. I think Charles was thinking perhaps of one of the skits of the Olympics that they have, which are great: the 100-meter dash for the hard of hearing where the gun goes off and everybody stays on the block; or the 200-meter race for the directionally challenged where

everybody goes off in different directions, like me. By the way, there is a third skit in there, if you like this kind of silly humor, that's really funny: it's the marathon race for men with exceptionally small bladders. So I'm going to be short so as to not make this session into a marathon, which I fear it may become as we were at risk of doing yesterday.

Now, I don't have a vote on today's decision. All I can do is comment and offer advice. I would like to make one comment, which I'm sure will raise the hackles on some people's backs. I've sat at this table for seven and a half years, a little bit less than many, but more than some. I'm struck at how we've become conditioned by so-called market expectations, meaning specifically the dealer surveys and the dealer community. And maybe I was in the markets for too long and spent too much time as a market operator, but I urge our staff and the rest of us to be very careful here. Dealers are like every other operator on the street. They're driven by greed; their only interest is in their own profitability, their own income statement, and that of their partners and the insiders. If you believe otherwise, I think you're naïve. If you feel informed by their expectations that were presented both yesterday by Simon—and, by the way, a very good presentation always—and Bill English—who just does a superb job—please bear in mind that market operators are driven solely by profits and their own book-running needs. They want accommodation because it's a moneymaker for them. And I think we can be led astray if we base policy so heavily on what the dealers tell us. It's always useful to remember what Fischer Black said: Markets are much more efficient on the banks of the Charles than they are on the banks of the Hudson. He learned that lesson late, but the point is, be very wary if we're going to rely on the dealers and those who are driven by greed and not by the broader public's interest.

The second comment is that while I was listening to presentation of the LSAPs—an excellent paper—delivered yesterday and the subsequent discussion, the lyrics of the Eagles’ song “Hotel California” kept coming to mind. Now, perhaps that’s because I like to remind people that Don Henley is a Dallas-ite, a Texan; I see him now and then—I just get glimpses of him standing in line at the grocery store. But remember that song’s phrase: “‘Relax,’ said the night man. We’re programmed to receive. You can check out any time you like, but you can never leave.” We should be mindful that we are bequeathing an engorged balance sheet to the next generation of Federal Open Market Committee members and perhaps the next Chairman. We can check out. They cannot leave; they’re going to have to deal with this. I haven’t been able to articulate this well—I’ve talked to the Chairman about it privately. We have a fiduciary responsibility, and we have to be very careful that we don’t lock our successors into a predicament from which it is almost impossible to leave without creating market disruption. I’ve said this before: We talk about not creating market disruption on the buy side, but I worry a great deal about it on the sell side.

Now, I’d like to turn to some general comments on what we know, or what I think we know, about monetary policy at the zero bound, and then I want to offer very quickly some specific suggestions concerning the policy options that are on the table. Our theoretical and empirical models all tell us that the anticipated post-liftoff conduct of monetary policy is an important influence on how the economy performs today. The Board staff has produced numerous studies demonstrating the power of these efforts. In contrast, our theoretical models give us what I would consider little conclusive reason to think that purchases of Treasuries have any direct impact at all on the economy. Empirical research, such as that conducted by Christensen and Rudebusch at the San Francisco Fed, is consistent with the proposition that these

purchases matter only insofar as they signal that future interest rate policy will be easier than would otherwise have been the case. That is, Treasury purchases may not matter at all, except through the signaling channel. The Chairman's benefit–cost framework was very impressively presented yesterday and quite thought provoking. I would just advise that that framework may be ill-equipped to deal with the situation as it is now, and I'd want to think it through, but I'd be careful about bringing a knife to a gunfight.

Current employment depends on expected future interest rate policy, which, if it depends on our Treasury holdings at all, depends on what people expect our holdings to be years from now when liquidity is again scarce. MBS purchases are a different story. The MBS market appears to be sufficiently segmented from other asset markets that our intervention there directly affects activity in the housing sector. We've acknowledged that, and Governor Duke has been quite articulate on that in several meetings running. It's to the MBS market that I think your benefit–cost analysis, Mr. Chairman, may perhaps be the most usefully applied, assuming you think it's proper for this Committee to focus on a specific asset class. Bear in mind that once we do go down this path of asset-class emphasis, it may be very difficult to pull back from it or to resist political pressure to focus on other asset classes in the future. But it appears to be the drift of this Committee that that's where we're going. I'm not comfortable with it, but that's the given in my view. We also know that postponement of date of liftoff has little effect on how the economy performs today, if it leaves the anticipated post-liftoff conduct of policy unchanged. The same goes for announcing thresholds, or indicative thresholds, as our Vice Chairman mentioned, that have to be met before liftoff. These findings have been broadly confirmed by several Board staff studies, the latest being the memo on the current outlook and alternative policy rule simulations in EDO by Hess Chung, which was distributed for this meeting.

In my view, there are alternatives to traditional Treasury purchases that offer more reliable benefits and avoid many associated costs. These alternatives include MBS purchases, given that that's where I think we have decided to focus many of our efforts, and very importantly, direct efforts to better communicate and address our post-liftoff policy plans. On the latter point, I would encourage the communication subcommittee to be more ambitious in their proposals to reform the SEP report. The 19 men and women sitting around this table are not likely to agree unanimously on a mechanical simple policy rule, particularly in a world such as you described, Mr. Chairman—I believe it was two meetings ago—when you said that we really don't know how the economy is working right now and we actually don't fully understand the consequences of the policy measures we've followed. I may have paraphrased that, but that was the essence of what I heard. Now, that doesn't mean that comparisons of the SEP medium-run policy path with the prescriptions of a variety of policy rules couldn't be informative. Governor Yellen made a notable effort in this direction in a recent speech, although it was applied to primary dealer funds rate projections rather than the SEP. By going from the general to the concrete, obviously I personally would prefer that we not purchase additional Treasury securities. I rather like what Mario Draghi said on Thursday, and I'll quote, not paraphrase: “We've already done much that is needed.” And then, regarding unemployment he said, “This question should be addressed to the policymakers who created this situation in the first place.” Now, granted, there are some of us at the table who feel the Fed was part of that creation by keeping rates too low too long. Others disagree, but I think the message there, and I'll come back to this at the very end, Mr. Chairman, is that this question is best addressed by fiscal policymakers, not monetary policymakers.

However, if the Committee is intent on going ahead with these purchases, I would prefer providing qualitative labor market liftoff guidance similar to that in paragraph 5 of alternative C rather than either the calendar guidance, which I've never been comfortable with and have protested at every meeting, or a numerical unemployment threshold. I agree with President Plosser that markets and the public are likely to fixate on that numerical threshold for unemployment, and yet I do think that, through your press conference, you might mitigate that fixation, and I'm counting on you to do so this afternoon. I would propose a modified paragraph 5 that would read as follows: "To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the asset purchase program ends and the economic recovery strengthens." In other words, I agree with President Dudley that the bracketed language be removed. My paragraph would go on to say that, "in particular, the Committee decided to keep the target range for the fed funds rate at 0 to ¼ percent and currently anticipates that this exceptionally low range for the fed funds rate will be appropriate at least"—and this is important here—"until it has observed substantial improvement in labor market conditions, provided inflation between one and two years ahead is projected to remain at or below the Committee's 2 percent goal." I would strike the word "longer-run," as I mentioned yesterday. I think it confuses us with the "medium term" we stress earlier. "And that longer-term inflation expectations continue to be well anchored." I think President Bullard makes a very good point. If we say 2½, the market will adjust to 2½, I believe, almost immediately. They'll consider that our new mark, and I don't think that's healthy, and it's very difficult to explain. And then I would let the paragraph read as it reads now for the rest of the paragraph. Note that asset purchases continue until the outlook for the labor market improves

substantially, whereas a low funds rate is maintained until substantial improvement in labor market conditions is actually observed. Participants would be free to offer their individual opinions on what constitutes “substantial improvement labor market conditions,” and those opinions might change depending on, for example, the behavior of wages and unit labor cost and other economic indicators.

Mr. Chairman, you’ve now heard from three consecutive speakers who are uncomfortable with the way things have been stated. We realize, referencing this morning’s *Wall Street Journal*, that none of the three of us is an MIT Ph.D., but I do think, and I hope, that our words will be listened to. I want to conclude simply by saying that, to me, the most important thing that happens today is what you say at the press conference, and I would urge you, Mr. Chairman, to draw on your enormous talents as a great teacher. You’re not speaking to a group of economists, and it’s important to remember you’re addressing the world marketplace and, most important, the public. Again, I would only ask one thing in terms of your presentation, which is ultra-important in explaining what I think this Committee is going to decide despite the protestations of myself and the previous two speakers: That either at the end or at some point, you work in and stress that the solution to the unemployment problem is not completely in the hands of the Federal Reserve and monetary policy. And I would urge you to emphasize the need for fiscal policy solutions that encourage job creation and economic expansion rather than push us over the cliff to recession once again. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. I may be the first, other than President Dudley, to state outright my support for alternative B. I’d like to explain how I’m thinking about the elements of B and particularly their communications challenges. As I stated in the economy

round, in my view there has been no material change in the baseline outlook since September. I view both elements of today's decision, the Treasury LSAP and the introduction of thresholds, as representing no substantive change in the stance of policy. I'm viewing the fiscal cliff downside scenario as mostly a contingency. The January and March meetings would provide an opportunity to reassess the economic situation as affected by the fiscal situation and any possible monetary policy responses. I hope the Committee's communication choices, along with the Chairman's press conference, stress the continuity of policy. I think this is the wisest course. I note that a recent *Financial Times* article, dated December 5, carried the title "Fed Set to Unveil Extra Asset Purchases." I think there are good reasons to discourage this interpretation. The adoption of alternative B, in my mind, is QE3, not QE4.

I expect we'll hear in this round some support for delaying the decision on the introduction of the thresholds until the March meeting. I'm ambivalent on this question. I can see the value of separating the LSAP decision and communication related to the LSAP decision from thresholds communications. But on reflection, I've decided to support introducing them at this meeting. Much could change by March, and I think that introducing them now provides the best chance of achieving a smooth transition of characterizing the employment threshold as consistent with the most recent data guidance, and therefore not intended to be a substantial change of policy. I don't see a lot to be gained in delaying the thresholds decision. My thinking, again, is to emphasize continuity of policy.

I confess that my decision to support the LSAP aspect of alternative B at this meeting is not free of angst. I want to thank the staff for the memo analyzing the various aspects of continuation of open-ended asset purchases in 2013. As that memo suggests, I think a reasonable working assumption is that continued asset purchases will have a moderate positive

effect on real economic activity. So in that context, it's important to me to be clear what decision in my view we are making with alternative B. The staff assumption is the LSAP program will terminate at midyear. As stated in the Tealbook B, the assumption is that "by mid-2013 there will be accumulating evidence of a pickup in economic growth and an outlook for substantial improvement in the unemployment rate." At that time, the Tealbook forecasts an unemployment rate about where it is right now. Job growth through midyear is expected to be at about the same pace of 150,000 to 160,000 per month that we've seen over the past two years. Though the Tealbook expects GDP growth to have stepped up to just above trend in the second quarter, we would not have even an initial estimate of second-quarter growth until July. My own forecast doesn't take particular issue with the Tealbook. If something like the Tealbook forecast of where the economy will be at midyear comes true, I struggle to see how we will make a convincing case for a substantial improvement in the outlook for labor markets. I think the most realistic timing for making a plausible case for sufficient improvement in labor markets will be closer to year-end. As a consequence, I have to concede that my support for alternative B implies a balance sheet expansion more like market expectations of \$1 trillion than the lower numbers suggested by the Tealbook policy assumption. In my mind, to be realistic, the decision being made today is closer to \$1 trillion—or \$1.25 trillion, including the purchases to date since September—and a balance sheet expansion along these lines and then something less.

Again, the staff has done an admirable job of analyzing the various considerations associated with further balance sheet growth. At the risk of being accused of reductionism, I process all of this analysis as leading to a practical conclusion that continuing balance sheet expansion involves a lot of unknowns and that it is appropriate to be cautious. I'm warm to the notion of tapering the purchases beginning at midyear if the Tealbook and similar forecasts play

out as expected, but justifying reduction in the pace of purchases on the basis of an improved outlook for the labor markets as early as July will be nearly as difficult as justifying an outright end of purchases. The Committee, therefore, has to wrestle further with the question of what will be the optics around a decision to make changes in the LSAP. In that vein, it seems to me that alternative B carries with it some very big communications challenges over the coming months if we're going to end up with a smaller expansion of the balance sheet as implied by the Tealbook policy assumption. One option is to try to moderate expectations about what constitutes evidence that is sufficient to arrive at an improved labor market outlook. A second option is to accept that ending or tapering the pace of asset purchases by midyear will likely have to rely on arguments about efficacy and costs. That will involve some nimble communications footwork in coming weeks and months in that we will appear to have backed off the "substantial improvement" conditionality and the open-ended approach.

Let me now just make a couple comments on statement language. In paragraph 3, I support the insertion of "initially" before the words "at the pace of \$45 billion per month" as a way to suggest purchases could be adjusted depending on evolving circumstances. I'd like to make a small suggestion for the last sentence of paragraph 3. Instead of the phraseology "put downward pressure on long-term interest rates," I prefer "keep" or "maintain downward pressure" to reinforce the theme of policy continuity. In the first sentence of paragraph 5, I support inclusion of the bracketed language. Also, I endorse the thrust of the sentence, "The Committee views these thresholds as consistent with its earlier date-based guidance." But I'll just point out that we might avoid any confusion if it reads "most recent date-based guidance," that is, mid-2015, or to be more explicit something like, "The Committee currently views these thresholds as consistent with the mid-2015 forward guidance introduced last September."

Regarding the choice of language in brackets at the end of paragraph 5, I prefer the second option, that is, “its longer-run goals of maximum employment and inflation of 2 percent” because this phrase underscores that the thresholds are not a replacement for the Committee’s statutory objectives. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. On the date-based guidance, were you saying “with its most recent?”

MR. LOCKHART. I suggest either to say the “most recent date-based guidance,” so that there is no confusion as to the two previous date-based guidances, or to say, “The Committee currently views these thresholds as consistent with the mid-2015 forward guidance introduced last September.”

CHAIRMAN BERNANKE. Okay. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. It will come as no surprise that I oppose expanding our asset purchases for the same reason I opposed them in September. I view them as unlikely to aid economic growth without unacceptably increasing the risk of inflation, particularly during our exit. And if we are agreeing to purchase assets, I believe we should restrict ourselves to U.S. Treasuries so that we don’t deprive non-housing-related borrowers of the credit they deserve. I agree wholeheartedly with the Vice Chairman that we don’t know much about the degree of market segmentation across various markets, but in my view, an agnostic policy would focus solely on one sector, the one that’s the most risk-free of all capital markets, the deepest and the most liquid, rather than taking that sector plus one selected sector of many. I believe that the initial asset purchase program looks even less appropriate now than it did in September. When we launched the program in September we thought payroll employment growth had averaged 94,000 per month over the previous three months. Payroll employment is

now estimated to have gained 139,000 per month from June to August and an identical 139,000 per month from September to November, and that pace lines up amazingly well with the average gain of 140,000 per month since employment bottomed out in February of 2010. As I said in September, this looks to me like an economy showing fluctuations around a slow but steady trend, like a balanced growth path. So I see no reason to expand our asset purchase program now.

Governor Stein yesterday painted a vivid picture of what he called a *Groundhog Day* scenario, in which we find ourselves a year from now not seeing the higher economic growth we expected and the bigger improvement in labor markets, but in about the same situation we're in now, that is, slow growth and slow improvement in labor market conditions. Honestly though, doesn't this describe our current situation right now? For the past two or three years we've been seeing sluggish economic growth, but we've kept forecasting an acceleration of growth that never arrives. We once forecasted that real GDP growth in 2012 would be over 4 percent; we're going to get less than 2 percent. We keep revising down our forecasts as they come through. What we've been through in the past couple of years looks more like *Groundhog Day* than anything else. What has impeded growth? I love Governor Stein's phrase, "a muddled mix of small disappointments." It has been difficult to identify any single impediment for economic growth, thus my exchanges over the years with Governor Tarullo and with others on labor market mismatch. One could point to a variety of things, but it has been difficult to pin down anything definitive. This phrase, "a muddled mix of small disappointments," is more evocative than an adverse movement in the variables g or e in your framework, Mr. Chairman, but it constitutes the same thing, a variety of factors that are hard to assess, hard to prove, and

impossible to quantify that are holding down economic growth. This corresponds to your case 2 or case 3(b), Mr. Chairman. In both cases the thing to do is wind down the stimulus.

I want to say, Mr. Chairman, that I thought your remarks yesterday afternoon were very useful. You put on the table the idea that the Committee might, at some point in the future in some circumstances, conclude that our asset purchase program is ineffective or that factors outside our control are limiting economic growth. Some of us reached that conclusion a while back, but clearly that's a minority view, and the rest of the Committee doesn't agree. I think it will be very helpful though, for the entire Committee's sake, to publicly use language that opens that door, that lays the groundwork for a possible scenario in which the Committee wants to back away from asset purchases. Particularly important is the idea of tempering expectations about labor market improvements and our capacity to influence them. I would note though that some strong elements of the language in this statement, as pointed out by President Lockhart, are hard to square with that potential scenario.

Regarding our forward guidance, I favor qualitative thresholds as in C(5). I said my piece about quantitative thresholds at the October meeting. I'll only add here that the point I made in October about how we look at a wide array of indicators besides the unemployment rate was echoed by several people yesterday, by the Vice Chairman today, and by the staff memo on labor market conditions. I'll also say that I agree with many of the observations made by Presidents Bullard and Plosser about thresholds. I think there is a significant risk that these are going to be confused with our goal or target, and that will be a distraction that will inhibit the effectiveness of our communications.

In addition to the continued expansion of our balance sheet, alternative B involves a commitment to hold off raising the funds rate for "a considerable period" beyond when we

would otherwise lift off based on economic growth and inflation. I understand the idea behind this approach, which is to bolster expected future economic growth and thereby bolster growth today, but I believe that by maintaining this formulation or strengthening it, as an option in alternative B contemplates, could prove quite problematic for us. I want to sketch out a scenario to illustrate concretely some of the risks I see. I'm not going to argue it's the most likely outcome, but I am going to argue that it's reasonably plausible and represents risks we ought to take into account. The premise of the scenario is that at some point over the next few years, we've seen three quarters of consecutive economic growth above 3 percent, and that employment at that point is increasing around 275,000 per month. This scenario could occur even with unemployment only marginally lower than today if the labor force participation rate flattens out. This result is not that far away from what the Tealbook baseline says that we will see at the beginning of 2015. Tealbook B shows that under an array of simple policy rules and under optimal policy simulations in the discretion case, we would normally begin tightening by then. But whatever happens, our current language commits us to holding off raising rates for a considerable period thereafter. This interval—I believe we started calling it the Woodford period at our previous meeting—extends for another full year in the Tealbook. So what would the Woodford period look like? With consumer spending and business investment picking up, banks will start seeing more good lending opportunities. Under these conditions, banks will want to hold a lower amount of reserves relative to their assets for any given interest rate on excess reserves. This will be reinforced by the rise in the long end of the yield curve that will be occurring then as well. Banks will expand their balance sheets too rapidly if we do not raise the interest rate on excess reserves at that point. We may observe an acceleration of deposits, but monetary aggregates can be hard to interpret, especially if the regulatory environment is

changing at the same time. Think money market mutual funds or changes in deposit insurance coverage.

Our inflation safeguard may fail us in that case. Inflation expectations might remain contained at first, and that would be consistent with many historical episodes in which inflation has accelerated and yet public forecasts of inflation, expectations of inflation, were for inflation to immediately subside. Now, I'll note that that was the case with staff forecasts as well in many episodes like that. Our own inflation forecast might remain under 2½ percent in those circumstances. Indeed, we have a history of overestimating the extent to which slack will depress inflation. The problem is that what emerges at first is a risk of higher inflation, not a certainty. In other words, the makings of an unanticipated surge of inflation could start building during the Woodford period, but we may feel we need to hold off for a considerable period solely due to fulfilling our 2012 commitment. In essence, this forward guidance sets up a tension between two commitments, a commitment to price stability and a commitment to this considerable period. I recognize that a small increase in inflation above 2 percent is essentially part of the plan. It's part of the baseline simulation and part of the economic effects of this. I recognize the Werning paper and that the increase in inflation isn't necessarily essential to the economics of promising future stimulus in order to get more future stimulus today. But this scenario I'm talking about involves a more dramatic potential acceleration of inflation that emerges first as just risks and incipient inflation pressures.

In the past, we have often tightened policy or withdrawn stimulus preemptively in response to the rise in the perceived risks of unwanted inflation outcomes before they emerge as actual bursts of inflation or increases in forecasted inflation. This formulation of the guidance prevents such preemptive moves, and it sets up this tension between these two commitments. I

want to believe the Committee would tighten if faced with such incipient inflation pressures even if the inflation safeguard clause had not yet been triggered, but I worry that the forward-guidance language in alternative B and, to some extent, all of our statements this year would keep us from tightening. You could say I'm worried that the Woodford period will become a Woodford trap. I readily admit that this scenario probably seems quite unlikely, given our inflation performance in recent years and the extent to which inflation expectations have been quite stable, but the broader perspective here is that our disappointment with labor market outcomes has motivated us to test the outer limits of how much stimulus we can provide and how much stimulus we can promise to provide in the future without compromising our credibility for price stability. I am concerned that we do not really know how disappointed we ought to be with labor markets, and we may be attempting to achieve more-rapid improvement than is actually feasible. I am also concerned that in our zeal to promise ever more future stimulus, we will constrain ourselves down the road in ways that endangers the credibility we've come to take for granted. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. I closely associate myself with the remarks of Vice Chairman Dudley. His eloquence makes it easy to justify my practice of being succinct.

I support alternative B with the language in paragraph 5 that includes thresholds. The improvement in interest-sensitive sectors is an important counterbalance to the headwinds created by fiscal policy uncertainty. Given the fragility of the recovery, as well as the practical limits to the size of MBS purchases, it is prudent to continue Treasury purchases of \$45 billion as the maturity extension program expires. Both the Board memo on asset purchases as well as

research done by the Boston research department indicate that this purchase program will provide important support to an economy still experiencing economic growth too slow to get substantial improvement in labor markets. Such a policy action will also help us reach the inflation target that we stated at the beginning of this year. In both my forecast and that of the Tealbook, we've continued to undershoot our inflation target for the entire forecast horizon. If one excludes the volatile food and energy sectors, the four-quarter moving average of the change in core PCE has been below 2 percent for four years, and we expect it to remain below our target for another three years.

To my eye, it is difficult to consider monetary policy highly accommodative when we undershoot on our inflation and employment targets for an expected seven consecutive years. Even if we just had one mandate and that was an inflation mandate, I would argue that we should be doing more. Additional asset purchases are needed to shorten the time we continue to miss on both elements of our mandate. If we do conclude asset purchases are being less efficacious, we should actively seek alternative policies that will more quickly reach our mandate. We should change our tool, not our goal. So I don't agree with the *Groundhog Day* analogy. I think that if we find that what we're doing now is not being efficacious, then we have to search for other ways to try to reach our dual mandate.

I strongly support the introduction of thresholds in paragraph 5. We should calibrate the likely path of our policy on economic outcomes, not on calendar dates or purchase amounts. This is a particularly good time to announce a communications guideline that serves as an automatic stabilizer so that markets do not overreact to the inevitable fiscal bumps that are likely over the next several months. The proposed threshold makes clear that we are focused on economic outcomes that are more consistent with our mandate and that we intend to take forceful

actions to shorten the time until we re-attain our inflation and unemployment goals. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I support alternative B with the threshold language in paragraph 5. I support the LSAPs as they are described and the flow quantities in alternative B. After listening to Vice Chairman Dudley speak so well about the efficacy and the cost of purchases language in the alternative, I think that's highly appropriate. I thought your comments yesterday were a good initial framework for our future discussions about that, and I look forward to those discussions and evaluations over the coming year.

As I said, I support paragraph 5 on thresholds in the alternative. It's artfully crafted to take into account some of the concerns that were raised at previous meetings. It describes the economic conditions that would prevail after some time is passed, after the recovery has strengthened. It captures our commitment to the longer-run inflation goal of 2 percent and conveys that a symmetric view of that goal allows a moderate overshooting of 2 percent. Indeed, the ½ percentage point upside threshold on the goal is about the same magnitude as the undershooting of inflation over the next few years currently projected in the Tealbook, and it operationalizes quite well the idea that 2 percent is not a ceiling, but it's a symmetric goal. The paragraph also notes the wide range of information we will consider to make sure that the unemployment rate is not sending a misleading signal about the economy, and it emphasizes the balanced approach we will take to policy once we begin raising rates. In other words, paragraph 5 implements many of the important characteristics of an optimal policy path with commitment. I disagree with the contention that we haven't thought enough about this or seen enough analysis. In fact, we've seen lots of analysis going back to last summer. In 2011 we first

saw thresholds analyzed in the context of FRB/US. And we know that theory indicates that such a path can deliver better outcomes with regard to both the employment and inflation components of our dual mandate—specifically better outcomes than a completely discretionary policy and better than one that adheres to a simple rule that doesn't account for the extended period in which policy has been constrained by the zero lower bound.

I'm optimistic that we can communicate to the public that this is a threshold, not a trigger. All we have to do is talk about it a little bit more, you in your press conference and others around the table. All of us can help clarify that, and I don't think anybody has the desire to confuse that. It's in the public's interest to understand it better. As many people in this room have noted, there are serious drawbacks to using calendar dates to communicate our commitment to keeping rates low for a time after the economy has strengthened. In current circumstances, we want to reinforce the public's understanding that we will leave policy in its highly accommodative state beyond the point at which, in the absence of the period of zero bound constraint, the economic outlook would typically dictate raising the funds rate. Importantly, this liftoff point is defined in terms of economic conditions, and because the outlook will change in response to the inevitable arrival of exogenous shocks, things like your g , the date we would expect to reach these conditions will also change over time. In our current statement, we've been using the calendar date—and it changes—to convey this deviation from what we would ordinarily do. That is a pretty indirect way to get across our message. We can provide much more clarity to the public by making a statement in terms of well-known indicators, like unemployment and inflation, of the economic conditions we'll need to see before considering raising rates. Such a statement would also mean that it will be more obvious if we deviate from this marker. I would say that this is helpful discipline for our policies. This is analogous to the

standard argument that announcing an explicit numerical inflation objective provides a better anchor for inflation expectations. Thresholds provide a better anchor for our state-contingent policy intentions. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Kocherlakota.

MR. KOCHERLAKOTA. Thank you, Mr. Chairman. I am afraid I am going to be a little discombobulated because I am going to attempt to respond to some of the concerns that have been raised by others around the table. But let me start by saying I do support alternative B, with the threshold language. I like the Vice Chairman's suggestion of removing the bracketed phrase in the first sentence of paragraph 5. And like President Lockhart, I preferred the second phrase at the very end of the last sentence of paragraph 5, "its longer-run goals of maximum employment and inflation of 2 percent," because I think that will highlight the distinction between our threshold value for inflation and our longer-run goal.

Let me talk a little bit about why I favor the threshold language in alternative B. I think that it does communicate something of substance to the public. It communicates that the Committee is highly unlikely to begin to raise the fed funds rate as long as inflation expectations over the medium term remain below 2½ percent and the unemployment rate remains above 6½ percent. Is this helpful? I think it is. It provides more clarity about the reaction function than our current date-based guidance does, in a world where clarity about policy is scarce—as we have seen in many forms. We hear all the time from the public about how they want more clarity, and this provides more clarity about what our intentions are going to be.

As the Vice Chairman emphasized quite nicely, this is an automatic policy adjustment being built into our announcement of thresholds. I have emphasized in the past how this aspect of thresholds helps us if conditions deteriorate more than we anticipate over the coming months,

and that is very valuable. The Vice Chairman raised a great point: I think actually this will help us with the tightening process if conditions were to improve more rapidly than we anticipate. If we have a much better year in 2013 than most of us are anticipating—we get a fall in unemployment by 50 basis points in the next six months—would we be willing to bring the date forward then? The Vice Chairman discussed a whole host of problems with doing so. Whereas, if we have thresholds in place, we have an automatic tightening feature involved in doing that. So I think thresholds provide an automatic adjustment to the evolution in the economy where things evolve better than we expect or worse than we expect.

Now, I'm also going to say a few words about how I think about the inflation safeguard. I don't really think the threshold choice for inflation, the values we are picking for it, are playing much of a role in terms of providing stimulus. I think the stimulus in the thresholds is really tied very much to the unemployment rate. Why do I say that? I see the inflation threshold as highly unlikely to be hit. And this is not just some kind of random thinking on my part. It is coming from the FRB/US model. Now, some of us have expressed a concern that the FRB/US model doesn't incorporate some of the most up-to-date principles of modeling that have come forward in the past 10 years. But you can look at the DSGE models that are producing quarterly forecasts as well, and looking at their most recent forecasts, you have to come away as well with the feeling that, boy, that 2½ percent inflation threshold is unlikely to be hit. If you don't like models, you can look at history. Over the past 15 years, the SEP and the Greenbook's medium-term inflation outlooks never have risen above 2¼ percent. This includes periods when resource utilization was considerably higher than it is today, and, in fact, the unemployment rate at times was below 5 percent over that time frame. And we can turn, instead, to the private-sector forecasts. The Survey of Professional Forecasters, for example, only provided PCE inflation

projections beginning in 2007, but we can look at the CPI inflation outlook that they provide, as long as we're willing to adjust it using the usual kinds of estimates of the difference between PCE inflation and CPI inflation. If we were to do that, you're going to conclude that the equivalent PCE inflation outlook rose above 2¼ percent in only three quarters of the past 60. And it never rose above 2.35 percent in that same time frame. I think it the idea we are going to hit a 2½ percent threshold for inflation is a real tail event. Don't get me wrong, I'm not saying we shouldn't have that in there—we definitely need it. But we are talking about protecting yourselves against tail events. It is a useful discipline on the Committee to have that kind of explicit protection against tail events, much more useful than the vague discipline that is included in alternative C, for example.

As I have indicated in the past two meetings, I am very much in favor of the specificity and the clarity associated with thresholds. And I am sympathetic to President Plosser's view that it would be great if we could spell out more about a reaction function than what we are doing right now in thresholds. We should continue to work to do that. But I don't think that we should stick to such an imperfect form of communication as represented by date-based guidance until such time as we have the perfect description of a reaction function. I am uncomfortable with letting the perfect be the enemy of the good to that extent.

Now, for myself, I would actually favor lower thresholds than are included in B. I would start by lowering the unemployment rate, which is the main form of stimulus, to 5½ percent from 6½ percent. Yes, we can disagree about the various sources of what has been holding back the recovery. But whatever those sources of impediments are, they lead us to the same place: low inflation outlooks and high unemployment outlooks. Both of those point to—as President Rosengren said quite eloquently—the need for more stimulus to deal with those problems. How

do we provide more stimulus? We can provide more stimulus by lowering the unemployment rate threshold to 5½ percent. I think we can safely provide cheap inflation protection by lowering the inflation threshold at the same time to 2¼ percent. As I indicated earlier, I don't see that we are providing stimulus through the inflation threshold. We are providing protection. So we could lower that and provide the same amount of stimulus—in fact, more—by lowering the unemployment rate threshold and still protect ourselves with the inflation threshold. You can provide better protection with a lower inflation threshold. But I am, as I say, willing to go along with alternative B as written.

There are challenges to communication; there are always challenges to communication. We have left behind the world where we can just communicate through our 25 basis point moves in the fed funds rate. We are stuck with the world we are in where we have to communicate about the future, using words as opposed to numerical moves in the fed funds rate. I personally do not think that thresholds will be hard for us to communicate, Mr. Chairman, because we have you to lead us in that effort. I have a great deal of comfort that we will be able to communicate how the thresholds work for the fed funds rate. I don't see that problem as hard intrinsically. If that was the only thing to communicate, that would be easy. What is challenging is the idea that we are forced, for the reasons laid out in your one-page framework yesterday, to be less precise about the conditionality of the large-scale asset purchase program. I will suggest to you that the right way forward on that—as you said in your one-page framework statement yesterday—is to begin to bring forward the rhetoric emphasizing the continuing study of efficacy and cost of these programs. That's not going to be part of the fed funds rate program. It is part of the asset purchase program. That is, in my mind, what distinguishes why we can't have a conditionality

for the LSAPs. We cannot go to infinity on purchases because of the efficacy and cost considerations. I think that I have managed to exhaust myself. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you for your confidence. President George.

MS. GEORGE. Thank you, Mr. Chairman. I would prefer no further expansion of our balance sheet with longer-term Treasury purchases at this meeting. In yesterday's go-round, several people offered important insights on labor market conditions, noting the challenges that remain in achieving full employment. And yet, the recovery in labor markets has made significant progress over the past year. In particular, the 1 percentage point decline in the unemployment rate over the past year is a notable improvement in labor market conditions, and the progress is greater than expected last year. For example, in last year's fourth-quarter survey, the Survey of Professional Forecasters anticipated the average unemployment rate in the fourth quarter of this year to be 8.7 percent. Looking at the individual forecasts, the current unemployment rate is below every estimate except one in the panel from a year ago. While a portion of the decline in the unemployment rate is due to the 0.4 percentage point decline in labor force participation, nonfarm employment growth has exceeded professional forecasters' expectations over the past year by a total of about 600,000 jobs. Similarly, the developments in the housing sector have outpaced forecast. A year ago, the median forecast in the Survey of Professional Forecasters was anticipating an average annual pace of about 710,000 housing starts in the fourth quarter of this year. The pace in October was closer to 900,000, suggesting that improvement in housing activity has also been outperforming expectations over the past year. Given that improvement in labor and housing market conditions have exceeded expectations, applying more accommodation to better-than-expected data strikes me as potentially inconsistent with appropriate monetary policy.

I also see the effect of even lower longer-term rates as unlikely to provide sufficient benefits to the economy to justify the future risk and costs that may come with a larger balance sheet. A recent analysis by my staff looked at the New York Fed's consumer credit panel and noted the steep decline in the number of consumers taking on more debt during the recession. While this measure is slowly recovering, it continues to suggest that relatively few borrowers are taking advantage of the current level of historically low interest rates. Tight credit conditions are one explanation, but my staff's analysis indicates demand factors are at play, too. Even consumers with excellent credit scores, those living in affluent areas, and consumers from parts of the country that were less affected by the housing bubble are reluctant to take on more debt compared with earlier behavior. Thus, it appears to me that the level of interest rates is not the primary consideration to consumers when deciding to take on more debt.

Finally, in terms of guidance, I agree with others that moving away from the calendar-based guidance is important. Turning to thresholds raises other issues, but to the extent they are, in fact, interpreted as indicative and not binding, as Vice Chairman Dudley notes, they may improve our communication. Thank you.

CHAIRMAN BERNANKE. Thank you. President Pianalto.

MS. PIANALTO. Thank you, Mr. Chairman. I have been concerned for some time now about the consequences of large-scale asset purchases for future financial stability issues, market functioning, and our ability to unwind our balance sheet in a safe and timely manner. I also think that the marginal benefits of asset purchases are likely to be declining, and the marginal costs and risks are likely to be increasing. So for me, today, the litmus test for additional purchases is whether I think the marginal benefits exceed the marginal costs and risks. At a scale of

\$1 trillion, which is evidently what is expected by market participants, I think the benefits fall short of the risks. There are a few considerations behind my concerns.

The staff's note on the implications of additional security purchases for the exit strategy principles cautions that a purchase program greater than \$500 billion next year could result in a portfolio that is difficult to unwind, according to our published exit principles, without impairing market functioning. Rising interest rate scenarios in which we are not remitting earnings to the Treasury, and we are taking capital losses, are also scenarios in which private investors are likely to be taking large capital losses. As I mentioned yesterday, my financial market contacts are very concerned about how a range of investors might react to these circumstances.

I understand that future financial stability issues are particularly challenging to assess, but they should not be dismissed. I was sitting right here in this very chair in 2004, 2005, and 2006 when we were reviewing charts that were showing housing prices rising. We were looking at the subprime mortgage markets, and the Committee concluded that we could not do much about housing prices rising and that the subprime mortgage market was so small that it wouldn't cause damage to the economy. We were focused on price stability and maximum employment. So it is important to me that we put more emphasis on financial stability. The work being done by the staff is a good start. The financial stability reports continue to be very effective and continue to improve. But I want to make sure that we think outside the box and not just focus on those risks that got us into the most-recent financial crisis, but also think about some risks that we might be facing in the future.

Based on these concerns, I would be more comfortable with an asset purchase program of the size that is assumed in the Tealbook—that is, a total of \$750 billion in security purchases. For a program of this size, I think that it would be more appropriate to start with a pace of

Treasury purchases that is smaller than is incorporated in alternative B, such as the purchase rate of \$35 billion that President Bullard mentioned earlier, for many of the same reasons that he mentioned. The slower pace would give us more room to extend the program in the second half of the year and still keep the program at about \$500 billion of purchases next year. In your case number 2, Mr. Chairman, that you presented yesterday, it may take more time in particular to assess the improvements in the outlook for labor markets. And if we do not start with a slower pace, we will need to start tapering as early as March. And then, we are going to have to be prepared to explain to the public why a slower pace in March is necessary, even though we have not seen an improvement in labor markets. Now, I agree with the comments that President Lockhart made about the communication challenge that we are going to have. I do, though, realize that my preferred, more-gradual pace of purchases would be a surprise to financial markets at a time when markets are already on edge because of the concern about the fiscal cliff. Under these circumstances, we may have to proceed with a \$45 billion Treasury purchase program. But we also should begin to take some steps to send a signal to markets that the Committee does not necessarily see that the ultimate size of the program is going to be as big as they are expecting now. Mr. Chairman, you can use your press conference to clarify that the asset purchase program could be scaled back, relative to current market expectations, as progress is made on the outlook for labor markets and as risks to financial stability and our exit strategy grow as our balance sheet expands.

I can very reluctantly support alternative B as long as we do take some steps to ratchet back market expectations. Right now, as we have all been commenting, they are focused on improvements in labor markets. I think it is also important for us to remind them that we are also very closely reviewing the efficacy and the cost of purchases. President Fisher made the

recommendation that if we remove the labor market reference in paragraph 5, it might help—it is a very small step, but at least it is removing labor market improvements in one more place in the statement. As a Committee, we just have to continue to closely monitor the efficacy of the purchases and more important the implications for financial stability and for our exit strategy. Apparently, as I am speaker number 11, the minutes are also going to help pare back market expectations because there has been a lot of discussion by many of the participants about the concerns associated with the large asset purchase program and the implications for financial stability and our balance sheet.

Finally, I remain open to adjusting the language of the forward guidance to be data-driven. I have some of the same concerns, again, that President Bullard mentioned in using a forecast for inflation. When we had this conversation about forward guidance, I mentioned that I do have some concerns about using a forecast for inflation. I continue to think a 7 percent unemployment rate would make a better threshold than 6½ percent because I have an estimate for the longer-run unemployment rate at around 6 percent, in which case waiting until the unemployment rate falls to 6½ percent carries too much inflation risk for me. That said, I am willing to compromise on the unemployment threshold as long as we remain vigilant in the application of the inflation threshold. I am also willing, Mr. Chairman, to support the threshold language, again, if you use your press conference to explain the motivation behind the change and to make the necessary qualifications, including an explanation of what additional measures we will be looking at for the labor market conditions as well as the kinds of measures that we will be looking at in projecting inflation. Again, my biggest concerns with the threshold language—and I know I'm sounding like a broken record at this meeting—are the same concerns that I have around the larger LSAP program, and that is that we should not only be focused on

the unemployment rate and price stability, but also make sure that we stay focused on financial stability developments. And that is in the statement language, and, again, it can be emphasized through your press statement. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Williams.

MR. WILLIAMS. Thank you, Mr. Chairman. I support alternative B. The economic situation calls for additional, ongoing monetary stimulus, and continuing our Treasury and MBS purchases is a good way to accomplish that. Vice Chairman Dudley summed up the arguments for a combined strategy very well, and I agree with his comments in terms of using both Treasury and MBS purchases. I would also mention that I agree with him that I would strike the bracketed “it sees a substantial improvement” phrase from paragraph 5. In terms of LSAPs, I will echo President Lockhart’s remarks. My own view is that appropriate policy will include extending these purchases well through most of this year, probably ending them in the fourth quarter. That is just my own expectation. And I would like to respond to President Fisher’s remarks about the research done at the San Francisco Fed. It is true there are issues about how do the Treasury purchases affect financial conditions. They have identified those—both a signaling channel and a term-premium channel. There is a lot of uncertainty about how much of a role each channel plays. Of course, both are beneficial to the economy. But, again, going back to the Vice Chairman’s comments, there is a lot of uncertainty about these tools in general, so that argues for using both of them. That’s my own conclusion from reading that research.

I do support the thresholds language in paragraph 5, but I confess to seeing this as a closer call than the decision to extend our asset purchases. On the positive side, thresholds are a simple and clear way to link our policy to economic outcomes in a way that conveys that we are staying low for longer. Nonetheless, quantitative thresholds present challenges and risks of both

substance and communications. First of all, we should recognize we are shining a very bright spotlight on the unemployment rate. I find the theory of rational inattention developed by Chris Sims and others instructive in this regard. It reminds us that people have limited capacity to absorb information, and are, therefore, selective in what information they pay attention to. When we stated a specific date for liftoff, the spotlight was cast on the calendar, and that's what everyone focused on, for better or for worse. Once we start talking in terms of an unemployment threshold, it will be the unemployment rate that takes center stage, commanding all of the attention of our audience. Of course, it is important that we communicate the various modifiers and exemptions and footnotes around the use of thresholds. But in the end, we should be realistic and recognize that most eyes will be following the spotlight. Second, we don't have a solid foundation on which to base our specific numerical choice for the unemployment threshold. That came out in some of the comments already. Over time, with new information and analysis, we may regret choosing a 6½ percent threshold. For example, as I mentioned at our previous meeting, movements in r^* or the natural rate of unemployment could change the appropriate conditions for funds rate liftoff. Now, this is not just a theoretical concern. A year or so ago a 7 or 7½ percent unemployment threshold seemed eminently reasonable. In the future, we may well find ourselves in the awkward position of having to change the announced threshold either up or down. Third, thresholds represent a major intellectual shift in how we think about and communicate policy compared with, say, a standard linear reaction function. Even if we just focus on unemployment and inflation, our usual reaction function is a function of both unemployment and inflation together. We don't normally shine the policy spotlight on either unemployment or inflation separately. Looking further ahead—I am still looking to the time when interest rates are above zero—once rates do rise above zero, our use of thresholds will

create some new challenges as we try to explain our return to a normal policy approach and communications.

Weighing these costs and benefits—and, important, in the current situation where the funds rate is stuck at zero and our other policy options are limited—I am comfortable supporting thresholds. Many of the communications challenges specific to this approach can be addressed in your press conference, Mr. Chairman—we’re loading everything on the press conference.

MR. FISHER. No pressure. [Laughter]

MR. WILLIAMS. But more generally, I think as President Evans said, we must recognize that our future policy communications challenges may not be any easier than they were when we provided forward guidance in terms of a calendar date. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Yellen.

MS. YELLEN. Thank you, Mr. Chairman. I support alternative B. Given heightened uncertainty about the economic outlook, due in part to the fiscal cliff, and the lack of clear improvement in the outlook for the labor market, I consider it imperative that we continue our longer-term asset purchases at the current rate of \$85 billion per month. I agree with President Lockhart that this is essentially a continuation of current policy, and it is a policy that I believe is working. I recognize that market expectations concerning the ultimate level of purchases under this program exceed the comfort levels of some members of the Committee, but I am very concerned that a reduction in the pace of purchases at this critical juncture would undermine what we are trying to accomplish and could have a very destabilizing effect.

The phrasing of our September statement intentionally emphasized that our purchases would run at an \$85 billion rate. We turned \$85 billion into a focal point for the markets. Disappointing the very natural expectation that our purchases will continue at this same level,

absent some tangible evidence of improvement in the labor market, and without any rationale for why the efficacy and costs of purchases have changed, will create lasting confusion in the markets and undermine our own credibility. Over time, though, I think it is entirely appropriate for us to vary the pace of our purchases as evidence pertaining to the progress of the labor market accumulates. Inclusion of the word “initially” in paragraph 3, coupled with omission in that same paragraph of any total for the quantity of purchases, signals that the pace of these purchases will be subject to review. And as I indicated in my remarks yesterday, I agree that we need to review the efficacy and costs of this program going forward, and I thought the framework that the Chairman set out yesterday is very helpful for thinking about how to do that. As I noted, I, too, am particularly concerned about the possible emergence of market behavior that could threaten financial stability.

While I do worry about the costs and risks associated with our asset purchase program, I think it is essential to recognize that we do not have any riskless policy options. We face a profound risk that slow progress in moving the economy back toward full employment will not only impose immense costs on American families and the economy at large, but may also do permanent damage to the labor market. We also face the serious risk that inflation, which we currently forecast to run below our target, could decline further over time, raising real interest rates and thereby making it yet more difficult for monetary policy to provide meaningful stimulus. Under such circumstances, there is an important benefit from conveying that we do not intend to take the punch bowl away just as the party is getting going. Frankly, I worried at the time of our September meeting that our open-ended purchase program would be interpreted by markets as tepid support for accommodation. Instead, just the opposite occurred. By linking our purchases to significant improvements in the outlook for the labor market, and coupling this

commitment with the statement that we intend to keep rates low as the economic recovery strengthens, we communicated that we will at least keep refilling the punch bowl until the guests have all arrived, and will not remove it prematurely before the party is well under way. It is natural and appropriate for central bankers to be cautious, to worry about risks, and to convey their resolve to tighten when appropriate. But even though we have shifted expectations about how aggressive we will be in providing accommodation, we have not seen any sign that inflation expectations have become unmoored. Importantly, we should be very careful not to repeat the mistakes that, in my view, the Bank of Japan has made for the past 15 years. Every time there is even a whiff of recovery the BOJ makes clear that it is ready, willing, and able to end quantitative easing and is prepared to reduce its balance sheet back to normal in a heartbeat. In addition, the BOJ conveys its skepticism that QE works even when undertaking new purchases. Arguably, as a consequence, that economy has remained mired in deflation. Losses on the central bank's balance sheet can raise questions among politicians and the public about a central bank's performance. But prolonged failure to meet the central bank's mandate can be just as damaging to its reputation and independence.

Regarding thresholds, I wholeheartedly support adopting them. I won't review all of the arguments we have previously discussed for thresholds and the logic that supports choosing the particular values specified in alternative B. Important, to my mind, the articulation of these thresholds should help the public better predict how the date of liftoff will likely shift in response to economic news, and that response will serve as an automatic stabilizer. I also agree with President Dudley that tightening, when the time comes, is less likely to cause market disruption with these thresholds in place. It will also be a relief for us not to have to continue to reconsider our calendar guidance. To manage the transition from calendar-date guidance to economic

conditionality, I support the inclusion in today's statement of language stating that the new thresholds are consistent with our earlier date-based guidance.

I also like the final sentence of paragraph 5, which importantly suggests that when rates do rise we expect to be patient in returning them to normal levels. I support the inclusion of language in B(5) stating that we will look at additional measures of labor market conditions in conjunction with the unemployment rate. However, the staff memo on assessing conditions in the labor market makes a strong case for considering the unemployment rate as the primary indicator of labor market conditions. It is quite sensible for the threshold to be framed in terms of this variable. I also think it is desirable to state the inflation threshold in terms of projected inflation because we need to look through transitory fluctuations in inflation relating, for example, to commodity prices. Given that we will be talking about our projections, I think it will be important for us to rationalize these forecasts in terms of observable variables like core or trimmed mean measures and to discuss our thinking relative to that of outside forecasters. I would note, though, that adopting a projected value for inflation will require the Committee to make ongoing collective determinations as to whether we expect inflation between one and two years ahead to be below or above 2 percent. I don't think it is appropriate for us to rely on the SEP for those determinations.

CHAIRMAN BERNANKE. Thank you. Governor Duke.

MS. DUKE. Thank you, Mr. Chairman. I would like to endorse, but won't repeat, President Pianalto's comments about financial stability. Instead, I will use my own comments to focus on the discrepancy between market expectations for asset purchases and my own assessment of appropriate policy. For two meetings now there has even been a significant gap between market expectations and the policy assumed in the Tealbook. The December Tealbook

assumes that the market gradually learns of our policy intent, and the resulting staff forecast includes the effects of market disappointment. But how much runway do we really have to modify market expectations; how do we go about it; and how do we pull off gradual understanding rather than sharp disappointment? One outcome that I especially fear is that the learning will go in the other direction—that is, we will be the ones doing the learning, as market expectations get ever more firmly engrained, and we ought not to disappoint. Even worse, markets could revise upward their estimates of future purchases, either because they decide that it will take longer than they currently think for the outlook for labor markets to improve, or because they come to believe that the stopping rule is more aggressive than they originally thought. In either case, the upward revision would widen the gap. In case anyone thinks this wouldn't happen, I would point out that the memo on market functioning in the MBS market indicates that some market participants already expect MBS purchases to continue through the first quarter of 2014. And several Bloomberg articles this week, reporting the results of its surveys, referred to the Fed's \$4 trillion balance sheet as if it were a done deal.

In preparation for this meeting, I went back to the memo on flow-based balance sheet policies that was distributed in preparation for our meeting in September. The memo emphasized that the effectiveness of a flow-based program depends heavily on the public's understanding of the Committee's reaction function and the stopping rule. Indeed, the memo cites the stopping condition as the key feature necessary to make the policy responsive to evolving economic conditions. The memo further suggests that it might be necessary to specify some minimum time frame for purchases to continue in order to avoid having the public underestimate the amount of securities the Committee would be willing to buy. It does contain a discussion of risks related to market functioning or inflation expectations coming unanchored as

the balance sheet grew larger and suggests that if the Committee was worried about such risks it might establish an upper limit on purchases as a possible way to guard against them. Finally, the memo goes on to acknowledge that efficacy and costs are difficult to judge, and warns that such an escape clause could damp the response of asset prices to the policy announcement. Given that they really didn't have any experience with such policies upon which to draw, I think the authors of the memo did a remarkable job of identifying the factors to consider in formulating a flow-based policy. But now that we do have some experience with our formulation, it is important to examine that experience for clues about why the discrepancy between market expectations and expected policy has developed.

For myself, I think I put too much emphasis on the potential for markets to underestimate our intentions. I now wish that I had thought more about the possibility that markets would focus so heavily on the economic conditions that would lead to stopping and pay so little attention to the costs and efficacy conditions. In retrospect, I guess I expected markets to view our statement as a commitment only through the end of the year, and I relied heavily on the costs and efficacy off-ramps as potentially limiting purchases. But we are where we are, and the question is, what do we do now? I thought the memos provided for this meeting were especially helpful for thinking about the limits to balance sheet size and, by implication, purchases—for it is the risk imposed by a very large balance sheet that is driving my reservations about continued asset purchases. Mr. Chairman, you made the case yesterday that the accounting losses didn't really matter as long as there was an overall economic benefit. That analysis is less comforting to me for two reasons. First, it assumes economic benefits from the policy that are harder to measure. And, second, I think most of the world thinks as I do in more of an accounting sense.

Since I have been here, I have watched the administration try to make the case for jobs saved by stimulus; the myth of big bank bailouts proliferates despite profit on the TARP; and just yesterday the announcement of the closeout of AIG at a profit to the government hasn't erased any of the taint of that action. So I view the potential for multiple years of reporting income statement losses and no remittances to the Treasury as a serious condition. At the very least, it would be politically uncomfortable. Unless the public and the Congress have been prepped to understand and accept the losses as an expected condition, losses pose a risk to the reputation and independence of the Fed. When I arrived here, many thought that the banks were understating their losses, despite their adherence to GAAP. As unrealized losses grow, I can envision our accounting treatment strengthening the call to audit the Fed. I can also envision ways in which it might constrain policy. President Bullard mentioned yesterday one possible way that this could happen. We could lose the authority to pay interest on reserves, and that would certainly complicate our exit strategy. I think we need to think long and hard about whether a policy that takes on so much interest rate risk that it is highly likely to lead to both operating and capital losses in future years is appropriate policy.

Asset purchases in the amounts currently expected by markets, modeled as options 3, 4, and 5, represent for me an absolute upper bound to our balance sheet size. And I don't think the risks inherent in the \$750 billion in purchases, including in the Tealbook, modeled as options 1 and 2, should be dismissed as inconsequential. So I see roughly \$500 billion in bad news to deliver to markets. And as I said earlier, if market perceptions of the outlook for labor market conditions or the stopping conditions lead to expectations of even more purchases, the bad news gap could get even bigger. At the same time, I do recognize that creating confusion in the markets at this time, when fiscal uncertainty is so high, would probably result in a diminishment

of the positive results we have seen so far. But the longer we wait to correct market perceptions, the more forceful those communications will need to be. And it seems to me, if the market continues to discount any stopping condition other than economic conditions, the ultimate disappointment when other restraints on policy become clear could be damaging to our credibility with respect to the commitment implied by the threshold language proposed for this meeting.

I have looked hard at the quarterly labor market readings and the staff forecast for 2013, and I just don't see anything that rises to the level of a substantial improvement in the outlook for labor market conditions. I suppose it is possible that conditions will improve and we can declare victory, but we are starting this new program of Treasury purchases in the face of substantial upward revisions to the employment numbers that we had when we made the September decision and a decline in the unemployment rate of four-tenths since then. So the signal to markets would likely be that those conditions, roughly 150,000 new jobs a month, and three- or four-tenths on unemployment did not by themselves satisfy our stopping rule. Our own forecast assumed weak growth this quarter and next, which takes us right up to June before we even project improvement. I can't envision an outcome that meets the labor market condition in time for a mid-2013 exit. I have also tried to think of a way to articulate efficacy as a reason for stopping, and I just can't see how it is helpful to policy to say these purchases are not working, but all of those in the past did and any that might be undertaken in the future would work. Nor do I see anything on the near horizon to suggest that market functioning would be a likely reason to stop purchasing at mid-2013.

For me the question then becomes, whether we are likely to stop purchases in mid-2013 because of something we will learn between now and then or because we reach a limit that we

know now—which is how I came to the realization that the reason I am already convinced that we will need to stop or begin tapering purchases by midyear is my concern over the total size of the balance sheet. And as many conversations as we have had in this room about transparency, I don't see any indication in alternative B that there are any upper limits to balance sheet size. Others on this Committee may see the limits as a larger or smaller balance sheet than the one that gives me pause, but I assume that everyone sees some upper limit. The closer we get to these boundaries, the more important it seems for the market to know where the boundaries might be.

Perhaps the place to start communicating about balance sheet size is in the minutes, the SEP, or both. The SEP template asks for differences between individual projections of the appropriate path of the balance sheet and the path assumed in the Tealbook. The responses to this question that were reported in the September minutes simply stated that 11 participants thought that appropriate policy would include significant additional asset purchases. I would expect the discussion in the minutes of this meeting would contain some reference to participants' expectations for total purchases. This discussion doesn't necessarily have to reveal the Tealbook assumption; it could simply reference balance sheet or program size. And lest anyone on the high side of purchases be comforted by the numbers of people there, I am actually one of the ones who expected more purchases because I expect that the best we will be able to accomplish is a tapering by midyear. At any rate, now that asset purchases are open-ended, I think we must go further and actually submit and publish projections of balance sheet size at our next SEP, in the same way that we do with the fed funds target.

Within the headroom that we have left for purchases, I would prefer to reduce or eliminate Treasury purchases and extend MBS purchases longer so that we can maximize the effect on the housing market. I know some of you object to the credit allocation aspect of

mortgage markets, and this is where I always like to watch President Lacker's head spin around. [Laughter] But in a world where the credit headwinds are concentrated in one form of credit, it seems to me appropriate that we allocate scarce monetary resources to that form of credit. In fact, I would consider revising our exit strategy to eliminate or postpone sales of MBS assets to extend the accommodation past the end of purchases. Such a move would have an added benefit in that it would avoid the capital losses associated with those sales.

Finally, I am not opposed to the threshold language itself. But if it were up to me alone, I would not add it to the statement at this meeting. First, I am concerned that markets may perceive a parallel construction with the asset-purchase stopping rule and look for a specific value for unemployment such as 7 or 7½ percent, and come to an expansion of their expectations for purchases. Mr. Chairman, you and I have discussed this, and I appreciate your plans to communicate about costs and benefits, but I still think this could happen. Second, given my belief that we have some bad news to deliver to markets, I would avoid it and use thresholds as a way to reassure markets when the bad news was delivered. This is a close call for me. Although my preference is not to introduce thresholds at this time, my primary concern with the policy statement is still the continued disparity between my assessment of appropriate policy and market expectations.

So I plan to support alternative B at this meeting with the hope that, first, we will work to understand how the members of this Committee view future purchases, especially with respect to the assumed stopping conditions, measures of cost and efficacy, and maximum balance sheet size; and, second, that we communicate clearly to eliminate the gap between market expectations and our Committee intentions. And like President Pianalto, I believe that the reflection in the minutes of both the comments made here today and the balance sheet assumptions in the SEP is

a first step in that direction. In terms of specifics on the statement, I do support “initially.” I would support the “maintain” rather than “put downward pressure.” I would not include the bracketed language at the beginning of paragraph 5. And if that was included, I would support President Fisher’s suggestion that we leave out the “substantial improvement in outlook for the labor market.” Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Mr. Chairman. The decision to support alternative B is, for me, not a close call as it is for Betsy, but I find myself sympathetic to much of what she just said. From my point of view, the situation that we confront is the one that Janet alluded to earlier, which is we agreed on a program in September that most, if not all, of us thought would not be perceived with quite the heft that it was by markets. That leaves us, or at least me, in something of a dilemma. On the one hand, given my quite strong view that more accommodation is appropriate at this time, one of the few things I am sure about is that labor markets are not anywhere near healthy yet. Given that belief, I wouldn’t want us to do anything now that would remove any of the heft that we got in September. I think dialing down the Treasury purchases would be a signal that would at best be uncertain and unclear and almost surely would be perceived as some removal of accommodation, but markets wouldn’t quite understand why and what had changed. On the other hand, for many of the reasons that Betsy and Dennis have already alluded to, I am not as sanguine about the communication challenge here as some of my fellow supporters of alternative B are. I think Betsy has rehearsed the problems well, and so I won’t repeat it. That is also why I, like Betsy, thought you might want to pair the thresholds language with the first time that a signal was being given that this thing may

not extend quite so far as market expectations believed it would. But as I said, given where we are and where alternative B is, I have no trouble supporting it today.

I would say that with respect to the issues around the LSAPs, there are two sets of distinct issues that are of greater or lesser relevance to people depending on their substantive positions. One is the actual question about the purchases. As I listen today, there are a number of people who would be perfectly comfortable stopping them right now—would prefer that we had not even undertaken them in September—and so that is a pretty clear answer. Although no one has said so in an unqualified way, I suspect that some of us around the table expect that they will be comfortable for some time to come continuing purchases. So, from their point of view, the communication challenge of trying to ramp back expectations is not as imminent a problem. And then, there is a group of people in the middle—I suspect Elizabeth is one of them—who are genuinely not certain how long they may be comfortable because they do want to see what kind of impact is being had and may sense that they will get a better idea of the efficacy question along the way. To the degree that that group of people actually becomes an important fulcrum of future decisionmaking—no inside information here, but the Chairman may well find himself in that middle position at some point along the way—we do want to preserve optionality for the Committee as a whole.

And so the question, just to restate it is, how does one begin to communicate in such a way as to affect expectations? And, like Betsy, my eyes were drawn to the Tealbook assumption that investors will gradually realize that cumulative purchases will be about \$500 billion. Well, how exactly is that going to happen—that it is nice and gradual? How can we achieve that without giving negative signals quickly, which would thereby undermine some of that heft that I indicated earlier? My personal sense is today is not the day to begin giving negative signals

because it would undermine the left. A clearer statement of criteria in a somewhat abstract, disembodied way is probably the best that can be done. But this is a challenge beginning, probably with the March press conference, and maybe even the February monetary policy testimony, and a challenge for all of us individually and collectively because, boy, this one has “Babel” written all over it with everybody coming out and giving their views of what LSAPs mean and what improvement in a labor market is and where the costs or where the benefits are. That has not proved helpful for the institution in the past. However, people do have different views and feel greater or lesser compulsion to state them. I put that on the table as a difficulty, which I think is a shared difficulty, of figuring out how to thread that needle over the course of the next few months. It is dependent, of course, on people’s substantive views as well as a communications challenge.

On thresholds, I have come around, as I have said earlier. The fact that I have come around reveals the fact that I think there are some shortcomings or costs as well as benefits, and people have already mentioned them today. If I had my druthers, I would get rid of all of the other verbiage besides the thresholds themselves in paragraph 5. But I am not going to win that one, so I won’t even pursue it. The only specific thing I would say is, Charlie Plosser, on this one, I actually think the potentially incomplete information given by the unemployment rate works in your favor on thresholds, given what I understand to be your policy inclinations, because to the degree that the unemployment rate comes down more quickly because of transitory labor market participation developments, that would get us to the point of thinking about tightening sooner. In this context at least, I don’t think those kinds of problems that Sarah and I and others have talked about are of particular concern, but that’s not to dismiss all of the communications concerns around thresholds. I think the problem with thresholds is that

everybody is for reaction functions and communicating reaction functions, but then people begin to get nervous when you actually get specific. Well, if you don't get specific, and you just restate all of the things you think about, then you are not communicating the reaction function. At some point, you've just got to pull the trigger and say, "Okay. This is the best we can do. We're going to do it." Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Raskin.

MS. RASKIN. Thank you, Mr. Chairman. I support alternative B. The expectation for additional accommodation that we put in place in September still seems appropriate to me. What appeared to be actual improvements in the indicators of consumer spending at the October meeting have turned out to be fleeting. Real disposable income is rising less than we expected, and I think it will be some time before we see considerable momentum in labor compensation sufficient to drive consumption or help create a virtuous cycle of economic growth. At the same time, inflation appears to be well contained. If inflation works primarily through wage pressures, there don't appear to be any such broad-based pressures developing at this time. In my view, the primary risks to the outlook are still large and to the downside. We have not yet bumped up against financial stability or market operation constraints, and monetary policy works in part through expectational channels, so I support not dialing down the accommodation that we agreed upon in September. That said, I am not giving an opinion on a total LSAP size and am prepared to engage each month in a careful efficacy evaluation to determine the appropriate size of continued monthly purchases. We have to engage each month in rigorous analysis of financial stability and market operation, as well as transmittal effects from financial markets to economic growth. It is appropriate to be cautious.

Looking at the statement as a whole, I think its thrust and tone is to be clarifying for economic agents our commitment to better outcomes. With this overall thrust and tone, the lower tail of possibilities that households and businesses might worry about gets partially cut off. For instance, the odds that this Committee begins to tighten at the first sign of good labor market news, and prematurely slows the economy, should remain small. Similarly, the chance that this Committee will greet worsening economic data with a shrug and a “we have done all we can” should seem less likely to economic participants. We want to make sure that households and businesses understand that the Committee remains committed to the promotion of future economic recovery rather than perceive an expectation of future economic weakness. It is important that our statement as a whole continue to convey this commitment, especially in the current context of the fiscal cliff and the current economic environment. An important step for future statements, I should say, will be to reflect the balance of this commitment to the promotion of an economic recovery with concerns about efficacy, financial stability, and market operation. The communication of this balance in a way that doesn’t destroy the beneficial expectational aspects of our accommodative policies, and in a way that doesn’t make us look like Governor Yellen’s characterization of communications by the Bank of Japan, will require careful work. Adding to this communication challenge will be a layering of a communication strategy regarding remittances that we are only now beginning to contemplate.

I continue to believe that there are good arguments to be made for being even more explicit with our forward guidance. I like the formulation of alternative B that includes the paragraph specifying quantitative thresholds in the context of other qualitative indicators. We have now had plenty of deliberation and consideration of these values. We have discussed that they are thresholds rather than triggers, and we have constructed a qualitative set of additional

determinants such as other measures of labor market conditions and indicators of inflation pressures and inflation expectations. Moreover, the market has been conditioned to be receptive to the way this paragraph is crafted. Obviously, though, I am concerned with President Bullard's sense that the formulation will be viewed as triggers rather than thresholds and will lead to inadvertent tightening. I sense that markets understand the proposed formulation, but I am also moved by President Plosser's fears that the communication is flawed. However, I am trying to compare the proposed communication not with language that we have not yet crafted, but with calendar dates. Calendar dates give absolutely no information, and the statement's proposed language is better than that. It gives more information—limited information, but more—and is at least marginally clarifying. What I also continue to like about thresholds is that if the markets and the public believe that we have a lower inflation threshold than we do, then when inflation moves above the level there might be some concern that we have lost our resolve or our ability to keep inflation in check, and that could raise inflationary expectations. If instead market participants fully understand that we are merely temporarily allowing inflation to rise, as long as it remains below the 2 percent objective with ½ percentage point margin, inflation expectations seem more likely to remain steady. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Stein.

MR. STEIN. Thank you, Mr. Chairman. I support alternative B, though I do so with fairly serious reservations, similar to some of those expressed by President Piantalto and Governor Duke. I would have preferred an option that kept the MBS purchases going at their current \$40 billion clip but began to dial back the Treasury purchases, and in so doing sent a clearer message to markets that reined in expectations about the ultimate scale of the program. As a number of people have mentioned, based on the current dealer survey, these expectations

are considerably larger, at least than I would be comfortable with, for virtually any evolution of the labor market outlook. Now, of course I understand the point that many people have emphasized, that if we dial back in this way we would have likely disappointed the market, given where these expectations currently are. But of course this is a dynamic problem, and if your constraint at each point on the path is that you can't disappoint the market, you run the risk of getting yourself boxed in. Ultimately, the analysis has to fall back to the fundamental costs and benefits of the different policy options.

On the benefit side, I do believe the MBS purchases have been beneficial, which is why I would favor continuing them. As for the Treasury purchases, my admittedly gut sense is that the incremental benefits laid on top of the MBS are more in the form of signaling and in some sense a complement to our forward guidance. But if you are talking about signaling, it is incumbent to ask about alternative messaging technologies. And I had thought that one of the appeals, to me at least, of the thresholds was that this was an alternative way to convey our generally dovish intentions, and, as others have noted, was more credible in some ways than a calendar date. I thought it would have been nice to use it as a more cost-effective substitute for Treasury purchases in the signaling department. But we are not doing that kind of substituting today, which strikes me as a bit of a missed opportunity.

On the cost side, let me start by saying, Mr. Chairman, I found the algebraic formulation that you laid out yesterday extremely helpful. It has all the right ingredients and clarifies things very well. And in so doing, it underscores one of the real missing ingredients in the debate we have had so far, which is that we have not forced ourselves to a consensus on $C(x)$. $C(x)$ is essentially a placeholder; it could embody many things. And what would be extremely helpful is if we had a clearer shared understanding of what is driving it and what is driving the convexity in

$C(x)$ —that is, where do the increasing marginal costs come from? In an ideal world, we would have something that was almost a quantitative theory and that we could operationalize a little bit to help us think about the tradeoffs. But for all of the formal modeling work that we do in the FRB/US and elsewhere, everything that we have in the models is really very linear in nature. There is no explicit mechanism that drives diminishing returns or increasing costs. At this point, we really don't have any analytical discipline around the question of how much is too much, and that is essentially the question we are facing at this point.

In an effort to try and think a little bit about this question, let me propose a thought experiment. Imagine everything is exactly as it is today. The economy is exactly the same; we know whatever it is we know about efficacy; there are no signs of market dysfunction on the horizon; the financial stability picture is exactly as it was reported to us yesterday. The only difference is that the SOMA portfolio is at—and I am going to pick a number, which is unrealistic but makes my math easy to do in real time—\$5 trillion at a 10-year duration. Let's just imagine that; I know it's not a real number. Let's stipulate there are not going to be any exit problems. So the question is, if we had a \$5 trillion SOMA portfolio, with everything else the same, would anybody in this room change their vote? My overriding intuition is the answer should be yes. Now, if you could figure out why, maybe you could start backing into a theory that would give us a little bit of content and guidance now. My best stab at a theory is based on fiscal risk. So if we had a \$5 trillion portfolio with 10-year duration, we would have effectively made it so that on a consolidated basis, the United States government is financing itself completely on an overnight basis. To see why—and you will see why I picked these numbers—right now, the average duration of Treasury debt in the hands of the public is 4.4 years, and there is about \$11 trillion of such debt. So 4.4 times 11 is approximately \$50 trillion, which is about

\$5 trillion of 10-year duration equivalence. That's the short side of the trade. Five times 10—you see why I picked the numbers—if we owned \$5 trillion of 10-year duration equivalence, it would exactly net out. On this particular way of thinking about it, we would have completely offset the Treasury's duration. This is a different way of framing it: It would be, from an interest rate risk exposure perspective, exactly like a world in which the Fed owned only bills and in which the United States government was financing itself, rolling on an overnight basis. In a world where we can't get our fiscal act together, I would hope that that would strike you as a slightly sobering proposition.

Now, that is \$5 trillion with an exaggerated duration, and I hope we won't get there. What about something more realistic like \$3.8 trillion, which is the peak SOMA size in option 3 in the memo, and essentially the market expectation? Do a similar back-of-the-envelope calculation with \$3.8 trillion with the weighted-average duration of the SOMA portfolio at 6.6 years, which Lorie tells me is where we will be roughly at the completion of the program. That would have the effect of shortening the Treasury's effective debt maturity from 4.4 years, not to zero, but to about 2.2. Again, in those units, though not nearly as big, that strikes me as a pretty significant effect.

An alternative framing is not in terms of this kind of consolidated government debt maturity, but in terms of incremental dollars of fiscal exposure. This is what the memo did; I found the memo extremely helpful on this dimension, and I want to express my appreciation to the staff who did it. Here is an extremely crude reading of the memo, which doesn't nearly do it justice. If we do another \$1 trillion of purchases, our expected incremental fiscal outlay, essentially due to the negative term premium capitalized, is on the order of \$100 billion. And the risk in the more-adverse scenario is it gets another \$200 billion worse. Now, this shows up as

deferred assets and negative remittances and all of that, but I would differ with the characterization of this as primarily a political or a communications problem. It is a real hit to taxpayers. Now, that brings with it a communications and a political problem, but it is based on something of substance. Of course, there is some scope for finessing the timing of the remittances by not selling the MBS, but that doesn't really to a first approximation change the underlying economics. If rates go against you, and you have got a really big carry trade, you have lost money.

That is the best I can do in terms of putting concrete magnitudes to this thing. In doing so, I don't mean to suggest that there are no other issues that are as, or potentially more, important—in particular, as President Pinalto and others have suggested, financial stability issues. I don't mean to downplay them. Of course, because I can't quantify them in the same way, there is some risk that I have been kind of looking under the street lamp with this analysis. As far as these fiscal costs and risks go, I completely concede that reasonable people can and should disagree about how big they are relative to the benefits. And Mr. Chairman, yesterday you suggested that some of these risks were not that large relative to the benefits. That may be right. I am not completely there yet in my own mind. The framing seems to matter. When I think about it on a consolidated debt maturity basis, it feels striking to me. But I concede that I don't have a completely strong counterargument.

But where I would hope there would be less disagreement is on a proposition that Narayana advanced yesterday, which is that whatever these risks ultimately are, we ought to be pretty up front about them and acknowledge both amongst ourselves and publicly that our policy involves taking on a material amount of fiscal risk. And, of course, that risk will grow as the balance sheet grows, and at some point, then, we will disagree over where that point is. It should

start to weigh strongly against our willingness to do more, almost irrespective of the labor market outlook. And here I am going to agree very strongly with something that Governor Duke said about there being a fundamental tension. Once you take this view that the $C(x)$ function is strongly convex, there is a fundamental tension between that understanding and an open-ended program because we know something about the limitation now. We don't have to wait and see. At some point we are going to get to a point where we are really uncomfortable.

So just the bottom line, I think we have got ourselves in a little bit of a fix here with what the market thinks we are going to do relative to what at least some of us think it is reasonable to do. And we need to start making a concerted effort to start reining in those expectations. I can't see any reason we wouldn't in the next SEP—parallel to what we view as the optimal path of the funds rate—be able to put down our optimal path for the size of the balance sheet. I agree very strongly with the idea. That would help greatly align the market with where we are. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Powell.

MR. POWELL. Thank you, Mr. Chairman. I hear many thoughtful comments all around the table, and let me say that I brought to this exercise a willingness to support additional purchases into 2013. That said, having read the memo carefully and thought about the structure of the LSAP and looked at the Tealbook forecast, my initial reaction was: How is this not a \$1 trillion to \$2 trillion LSAP? Where is the substantial improvement in the outlook for the labor market in the forecast and where are the teeth in the efficacy and other so-called off-ramps? I've been talked off the ledge on that, but my concerns remain, and I would associate myself with the comments of President Lockhart and President Pianalto, Governor Duke, Governor Stein, and Governor Tarullo, for that matter. I particularly appreciated the Chairman's

framework yesterday, and I'm going to try to address the Treasury LSAP through that framework. Let me also say that I thought the staff memo did, as always, a remarkable job of what it's supposed to do.

First, the costs. When we significantly expand the size of the balance sheet, those purchases incur additional costs. There are vast uncertainties around that including the form or channel through which the costs appear, their amount, and the timing of their realization. The Chairman's list of costs include market function, fiscal capital gains and losses, exit, and financial stability, and I would say there's another implicit category in the g variable, which is "other"—costs from unforeseen sources. It seems to me that none of these costs can be particularly well understood or accurately estimated in the time frame in which we will be continuing our purchases. Each of them is likely to be realized only years down the road. For example, we have modeled a present value loss, as Governor Stein indicated crudely, of about \$100 billion from option 3 or \$7 billion a year, or deferred assets, or five years of low remittances beginning in five years. These are all different faces of the same fact pattern. There's tremendous uncertainty around those numbers, and even conditional on those losses, we can't know the effects of losses like that until the events actually occur several years down the road.

Take the problem of exit. As Rodney Dangerfield might say, "Please take the problem of exit." We draw comfort from the thought that we can manage the exit if only because we don't need to sell any securities in the end. Now, we'd have to explain to the market why we're not selling any securities, having explicitly purchased them on the understanding that we would sell them as quickly as was practicable. How will the market receive that information? It's kind of unknown, and our level of comfort around exit is a bit overdone. Whether we sell or not, I

wonder whether there could be implications for inflation expectations or for the conduct of monetary policy. President Bullard brought up one yesterday that I hadn't thought of. We're going to be paying billions of dollars of interest to our largest financial institutions and nothing to the taxpayer in a time of fiscal austerity, and to me that's a whole lot more than a communications problem.

My "other" cost category is flashing red: Financial stability, as Governor Stein and President Piana both indicated, is another great example. Anticipated financial crises don't happen, and that's why we never have financial crises anymore. For me, there are two consequences of this problem with distant uncertain costs and risks. The first is that I would move my marginal cost curve higher for any given level of x , and the second is that in the face of uncertainty, as distinct from measurable risk, I would want to proceed in discrete amounts under a stopping rule, and of course, that is arguably the intended design of the LSAP policy. Our stopping rule depends fundamentally on perception of a lack of efficacy, and I am concerned about the cases in which efficacy is debatable, under which we keep on purchasing, even though we may lower expectations as we do in case 3 of the Chairman's handout. Those cases appear to me to account for most of the probability distribution. In any event, those are the ones I'm concerned about.

Let me talk briefly about benefits. I believe that MBS purchases are having a positive effect on housing and ultimately could have a broader positive effect through consumer behavior and the behavior of financial institutions, for that matter. So it makes sense to me to continue MBS purchases, other things being equal, until the middle of next year and then slow down and then stop as the housing recovery will have reached a sustainable level, and monetary policy will have done its work. However, I doubt that Treasury purchases will provide much additional lift

when I look at the channels through which we believe they work. Lower Treasury rates will have little incremental effect, I would predict, on private business rates, which are already historically low and set to decline. In any case, private-business borrowers have not responded to still lower rates by hiring or investing—and they’ve made it clear that they don’t intend to change that until demand changes—other than by repurchasing their own equity or refinancing their own debt. The second-order economic effects of that will be small. There may also be some pass-through to consumer borrowing rates. We’re already addressing that through the most important one of those, through our MBS purchases. With global economic weakness and the ongoing fiscal crisis in the United States, the dollar should remain strong. Our short-term event studies are going to pick up some effect of our purchases, and I’m always going to think that those effects will decay quickly under the power of much greater forces, particularly the vast risk-on, risk-off flow. It’s mostly risk-off these days. More Treasury purchases are unlikely to increase consumer or business confidence, and as far as the stock market and the wealth effect are concerned, the expected 10-year real return on equities has been range-bound for three years while we have, along with other forces, managed to drive down real 10-year returns by more than 200 basis points. The stock market is pricing in a really high risk premium, and our purchases seem only to widen it. So I would also tend to lower my marginal benefit curve below that proposed in the staff LSAP memo.

Here’s where that leaves me: I’m concerned that the actions contemplated in this meeting are setting us on a path to a much larger balance sheet with likely benefits that are not commensurate to the risks that we’re bearing. It will be very difficult to get off that path unless we begin to prepare the markets starting with this meeting. If our actions at this meeting validate the markets’ expectations of \$1.2 trillion in purchases, the costs of correcting that impression

will go up, and our willingness to bear those costs may not. I'm not supportive of a program of that size, and I am concerned that we may be sitting on bad news in the form of a disconnection between the expectations of 12 of the 19 participants and those of the market. It may be that publication of our balance sheet expectations would close that gap, and I'd like to see us explore moving in that direction for the March SEP.

As far as thresholds are concerned, I had thought, as Governor Tarullo mentioned, that it might make sense to hold off in announcing thresholds and use them in effect to cover a reduction in our Treasury purchases at a future meeting. However, I can see that that doesn't seem to carry the day, and I will support thresholds at this meeting. I'm going to vote to support alternative B despite my misgivings, and in doing so I'm voting, just to be clear, for option 1 and not for option 3, and I would actually prefer a program that is much more oriented toward MBS, even one that goes longer without increasing the total amount.

Regarding the language in the statement, the one thing I would add that hasn't been said is in the first sentence of paragraph 5. I like the second part of the parenthetical, the reference to the asset purchase program ending, and here's why: There has always been this danger that the market will perceive the thresholds as our brand new reaction function and attach them to LSAPs, notwithstanding what we say. This is the only mention in the statement that suggests that that is not an appropriate thing to do. I believe the Chairman is going to address that pretty forcefully in his press conference remarks, but I'd just love to see that little piece of it in the statement. I also prefer the second clause at the end of paragraph 5. On the reference to inflation, 2 percent is to me preferable to the first clause.

And let me say that I hold these views on the LSAP conditional effectively on the range of economic expectations that we all have. I do understand that it could possibly be necessary to

go beyond option 1 and even option 3 for that matter if conditions seriously deteriorate, particularly if there's a credible threat of deflation. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you all very much. We need to be done by 11:30. Maybe the best thing to do is to go ahead and wrap up the meeting, and then coffee and lunch will be available.

Almost everybody reflected that this is very difficult—not free of angst, I think was the expression that was used. I certainly recognize the very difficult nature of the decision. I believe it was Governor Yellen who said, though, there is no easy choice here. On the one hand, there are real and difficult-to-measure costs associated with further balance sheet action, and the thresholds, for that matter, are a new communication step, which is not clear precedent. But on the other hand, we are taking significant risks with an economy that is obviously underperforming, and we are missing on both sides of our mandate. Again, there is no easy decision. We did make a commitment in September. Irrespective of market expectations, I think it is reasonable to follow through on that commitment and to continue the accommodation that we discussed in September.

Now, I agree with the communications points. Many people have made reference to my press conference, which I am looking forward to because it is going to be extremely informative. [Laughter] Of course, most of the press conference is Q&A, and so the questions that come will determine what I have an opportunity to say. But I thought it would help maybe if I gave you a little bit of the introduction now before we take the vote, so you'll see some of the things I plan to talk about. On the asset purchases, let me just read you a little bit. “The pattern of future asset purchases will depend on the Committee's evaluation of incoming information, in two respects. First, we expect to continue asset purchases until we see a substantial improvement in the

outlook for the labor market in the context of price stability. In assessing the extent of progress, the Committee will be evaluating a range of labor market indicators, including the unemployment rate, payroll employment, hours worked, and labor force participation, among others. Because increases in demand and production are normally precursors to improvements in labor market conditions, we will also be looking carefully at the pace of economic activity more broadly.

“Second, the Committee will be monitoring economic and financial developments to assess both the efficacy and possible drawbacks of its asset purchase program. The Federal Reserve’s asset purchases over the past few years have provided important support to the economy, for example, by helping to keep mortgage rates historically low. The Committee expects this policy tool to continue to be effective and the costs and risks to remain manageable, but as the program continues, we will be regularly updating those assessments. If future evidence suggests that the program’s effectiveness has declined, or if potential unintended side effects or risks become apparent as the balance sheet grows, we will modify the program as appropriate. More generally, the Committee intends to be flexible in varying the pace of securities purchases in response to the information bearing on the outlook or the perceived benefits and costs of the program.”

With respect to that, what I’m trying to convey is a balance between the economic criteria and the costs and efficacy criteria. With respect to the thresholds, let me just say that it has been more than a year since we introduced the date-based guidance. We have had substantial discussion. I think that while this is not perfect, it is a step in the right direction. Our communication will continue to evolve going forward. But let me give you a flavor of how I will explain this to the media in a couple of hours: “Although the modified forward guidance

should provide greater clarity about how the Committee expects to respond to incoming data, it by no means puts monetary policy on autopilot. In this regard, let me make several points.

“First, as the statement notes, the Committee views its current low-rate policy as likely to be appropriate at least until the specified thresholds are met. Reaching one of those thresholds, however, will not automatically trigger immediate reduction in policy accommodation. For example, if unemployment were to decline to slightly below 6½ percent at a time when inflation and inflation expectations were subdued and were projected to remain so, the Committee might judge an immediate increase in its target for the federal funds rate to be inappropriate. Ultimately, in deciding when and how quickly to reduce policy accommodation, the Committee will follow a balanced approach in seeking to mitigate the deviations of inflation from its longer-run 2 percent goal and deviations of employment from its estimated maximum level.” So the first point is that these are thresholds, not triggers.

Second point: “Second, the Committee recognizes that no single indicator provides a complete assessment of the state of the labor market and therefore will consider changes in the unemployment rate within the broader context of the labor market conditions. For example, in evaluating a given decline in the unemployment rate, the Committee will take into account the extent to which that decline was associated with increases in employment and hours worked, as opposed to, say, increases in the number of discouraged workers and falling labor force participation. The Committee will also consider whether the improvement in the unemployment rate appears sustainable.” So it is not a mechanical reaction function.

“Third, the Committee chose to express the inflation threshold in terms of projected inflation between one and two years ahead, rather than in terms of current inflation. The Committee took this approach to make clear that it intends to look through purely transitory

fluctuations in inflation, such as those induced by commodity price changes, and focus instead on the underlying inflation trend. In making its collective judgment about the inflation trend, the Committee will consider a variety of indicators, including measures such as median, trimmed mean, and core inflation; the views of outside forecasters; and the predictions of econometric and statistical models of inflation. Also, the Committee will pay close attention to measures of inflation expectations to ensure that those expectations remain well anchored.”

So I give a little bit of guidance on the things that we will be looking at and updating as we go along. The projection of inflation, which obviously would be conditional on continuation of low rate policy, will be a Committee decision and will be reflected in the statement, much like we now talk about our anticipation that inflation will be at or below target. But clearly for credibility reasons, we will need to make reference to other indicators to show that they are at least broadly consistent with our own view. I hope that gives you some flavor. It is important to communicate the conditionality, the efficacy and costs, and the fact that policy is by no means on autopilot—that we will continue to make informed decisions based on a wide range of data.

Those are some comments, if anyone has any questions or reactions to that. If not, on the language, I was proposing alternative B. Let’s see. Regarding President Lockhart’s suggestion about saying, “maintaining downward pressure”—this is in the third line from the bottom of paragraph B(3) where it says “should put downward pressure”—I propose we change that to “should maintain downward pressure.” No objection? Second, we have agreed, subject to our discussion, to go with paragraph 5, and the last sentence had two choices. Those people who expressed views preferred the second choice “its longer-run goals of maximum employment and inflation of 2 percent.” We’ll go with that, unless there is any reaction to that. Now, the last item is at the top of the page, near the beginning of paragraph 5, the bracketed phrase, “after it

sees a substantial improvement in the outlook for the labor market, the asset purchase program ends, and the economic recovery strengthens.” Most people who mentioned this argued to strike it, but there was one suggestion made to strike the part about the labor market and say “considerable time after the asset purchase program ends”—as a way of separating those two things—“and the economic recovery strengthens.” I would be open to doing that either way. I don’t know if people have a view. Should we stay where we are? Mr. Potter.

MR. POTTER. “Employ other tools” is the condition on the previous one, and that gets ruled out if you do, “after the asset purchases end.”

CHAIRMAN BERNANKE. I see.

MR. LACKER. I just didn’t hear what you said, Simon.

MR. POTTER. There is a plan B option, which is “employ other tools” as well. “Will continue its purchases and employ its other tools as appropriate.” That’s in paragraph 4 under the conditions, what actions would be taken.

CHAIRMAN BERNANKE. But that is not an option. It is already in there, you say.

MR. POTTER. Right.

CHAIRMAN BERNANKE. I see. So you’re saying that’s a problem with this language. However, we are not saying anything about the other tools—if we were to use other communications approaches, for example. Again, the majority of people wanted just to strike this. Are there others who want to include the asset purchase part only?

MR. POWELL. I did. Or is your question are there others?

CHAIRMAN BERNANKE. Yes.

MR. POWELL. I’m not sure I followed Simon’s point and your point, although you guys obviously follow it. [Laughter]

MR. POTTER. The condition was a substantial improvement in the labor market outlook, and we would use our tools to achieve that. Our tools are not just the asset purchases.

MR. TARULLO. But that was not actually your concern.

CHAIRMAN BERNANKE. I don't think there is anything logically wrong with what Governor Powell is suggesting. I think it does establish a little bit of a separation between asset purchases and the funds rate.

MS. DUKE. And in thinking about it, referencing the asset purchase program ending does a little bit of what I would have preferred, which is tie the threshold language on fed funds to reduction in asset purchases.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. Mr. Chairman, having suggested eliminating the entire bracketed portion, I would second Governor Powell's suggestion.

CHAIRMAN BERNANKE. All right. I'm seeing a little bit of a swing in that direction. What we are proposing, then, is "remain appropriate for a considerable time after the asset purchase program ends," no comma, "and the economic recovery strengthens." Any objections? Any further comments? President Kocherlakota.

MR. KOCHERLAKOTA. Mr. Chairman, I am unclear about what the Committee is doing in terms of the choice at the end of paragraph 5.

CHAIRMAN BERNANKE. We are choosing the second of the two options.

MR. KOCHERLAKOTA. Choosing the second? Okay. Your preference.

VICE CHAIRMAN DUDLEY. My preference.

MR. KOCHERLAKOTA. Well, that's perfect.

CHAIRMAN BERNANKE. Okay. If there are no other comments, we'll take the roll.

MS. DANKER. Okay. Let me just make sure I've got this. The only changes are in paragraph 3—we are putting “maintain” instead of “put” in paragraph 5, not 5'; we are eliminating the things between brackets except maintaining “the asset purchase program ends,” no comma, “and;” and then, for the final bracketed part of that paragraph, we are choosing the second option, which is, “its longer-run goals of maximum employment and inflation of 2 percent.”

This vote covers that statement and the associated directive.

Chairman Bernanke	Yes
Vice Chairman Dudley	Yes
Governor Duke	Yes
President Lacker	No
President Lockhart	Yes
President Pianalto	Yes
Governor Powell	Yes
Governor Raskin	Yes
Governor Stein	Yes
Governor Tarullo	Yes
President Williams	Yes
Governor Yellen	Yes

CHAIRMAN BERNANKE. Again, thank you very much. I listened very carefully these past two days and learned a lot, and I will continue to work with all of you to try to make this program as effective as possible. Ms. Logan.

MS. LOGAN.⁸ Thank you, Mr. Chairman. We are just passing out a handout, which is the draft Desk statement. Based on the directive, the Desk intends to expand the SOMA's holdings of securities by purchasing \$45 billion per month in longer-term Treasury securities and reinstitute Treasury reinvestments after the maturity extension program is completed. In addition, the Desk will continue to purchase \$40 billion of agency MBS per month, as well as maintaining the existing policy for reinvesting principal payments on agency debt and agency MBS into MBS. The Desk intends to release a statement with operational details at the same time as the FOMC statement. A draft of that Desk statement is being provided to you for your reference. We will make one adjustment to that draft statement, which is to replace the word “put” with “maintain,” in order to be consistent with the FOMC statement change. A revised set of frequently asked questions will also be posted later today.

⁸ The materials used by Ms. Logan are appended to this transcript (appendix 8).

The Desk plans to distribute the \$45 billion in monthly Treasury purchases across seven sectors based on the approximate weight shown in the table in the Desk statement. This distribution differs somewhat from that used in the maturity extension program. The purchases would encompass securities with 4 to 30 years of remaining maturity as compared with the 6-to-30-year range under the MEP. This wider distribution of eligible securities increases the amount of supply available for purchase. In conducting purchases, the Desk will maintain the existing limit of buying only up to 70 percent of outstanding issuance per security. The average duration of monthly purchases under this wider distribution will be roughly nine years. This is nearly equivalent to the net duration of the MEP, as purchases averaged about 10½ years' duration and sales averaged about 1½ years' duration. Of course, the proposed distribution could be altered if market conditions warrant, but we would aim to keep the average duration at roughly the same nine-year point and consult with the Committee regarding any material deviation from this plan. At this point, the Desk anticipates conducting 18 purchase operations per month with the size of those operations ranging from just under \$1 billion to over \$5 billion, depending on the sector. A schedule of the purchase operations to be conducted over the following month will be released on the last business day of the month. As directed, the Desk will also resume the process of reinvesting maturing Treasury proceeds at auction. Given the MEP sales of short-dated Treasury securities, the SOMA portfolio has limited holdings that will mature in the next three years. Specifically, the maturing proceeds would require reinvestments of just \$21 million in 2013 and \$475 million in 2014. As a minor technical adjustment, the Desk will not reinvest proceeds for maturing Treasury securities of less than \$2 million for operational efficiency and will refer to this technical adjustment in the Desk's statement with details provided in the frequently asked questions. Thank you.

CHAIRMAN BERNANKE. Thank you. Are there any questions? All right. Let me go to announcements. The press conference will be shown in the Special Library, if you are interested. Coffee is available, and lunch will be available whenever it's convenient for you. The next meeting is Tuesday–Wednesday, January 29 and 30, 2013. I will see you then. Thank you.

END OF MEETING