

**Meeting of the Federal Open Market Committee on  
December 15–16, 2015**

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, December 15, 2015, at 1:00 p.m. and continued on Wednesday, December 16, 2015, at 9:00 a.m. Those present were the following:

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

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

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

James M. Lyon, First Vice President, Federal Reserve Bank of Minneapolis

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

David Altig, Eric M. Engen, Michael P. Leahy, William R. Nelson, and William  
Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

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

Robert deV. Frierson, Secretary of the Board, Office of the Secretary, Board of  
Governors

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

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

James A. Clouse and Stephen A. Meyer, Deputy Directors, Division of Monetary Affairs, Board of Governors

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

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

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

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

Michael G. Palumbo, Senior Associate Director, Division of Research and Statistics, Board of Governors; Beth Anne Wilson, Senior Associate Director, Division of International Finance, Board of Governors

Ellen E. Meade and Joyce K. Zickler, Senior Advisers, Division of Monetary Affairs, Board of Governors; Wayne Passmore, Senior Adviser, Division of Research and Statistics, Board of Governors

Joseph W. Gruber, Deputy Associate Director, Division of International Finance, Board of Governors

Francisco Covas, Christopher J. Gust, and Jason Wu, Assistant Directors, Division of Monetary Affairs, Board of Governors; John M. Roberts and Steven A. Sharpe, Assistant Directors, Division of Research and Statistics, Board of Governors

Patrick E. McCabe, Adviser, Division of Research and Statistics, Board of Governors

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

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

Katie Ross,<sup>1</sup> Manager, Office of the Secretary, Board of Governors

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<sup>1</sup> Attended Wednesday session only.

Valerie Hinojosa, Information Manager, Division of Monetary Affairs, Board of Governors

Mark L. Mullinix, First Vice President, Federal Reserve Bank of Richmond

James J. McAndrews, Executive Vice President, Federal Reserve Bank of New York

Troy Davig, Michael Dotsey, Evan F. Koenig, Spencer Krane, Samuel Schulhofer-Wohl, Ellis W. Tallman, Geoffrey Tootell, and Christopher J. Waller, Senior Vice Presidents, Federal Reserve Banks of Kansas City, Philadelphia, Dallas, Chicago, Minneapolis, Cleveland, Boston, and St. Louis, respectively

Douglas Tillett, Robert G. Valletta, and Alexander L. Wolman, Vice Presidents, Federal Reserve Banks of Chicago, San Francisco, and Richmond, respectively

William E. Riordan,<sup>2</sup> Markets Officer, Federal Reserve Bank of New York

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<sup>2</sup> Attended through the discussion of financial developments and open market operations.

**Transcript of the Federal Open Market Committee Meeting on  
December 15–16, 2015**

**December 15 Session**

CHAIR YELLEN. Good afternoon, everybody. As everyone knows, we had a farewell lunch for President Kocherlakota at our October meeting, and Narayana recused himself from FOMC business after that. I will also note that Neel Kashkari has been selected as president of the Federal Reserve Bank of Minneapolis effective January 1, and he will be attending the January FOMC meeting. Attending on behalf of Minneapolis today is First Vice President Jim Lyon. Jim has also represented Minneapolis at the FOMC in September 2009, and I know he has attended many FOMC meetings. I would like to welcome you, Jim, back to the table.

MR. LYON. Thank you.

CHAIR YELLEN. Let's see. Now, let me say, this entire meeting, as has been the case for a few meetings, will be a joint meeting of the FOMC and the Board of Governors. So we need a motion to close the Board meeting.

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. Without objection. Let's ask Simon to start things off with the Desk report.

MR. POTTER.<sup>1</sup> Thank you, Madam Chair. Since the Committee met in October, expectations that liftoff will occur at this meeting have increased substantially, while the expected slope of the target rate thereafter is little changed. As liftoff expectations grew earlier in the period, broader asset prices were relatively range bound. However, late in the period, sharp commodity price declines weighed on risk sentiment. On net, domestic financial conditions tightened over the period.

As shown in the top-left panel of your first exhibit, over the period the market-implied probability of liftoff at this meeting increased markedly, driven by the October FOMC statement and the better-than-expected October employment report. Adjusting for year-end effects in the January federal funds futures contract, we estimate a market-implied probability of roughly 90 percent. The average probability

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

of liftoff at this meeting, according to the Desk's most recent dealer and buy-side surveys, is also around 90 percent. And all but one of the 51 respondents view this meeting as the most likely time of liftoff.

Amid the buildup in expectations regarding liftoff, there was a parallel shift up in the market-implied policy rate path, as shown in the top-right panel. The market-implied path continues to be shallow by historical standards at the initiation of tightening phases, rising by about 50 basis points per year in 2016 and 2017. According to the Desk's surveys, the average expected pace of tightening in the first two years after liftoff, conditional on not returning to the effective lower bound, declined slightly, as shown in the middle-left panel, continuing the trend observed since we first asked about this in September 2014. On average, survey respondents now expect the target rate to increase 80 basis points in the first year after liftoff and 95 basis points in the second year.

Market rates over the next two years are still somewhat below the mean expectations of the target rate in the Desk's surveys, as shown in the middle-right panel. These mean expectations are derived from survey questions eliciting probability distributions for year-end rates. Importantly, the answers include assessments of the likelihood of returning to the zero bound. The dots in the panel show individual respondents' expectations for the year-end target federal funds rate in 2016 and 2017, with the dots scaled by the proportion of respondents expecting each rate level and shaded by how likely they view a return to the effective lower bound; darker shades indicate a lower probability of returning to the effective lower bound. As you can see, the gap between market rates (the red diamonds) and the average survey expectations (the blue dashed lines) is slight for 2016 but becomes larger in 2017, and respondents that place high weight on a return to the zero lower bound have lower mean rate expectations.

The medians of the survey respondents' modal expectations regarding the federal funds rate remain slightly below the median of the SEP dots published in September. Desk survey respondents generally expect a decline in the median 2017 and 2018 dots and in the median projection of the longer-run rate at this meeting. In written commentary, they highlighted persistent downward pressures on global growth and recent Federal Reserve communications on the neutral federal funds rate as underpinning these expectations. Thomas will discuss the path of policy and market expectations more in his briefing.

Shifting to broader markets, expectations for liftoff to come at this meeting appeared to be taken largely in stride, particularly over the time period in early November during which these expectations increased to high levels. In November, domestic equity price indices and credit spreads were relatively little changed, and, as shown in the bottom-left panel, option-implied volatility across asset classes remained subdued. However, sharp declines in oil prices late in the intermeeting period appear to have had knock-on effects throughout global financial markets.

These declines in oil prices are shown in the bottom-right panel. Over the period, the price of front-month Brent crude dropped by about 20 percent. Broader commodity prices also declined notably over the period, with the Bloomberg Industrial Metals Index falling by roughly 10 percent. While contacts largely attribute the decline in oil prices to persistent oversupply—especially following the most recent OPEC meeting—broad-based weakness in commodity prices likely in part reflects ongoing concerns about global growth.

The commodity price declines had adverse effects on high-yield corporate credit markets, as reflected in the widening in high-yield spreads shown in the top-left panel of your next exhibit. The widening was most pronounced in energy credits (the dark blue line), with spreads, on average, up 200 basis points over the period. However, there was also a more broad-based selloff, with high-yield spreads ex energy widening by 80 basis points. As part of this, U.S. high-yield mutual funds and ETFs saw outflows of \$4.5 billion for the week ending December 9, up from an average outflow of about \$1 billion over the prior month. And as was widely publicized last week, one open-ended high-yield mutual fund that had invested in lower-quality corporate bonds gated investors amid persistent redemption requests.

Commodity price declines also continued to serve as a headwind to inflation compensation and emerging market asset prices. Five-year and five-year, five-year-forward inflation compensation was little changed on net and remains well below historical averages and the Federal Reserve's inflation objective, as shown in the top-right panel.

Meanwhile, the JP Morgan Emerging Market Currency Index declined by 3 percent, and the MSCI Emerging Market Equity Index fell by over 10 percent. The onshore and offshore renminbi depreciated against the U.S. dollar, as shown in the middle-left panel, taking the renminbi to levels weaker against the dollar than those seen following the devaluation in August. Further, the basis between the onshore and offshore renminbi widened in recent weeks, as shown in grey in this panel, likely reflecting a reduced desire by Chinese officials to intervene in the wake of the announcement of the renminbi's inclusion in the SDR basket and ahead of FOMC liftoff. China's leadership repeatedly stressed the strength of the renminbi on a trade-weighted basis, and many expect that in the future they will measure the renminbi against a basket of currencies rather than considering only the U.S. dollar.

More broadly, while dollar strength was most pronounced against commodity-linked currencies, the dollar appreciated modestly against the currencies of all major U.S. trading partners over the period, as shown in the dark blue lines in the middle-right panel. The Bloomberg Dollar Spot Index increased by about 1 percent, pushing year-to-date gains to nearly 8 percent.

The ongoing theme of monetary policy divergence, particularly between the Federal Reserve and other major central banks, such as the ECB, continued to serve as a tailwind to U.S. dollar strength. While on net the euro-to-dollar exchange rate was little changed on the period, the euro did touch its weakest level against the dollar

since March, as expectations of Fed and ECB policy diverged starkly. This divergence can be seen in the spread between U.S. and German two-year nominal yields, shown in the bottom-left panel, which reached year-to-date highs just ahead of the December ECB meeting.

At that meeting, the ECB announced an array of additional easing measures, including a 10 basis point cut to its deposit facility rate to negative 30 basis points, an extension of its asset purchases by at least six months, and an expansion of its public-sector purchase program to include reinvestments and local and regional bonds.

Nevertheless, market expectations for the extent of ECB easing had become quite lofty ahead of the meeting, and the announcement led to an abrupt tightening of euro-area financial conditions, including a sharp increase in euro-area sovereign yields. Interestingly, a substantial portion of the rise in these yields passed through into Treasury yields, particularly at the long end of the curve, as shown in the bottom-right panel. This highlights, as did the taper tantrum, the correlation in global term premiums and financial conditions more broadly.

As I noted earlier, the move to an almost fully priced-in increase for the federal funds target range appeared to be taken largely in stride during November, but this occurred with no reevaluation of the path of policy. As is clear from both the taper tantrum and the recent experience of the ECB, markets can be very sensitive to changes in policy or communications—at times, it appears, for no good reason. Thus, there is still likely event risk surrounding the announcement of the Committee's decision tomorrow, particularly given the turbulence in markets in the past few days, although the major surprise to markets would be no change in the target range.

MS. LOGAN. I'll begin on exhibit 3 and provide a review of money markets, market functioning, and Desk operations. Over the intermeeting period, the staff continued testing the Federal Reserve's policy normalization tools, with the overnight RRP operations continuing to provide a soft floor under short-term interest rates, including around month-ends. As shown in the top-left panel, outside month-end, the effective federal funds rate printed between 12 and 14 basis points. Treasury bill and repo rates fluctuated more notably amid the shifts in bill supply following the suspension of the debt ceiling.

As shown in the top-right panel, overnight RRP take-up averaged \$105 billion over the period, increasing on month-ends. And as shown in grey, Federal Reserve reverse repurchases with foreign official institutions, otherwise known as the foreign RP pool, hit record levels of over \$200 billion early in the period. Usage of both operations continued to be sensitive to the level of market rates. As you can see, usage declined later in the period, reflecting the impact of higher Treasury bill rates.

Over the intermeeting period, the Desk announced plans to offer a total of \$300 billion in three term RRP operations crossing year-end. We will provide an update on the intended plans for these operations at the end of the FOMC meeting tomorrow, as the details will depend upon the Committee's policy decision.



As Simon noted, this intermeeting period saw a significant increase in the likelihood market participants place on liftoff occurring at this meeting. The middle-left panel shows expectations for the levels of three overnight interest rates following liftoff, as implied by financial market contracts and the Desk's surveys. We calculated the market-implied post-liftoff levels of the effective federal funds rate and GCF repo rate using futures contracts adjusted for expected year-end movements, assuming that the median probability assigned to December liftoff from the Desk's surveys of 90 percent is currently priced in. In addition to the point estimates represented by the blue dots, we calculated a range for implied post-liftoff levels based on different assumptions about the perceived probability of liftoff, shown in the light blue shaded area.

As you can see, the market- and survey-based measures for the effective federal funds, GCF, and triparty repo rates suggest that these overnight rates are expected to shift up by around 20 basis points from their current levels, to within the target range of 25 to 50 basis points that market participants expect to prevail after liftoff. These rates are also expected to retain their current configuration, with the effective federal funds rate below the interdealer GCF repo rate and slightly above the triparty repo rate. However, it appears that the pass-through of the increase in the target range to market rates is expected to be slightly less than one for one, in part due to expectations that the ON RRP offering rate following liftoff will increase by only 20 basis points relative to an increase of 25 basis points in the target range.

As I noted, when calculating the overnight rates implied by futures contracts, we assumed that year-end conditions would be similar to what we have seen during the past few quarter-ends. While market participants expect some volatility in money markets related to year-end, we have no reason to expect that conditions will be materially worse than in recent year-end periods.

As shown in the middle-right panel, respondents to the Desk's surveys continue to broadly expect ample capacity, or headroom, in overnight RRP operations following liftoff, either through an elevated or suspended aggregate cap. This is reflected in the white boxes, shown in the panel, which are calculated based on expectations for the difference between overnight RRP capacity and demand. The expectation of ample capacity has likely contributed to confidence in the Federal Reserve's ability to control short-term interest rates following liftoff and around the year-end.

While we don't have reason to expect major dislocations associated with liftoff around year-end, I'd like to highlight some developments across markets that contacts have noted as potentially pointing to important structural changes in financial intermediation.

Recall that at prior meetings, we have updated the Committee on the widening in spreads within the Treasury repo market. This has resulted from dealers with large, stable repo funding bases requiring increased compensation to intermediate between money funds in the triparty repo market and the smaller, less creditworthy dealers that seek to borrow in the interdealer, or GCF, market. As shown in the bottom-left panel,



the spread between the volume-weighted average rates in the interdealer segment and the broader triparty market has widened. This spread, which averaged only a couple of basis points during 2013, has widened to over 10 basis points and has spiked as much as 30 basis points on quarter-ends.

The widening in this spread has had a direct impact on the cost of intermediation in the Treasury repo market. It has also been noted as having more indirect impacts in other markets. As illustrated in the bottom-right panel, the U.S. interest rate swap spread—the difference between the LIBOR-based swap rate and corresponding Treasury yield, shown for the five-year tenor in the dark blue line—has narrowed over recent months and is now negative at maturities of five years and beyond. In theory, swap rates should be higher than Treasury yields of equivalent maturity because they reference three-month LIBOR, which has credit risk.

The moves in swap spreads have been associated with developments that suggest they may be temporary. For example, the narrowing coincided with increased foreign-reserve manager sales of U.S. Treasury securities—sales that should put upward pressure on Treasury yields—and elevated realized and expected corporate bond issuance, which should put downward pressure on swap rates. An additional factor cited that may suggest a more persistent shift in these spreads, however, has been an increase in the cost of financing Treasury securities, something that is necessary for speculative arbitrage that would serve to restore a positive swap spread. The increase in financing costs is reflected in the recent inversion in the spread between the three-month LIBOR rate and the equivalent-maturity Treasury GC repo rate, also shown in the bottom-right panel. This inversion has been driven primarily by the increase in the term GC repo rate, consistent with the rise in the repo market spreads I noted a moment ago in panel 17.

In the most recent Desk surveys, respondents were asked to rate the importance of various factors in explaining the recent narrowing in swap spreads. As summarized in the top-left panel of your fourth exhibit, respondents assigned the highest rating to “increased balance sheet cost for cash products,” with 42 of 50 respondents assigning their highest rating to this factor.

Some pricing anomalies have also emerged in foreign exchange swap basis spreads. Over recent months, we have seen the spreads across a number of currencies widen, as shown in the top-right panel, suggesting a higher cost of borrowing dollars offshore after hedging the corresponding foreign exchange risk. The widening does not seem to reflect current funding stress in offshore funding markets, and has instead been attributed to increased demand for U.S. dollars via the FX swap market as a byproduct of monetary policy divergence, as well as increased demand for dollar funding over year-end. This widening would normally be arbitrated away by banks that would lend at a high premium via the FX swap market. However, contacts have suggested that the elevated cost of expanding their balance sheets to do so has deterred banks from engaging in this activity, particularly ahead of year-end.

To summarize, the market dynamics I described in Treasury repo and interest rate and FX swaps appear to be, at least in part, a byproduct of the increased costs financial institutions face when expanding their balance sheets to intermediate certain market activity. The resulting shifts in market rates and spreads could have implications for the monetary policy transmission process.

The next few panels focus on reinvestments. As the perceived likelihood of liftoff occurring at this meeting has risen, market participants have also been focused on other parts of the normalization process, including the reinvestments of principal payments on Treasury securities and agency MBS. As shown in the middle-left panel, the median respondent to the Desk's surveys now expects the FOMC will cease some or all reinvestments of Treasury securities and agency MBS approximately 12 months following liftoff, roughly 3 months later than was expected in October and 6 months later than was expected one year ago. In explaining the changes to their expectations, respondents focused on recent FOMC communications on conditions surrounding the end of reinvestment policy specifically and the gradual path of normalization more generally.

As shown in the middle-right panel, conditional on reinvestments being phased out over time, the median respondent expects this to occur over a one-year period following a change in the reinvestment policy, suggesting that a full cessation of reinvestments would not be expected to occur until roughly two years following liftoff. Lastly, I should note that in light of the large volume of Treasury maturities scheduled in early 2016, the Desk has fielded an increasing number of inquiries on the mechanics of the Treasury reinvestment policy.

As we discussed in June, and as reflected in the June minutes, the Desk will continue to roll over maturing Treasury securities at auction. As summarized in the bottom-left panel, this is accomplished by placing bids for the SOMA at Treasury auctions equal in par amount to the value of holdings maturing on the issue date of the securities being auctioned. The bids are allocated proportionally across those securities being auctioned based on the announced offering amounts. SOMA holdings are currently limited to 70 percent of the total outstanding amount of any one Treasury security. The Desk observes this when rolling over maturing securities.

In order to provide additional clarity on this question to the public in advance of upcoming maturing of Treasury securities, the Desk plans to publish FAQs to the public website shortly after this meeting that will outline the details of the Treasury securities reinvestment policy. We have copies of these FAQs if you would like to review them. Before I turn the briefing back over to Simon for updates on some longer-term issues, we'll be happy to take questions.

CHAIR YELLEN. Any questions for Lorie or Simon? President Bullard.

MR. BULLARD. Thank you, Madam Chair. I want to go back to exhibit 1, figure 1.

This shows market-implied probability of a rate hike at or before the December FOMC meeting.

I am concerned about a little bit of revisionist history here. I am looking before the September FOMC meeting, and this survey is showing a probability of 90 percent that the Committee would lift off. My recollection of that period is that market-implied probabilities were only about 30 percent going into the—

MR. POTTER. For the September meeting, this shows the probability of liftoff at or before the December meeting. We are trying to capture the probability of liftoff in 2015 in this chart.

MR. BULLARD. The probability of liftoff in 2015, not at a particular meeting?

MR. POTTER. It is at or before the December FOMC meeting.

MR. BULLARD. Now I've got it, sorry. Okay. Then I want to go to exhibit 4, figure 21, "Expected Timing of End to Some or All Reinvestments Relative to Liftoff." We've got some dots here at zero. Does that mean somebody in the market is saying that we are going to lift off and cease reinvestments at this meeting?

MR. POTTER. That is the one respondent who doesn't think there will be liftoff. That respondent thinks that you will cease reinvestments at this meeting and lift off in April. None of the traders who work at that firm believe that's true.

MR. BULLARD. Okay. Well, it kind of makes me wonder about some of the other dots.  
[Laughter]

MR. POTTER. This person has been more accurate than other people over the last three or four years, as he's had a view very contrary to what the market and the consensus was, and that was a good place to be. My guess would be that he probably is going to be wrong this time.

MR. BULLARD. Okay. Thank you.

CHAIR YELLEN. Other questions? [No response] Okay. Seeing none, Simon, why don't you proceed.

MR. POTTER. I thought it would be useful to update the Committee on several other issues. As noted in the revised notification for the year-end term RRP operations, the September 30 two-day term RRP operation was not authorized under the March term RRP testing resolution, as the resolution had only authorized conducting term RRP operations through September 29. There are multiple layers of review for open market operations that all missed this issue, and it was discovered only in the review process for the December term operations. We are continuing to assess what adjustments to the control environment could be effective in preventing this type of occurrence in the future and how we can better routinize the detection process, particularly prior to the ratification of open market operations at FOMC meetings. The public announcement of the September 30 term RRP operation did cite the testing resolution, and in the 2015 annual report on domestic operations we will note the deviation.

The revised data collection for FR 2420 has been proceeding smoothly. As can be seen in the first panel of exhibit 5, the volumes collected for the federal funds market have increased, and the staff is confident that the data we are receiving is of sufficient quality to execute on the plan to change the underlying data source for the publication of the effective federal funds rate to the FR 2420. The switchover is planned to occur at the start of March, and at that time we would also adjust the calculation method to the volume-weighted median from the volume-weighted mean. In addition, we are now collecting a very large volume of Eurodollar transactions and plan to also start publishing the overnight bank funding rate, or OBFR. The top-right panel shows a comparison of the effective federal funds rate and OBFR from the revised data collection, with those rates calculated using the brokered data. These differences are small.

The Desk plans to announce the switchover date on January 6, following the release of the minutes of this meeting. As outlined in the middle-left panel, this public announcement would also include details about efforts to increase transparency and about policies intended to align the production of the EFFR and OBFR with international standards for financial benchmarks, as described in a memo sent to the Committee last week. An additional advantage of the FR 2420 data over the data we receive from the brokers is that we can publish more details about the unsecured overnight market. The memo outlines the summary statistics we would include with the daily publication of the EFFR and OBFR. The staff is considering whether additional data should be released with a lag, and we would welcome your feedback on this and other details of the plan.

Since 2014, we have been able to analyze secured money markets using daily transaction data from the triparty repo market, as noted in the middle-right panel. The Desk has found this very useful in its analysis of the overnight and term RRP operations as well as in its overall market monitoring efforts. In 2014, the Federal

Reserve convened the Alternative Reference Rates Committee, or ARRC, a group of major U.S. dollar swap dealers tasked with identifying robust alternative reference rates. Staff members working to support the ARRC, under Governor Powell's leadership, have been assessing whether there might be a role for the official sector to produce an alternative reference rate based on overnight secured transactions, particularly given that the Desk already produces one such rate internally. The staff is currently investigating the possibility of the Federal Reserve Bank of New York publicly producing such a rate with the support of the Office of Financial Research.

At the June meeting, the staff updated the Committee regarding a review of the Federal Reserve's counterparty framework. At that time, we noted that the current framework is serving the Committee well while highlighting potential improvements in the administration of the counterparties. For the primary dealers, we are also investigating the appropriate financial condition criteria, following the discussion at the June meeting.

Our assessment has also been informed by the Treasury Operations Counterparty program and the Mortgage Operations Counterparty program, or MOC. Details on operational results from the MOC are contained in the bottom panel. In these programs, the Desk conducted outright transactions with smaller broker-dealers. Our evaluation is that the very small operational benefits associated with transacting with smaller broker-dealers are greatly outweighed by the costs associated with managing such relationships. Thus, we are unlikely to recommend that dealers with less than \$50 million in capital—the maximum capital of MOC participants—be eligible to be a primary dealer. The staff will continue to study potential adjustments to the counterparty frameworks in the context of a more sophisticated counterparty risk management approach that relies less on capital. Once we have this framework in place, we will present draft revised administrative policies to the Committee for feedback.

Recall that in the discussion of the modernization of the Domestic Authorization last January, I suggested simplifying the description of eligible counterparties. The Committee decided it preferred to wait for some of the results of the counterparty review before considering this change. Unless the Committee has strong views in favor of making this change in January, I would recommend waiting for the revised counterparty administrative policies before addressing this issue again.

The staff have also been working on modernizing the documents related to foreign operations. This work has uncovered a number of legacy issues related to earlier periods of active foreign operations. Further, the structure of the documents is not symmetric with the domestic side, and we see value in moving to a structure in which the Committee more explicitly directs the current and potential future operations of the Desk. The form of this direction may be influenced in part by the results of a project evaluating the current foreign-reserves management framework. This framework has been strained by the negative rates in the euro area, as can be seen in the top-left panel of your final exhibit. We project overall income on the euro portfolio to turn negative next year under our current investment approach. We hope

to be ready to present recommendations to the Committee at the March meeting, although there is a significant risk that it could take longer. Consequently, we recommend deferring any changes in the documents controlling foreign operations until the foreign reserves management review is complete.

Finally, the Desk, working closely with Board staff members, has been developing a formal structure for assessing the full range of operations that are readily available for implementation, as well as the lead time required to implement new or dormant operations under appropriate risk controls. As shown in the top-right panel, the structure starts by cataloguing all existing and potential operations and facilities and assigning each to one of five readiness categories. This structure allows us to comprehensively assess the readiness of operations and employ clear standards for testing, training, and technological development. It is important to emphasize that it is appropriate for the vast majority of operations and facilities in the extended and significant development categories to remain there.

As an example of an active use of this framework, consider the recent test of accepting yen for dollars that completed a series of small value tests of our ability to receive foreign currency from central banks in the active standing swap network. The completion of these tests moved this operation to “in production standby” from “rapid deployment.” Such live operational tests are important to validate that an operation remains in standby mode. This is why we ran a repo test this intermeeting period as well. Such testing does identify issues that require attention to maintain the standby status. For example, the recent TDF test exposed a small glitch in how funds are matured from TDF accounts due to software changes. The testing allowed San Francisco and Board staff members to fix the glitch prior to liftoff. Another advantage of such testing is that when problems occur, we can test backup capacity. This happened last week in the live testing of the overnight RRP, when a switch to a new version of FedTrade produced erroneous settlement instructions for some counterparties, requiring a manual contingency to be deployed. As we build out the operational readiness structure, it is likely we will present to the Committee a small value testing plan for the year rather than notifications for each individual test.

To conclude, the staff have conducted extensive tests of the tools that the Committee might want to deploy during the early stages of normalization and are confident in their operational integrity. If the Committee decides to raise the target range tomorrow, then starting on Thursday, we will begin our daily operational call at 9:00 a.m. to allow for more discussion and analysis among the staff and move the morning financial market update call to 9:30 a.m. Committee participants and their staff are welcome to join these calls. Thank you Madam Chair. That completes our prepared remarks. We’d be happy to take any other questions.

CHAIR YELLEN. Thank you. Are there further questions for Simon? [No response]

You’re unusually quiet.

MR. TARULLO. Don’t complain, Madam Chair. [Laughter]



CHAIR YELLEN. All right. I need a motion to ratify open market operations.

MR. FISCHER. So moved.

CHAIR YELLEN. Without objection. Okay. Let us proceed to the economic briefings, and John Roberts will start us off.

MR. ROBERTS.<sup>2</sup> Thank you, Madam Chair. I will be referring to “Material for the Staff Presentation on the Economic and Financial Situation.” The top panels of your first exhibit review labor market conditions, which have continued to improve in recent months. As indicated in the inset box in panel 1, total nonfarm payroll employment rose 210,000 in November, following a robust increase of 300,000 in October. As shown by the black line, over the past three months, payrolls have increased at an average monthly pace of 220,000, similar to the pace of recent years.

The unemployment rate, shown in Panel 2, was 5 percent in both October and November, slightly lower than in the third quarter. Over the past 12 months, the unemployment rate has fallen  $\frac{3}{4}$  percentage point. The labor force participation rate, shown in the middle-left panel, ticked up to 62.5 percent in November. Over the past 12 months, the participation rate has moved down 0.4 percentage point, the same pace of decline as for the trend (the blue line).

As shown in the middle-right panel, manufacturing output edged up only slightly in the first half of the year. We currently estimate that manufacturing IP rose  $3\frac{1}{2}$  percent at an annual rate in the third quarter, and we anticipate a small increase in the current quarter. November data will be released tomorrow morning.

Panel 5 presents the staff outlook for consumer spending. We currently estimate that real PCE increased at a  $2\frac{1}{2}$  percent annual rate in the current quarter, a bit less than in the third quarter. Some of that downtick reflects the effects of unseasonably warm weather, which held down use of energy-related utility services. Averaging across this quarter and next, we expect real PCE to rise about 3 percent at an annual rate. After the Tealbook closed, we received the November retail sales report. The latest readings, summarized in the inset box, are consistent with the Tealbook outlook.

As shown in the bottom-right panel, we continue to expect real GDP to increase at about a 2 percent annual rate over the second half of this year and in the first quarter of next year. That pace is a bit faster than our estimate of potential GDP growth.

Our medium-term outlook for real GDP is shown in panel 1 of your next exhibit. Over the medium term, we expect real GDP to increase about in line with the pace of recent years. In particular, we’re forecasting real GDP to rise  $2\frac{1}{2}$  percent next year and about 2 percent in each of 2017 and 2018. The top-right panel discusses some of

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<sup>2</sup> The materials used by Messrs. Roberts and Gruber are appended to this transcript (appendix 2).



the key factors shaping our outlook. As noted in the first bullet and shown in panel 3, net exports are expected to be a substantial drag on GDP growth in 2016 and 2017, reflecting the ongoing effects of the appreciation of the dollar since the middle of last year. Joe Gruber will discuss the net export outlook in more detail in his presentation.

We think a number of other factors will support GDP growth over the medium term. As shown in panel 4, after several years when fiscal policy was a substantial drag on real activity, it more recently has provided a modest degree of stimulus. We expect that to continue next year as spending authorized by the bipartisan budget agreement ramps up. In addition, we anticipate that consumer spending will continue to be supported by the high level of household wealth, shown in panel 5.

Panel 6 shows the staff outlook for the unemployment rate. With output gains forecast to exceed the staff's estimate of potential growth, the unemployment rate continues to fall and reaches  $4\frac{1}{2}$  percent by the end of 2018. The pace of improvement is somewhat less than in recent years despite a similar rate of increase in real GDP. As you can see in panel 1, we anticipate that potential output will rise somewhat more rapidly in the medium term than has been the case in the recent past. Thus, the same increase in real GDP leads to a smaller change in resource utilization and, as a consequence, a smaller reduction in the unemployment rate. The dashed red line shows the outlook for the unemployment rate as of the June Tealbook. Our near-term outlook for the unemployment rate is about  $\frac{1}{4}$  percentage point lower than in June. By 2018, the downward revision is a bit more than  $\frac{1}{2}$  percentage point.

Your third exhibit presents our outlook for inflation, starting with the near term in the top-left panel. As of the December Tealbook, we expected headline PCE inflation would be around zero in the current quarter as well as in the first quarter of next year, held down by falling energy prices. We anticipated that core PCE prices would rise at an annual rate of  $1\frac{1}{4}$  percent in the current quarter and a bit more in the first quarter. Since the Tealbook closed, we've received PPI data and, this morning, the November CPI. Taking these data into account, we now expect near-term inflation to be slightly lower than at the time of the Tealbook. Notably, current-quarter core PCE inflation would be 1 percent rather than  $1\frac{1}{4}$  percent. The top-right panel shows 12-month changes in total and core PCE prices. The plotted series end with the staff's estimate for November as of the Tealbook. With the latest data in hand, we now estimate that overall PCE prices (the dashed red line) rose only  $\frac{1}{4}$  percent over the 12 months ended in November, just a touch lower than the Tealbook figure that is plotted. The solid black line shows the 12-month change in core PCE prices. Taking into account the CPI and PPI data, we now estimate the 12-month change through November to be 1.3 percent—again, just a touch lower than the figure that's plotted.

Panel 3 shows the staff's outlook for core PCE inflation over the medium term, along with a decomposition of the key factors driving the forecast. Overall, we see core inflation rising from 1.3 percent this year to 1.9 percent by 2018. As can be seen in line 2, in the staff's view, the recent declines in energy and import prices have held down core inflation by about  $\frac{1}{2}$  percentage point this year and will have a similar

effect next year. By 2018, however, energy and import prices are a neutral influence. As shown in line 3, we also anticipate that rising resource utilization will boost inflation over the next several years. The effect is expected to be slight, however, reflecting the staff's view that the economy's implicit "Phillips curve" is very flat.

Line 4 presents the effects of other factors. Among other things, we anticipate that unusually low medical price increases will restrain inflation for the next year or so but will be essentially neutral by 2018. Finally, the staff estimates that underlying inflation is currently 1.8 percent and will remain at that level for the next several years. We expect underlying inflation eventually to move up to the Committee's long-run objective.

As can be seen in the middle-right panel, our forecast for core PCE inflation (the black line) is a bit lower than we wrote down in June (the dashed red line), especially next year. The near-term downward revision mostly reflects lower energy and import prices than in June; the projection for 2018 is about unchanged. Panel 5 shows the outlook for overall PCE inflation. Energy is once again the culprit for the near-term downward revision since June. Once the drag due to the behavior of oil prices fades, we continue to expect overall PCE inflation to move in line with core inflation.

Panel 6 shows recent data on hourly compensation. Over the 12 months ended in September, hourly compensation as measured by the ECI (the dot-dash black line) rose about 2 percent, a bit less than over the preceding 12-month period. Hourly compensation from the productivity and costs program posted large gains in the second and third quarters and, as can be seen in the solid blue line, was up 3½ percent over the most recent four quarters. While that is a step-up from the sluggish pace of recent years, this is a volatile series and, for now, we are not taking too much signal from its recent acceleration.

Your final exhibit highlights two of the alternative scenarios that were presented in the Tealbook, in which we consider the consequences of a recession when the economy is still near the zero lower bound on nominal interest rates. As noted in panel 1, the bulk of the statistical evidence suggests that recessions do not die of old age (that is, the chance of a recession does not increase as time passes). Nonetheless, based on the average occurrence of recessions since 1960, there is about a 15 to 20 percent chance of a recession occurring in any given year—and thus close to a 50 percent chance over the next three years. In the Tealbook scenarios, we considered the implications of a recession that starts in 2016:Q2, when the federal funds rate is forecast to still be close to zero.

We carried out the simulations using the staff's EDO model, which is a DSGE model of the U.S. domestic economy. As discussed in panel 2, our recession scenario reflects shocks to the model that have been chosen to replicate the average behavior of real GDP and the federal funds rate in the five more moderate recessions since 1960. Over those recessions, real GDP fell an average of  $\frac{3}{4}$  percent from peak to trough, and the federal funds rate fell 275 basis points. This decline in the federal funds rate is much larger and more rapid than would be implied by the inertial version

of the Taylor rule that we typically use in our Tealbook scenarios. As is our usual practice, we assume no additional unconventional policy response.

The middle row shows the implications of these shocks under two assumptions about monetary policy—with and without the zero lower bound imposed. Without the lower bound on nominal interest rates, as can be seen in the blue dot-dash line in panel 3, the unemployment rate peaks in the middle of 2017 at just over 6 percent. Inflation—in the middle panel—stays at 1¼ percent next year rather than rising as in the baseline. With the federal funds rate at around 50 basis points before the recession starts, it falls just below minus 2 percent by the end of next year.

When we assume, plausibly, that the federal funds rate can't fall below zero, the outcomes for the economy are worse. As shown in the red dashed line in panel 3, in this case, the unemployment rate reaches nearly 7 percent. The federal funds rate—in the panel at the far right—returns to its effective lower bound in the second quarter of next year and remains at that level through 2017.

As I just noted, the scenario includes the assumption that the Committee does not make use of any of its unconventional tools. If the Committee does use unconventional policy, outcomes would likely be better than those represented by the red dashed lines.

The bottom panel raises some additional considerations. As noted in the first bullet, over the course of the medium term, the funds rate rises in the baseline projection. Thus, starting in 2018, there would be room, under the baseline, to accommodate a 275 basis point cut in the federal funds rate. It is worth noting, however, that here we have assumed a moderate recession. If we take into account the severe recessions as well, the average drop in the federal funds rate would have been 400 basis points. Indeed, even in a moderate recession, a funds rate cut of 275 basis points may be smaller than desirable. For example, in these scenarios, the EDO model's estimate of the equilibrium federal funds rate drops by 650 basis points. Joe Gruber will continue our presentation.

MR. GRUBER. Thank you. Compared with the turbulence in international financial markets that preceded your meeting in September, international conditions now appear considerably more stable. Foreign GDP growth is strengthening and financial markets remained relatively calm over much of the intermeeting period even as the probability of liftoff approached certainty. Over the past week, markets have become a bit more jittery, with emerging market currencies depreciating and spreads widening, though for reasons we generally do not pin on liftoff. In this context, our baseline forecast does not suggest adverse consequences arising from liftoff for either the foreign economies or the U.S. external sector, but risks remain that bear continued close monitoring.

As shown in the top table of exhibit 5, after a very weak second quarter, our projection of a pickup in foreign GDP growth in the third quarter (line 1) appears to have materialized. In the emerging market economies (EMEs), emerging Asia

excluding China (line 3) enjoyed an especially strong step-up, supported by a stabilization of exports, as can be seen in panel 2, following substantial swings over the preceding half year. Chinese growth remained brisk (line 4), bolstered by retail sales (the red line in panel 3) and notwithstanding a dip in industrial production (the black line) that has already begun to fade. The pace of activity also stepped up in the advanced foreign economies (AFEs) (line 6), with bouncebacks in Canada (line 7), after declining oil investment pushed down GDP in the first half, and Japan (line 8). Growth in the euro area (line 9) and the United Kingdom (line 10) disappointed slightly, but the indicators for the fourth quarter, including composite PMIs (shown in panel 4), support our outlook for strengthening European growth.

One particularly dark spot has been Brazil, whose GDP (line 5 in the table) continued to plummet in the third quarter as political turmoil weighed on confidence and investment, driving down industrial production (the red line in panel 5) and pushing up unemployment (the black line). We do not expect Brazilian GDP to bottom out until the middle of next year, and we have downgraded our outlook yet again as stubbornly high inflation constrains monetary policy and political problems block implementation of needed fiscal and structural policies.

Returning to line 1 in the table, the overall foreign outlook is basically unchanged from the October Tealbook. Activity is expected to accelerate a bit next year, supported by accommodative monetary policy and easing credit conditions in the AFEs. In contrast to most economies we forecast, growth in China is expected to edge down gradually over the projection period, as the economy continues to rebalance away from investment and potential growth moderates. For many, but not all, economies, low oil prices are expected to boost growth, a positive impetus that has only gotten larger in light of the recent price declines.

The price of Brent crude oil, the black line in panel 6, fell to just below \$38 per barrel yesterday, only slightly above its trough during the global financial crisis, as global oil production remains strong and inventories accumulate. Prices came under further pressure after the recent OPEC meeting provided little indication that the cartel would take any action to reign in supply for the foreseeable future. We expect oil prices to edge up gradually during the forecast period, in part supported by declines in U.S. production. Prices for industrial metals (the red line in panel 6) have also continued their steep decline. The higher dollar and resilient supply have played an important role in pushing down prices, as have market concerns over the strength of demand, particularly from China, for metals.

Declining energy prices have been a major contributor to low inflation globally, supporting continued accommodative monetary policy by the major foreign central banks, as discussed in your next exhibit. As shown across the top three panels, headline inflation in the third quarter was near zero in the euro area, Japan, and the United Kingdom. Core inflation, though higher, is also quite subdued. Diminishing slack is expected to push up core inflation, with even steeper increases in headline inflation as oil prices flatten out. That said, inflation is expected to remain below target in both the euro area and Japan through the end of 2018.

Referencing subdued inflation, the ECB announced a number of policy measures on December 3, as discussed earlier by Simon and outlined in panel 4, including an extension of its quantitative easing program and a 10 basis point cut in its deposit rate to minus 0.3 percent. As shown in panel 5, the ECB's deposit rate (the green line) has been negative since mid-2014, pulling other short-term lending rates into negative territory as well without any noticeable disruption to European money markets. We expect the ECB to leave its policy rate (the green line in panel 6) at its current level until the end of 2018.

The Bank of Japan did not announce any new measures at its October and November meetings, despite revising down its inflation outlook, but it continues to purchase assets at a rapid pace. In the United Kingdom, markets were struck by the dovish tone of the Bank of England's November *Inflation Report*, including the announcement that it would not consider reducing its asset holdings until the policy rate normalized to about 2 percent, a higher threshold than many had previously expected. We expect the BOE to begin hiking its policy rate (the blue line in panel 6) in the second quarter of next year.

With the Federal Reserve widely expected to hike interest rates tomorrow, attention has focused on monetary policy divergences across the advanced economies. Policy divergences may present some challenges for U.S. monetary policy. As shown in panel 7, 10-year sovereign yields across the advanced economies remain fairly tightly correlated, suggesting that there is a risk that low yields abroad will put downward pressure on U.S. yields even as the Federal Reserve lifts policy rates.

Another consequence of monetary policy divergence has been the sharp appreciation of the dollar against the currencies of other advanced economies. As shown by the red line in panel 8, the jump in the dollar against the AFE currencies over the past two months has been coincident with a rise in the spread between U.S. 24-month-ahead policy rate expectations and expected policy in other advanced economies.

Our outlook for the dollar is shown at the top of your next exhibit. We assume that Federal Reserve liftoff has largely been priced into the dollar at this point, and we have penciled in only a touch more appreciation through the first quarter of next year. This forecast is generally consistent with the historical experience associated with periods surrounding the start of previous tightening cycles. As shown by the "butterfly chart" in panel 2, averaging across dollar moves in the 12 months surrounding the past four Federal Reserve tightening cycles (the black line), our forecast dollar path (the dashed red line) is about in line with the average post-tightening trajectory.

Of course, we are cognizant of the risk that liftoff might be associated with a more pronounced rise in the dollar, as explored in the "Stronger Dollar" alternative scenario presented in the Tealbook. In this scenario, liftoff and ensuing policy normalization induce a sharp 10 percent further rise in the dollar (shown in panel 3).



The stronger dollar pushes down U.S. real net exports and lowers U.S. GDP growth (panel 4) over the next two years, boosting the unemployment rate by about  $\frac{1}{2}$  percentage point (panel 5).

Another commonly raised concern surrounding liftoff has been the potential for increased financial turbulence in the emerging market economies. However, market movements since the October FOMC meeting suggest that the reaction could be limited. For one, as shown in panel 6, the response of emerging market currencies (the red line) to the sharp increase in U.S. policy rate expectations (the black line) following the October FOMC and October payrolls report was relatively muted. Over the past few months, EME currencies have been more closely correlated with oil prices, which plunged late in the period (the black line in panel 7).

We are not sanguine, however, about EME risks, given elevated corporate leverage and falling commodity prices hanging over many emerging market economies. In addition, prospects for China's exchange rate policy, which roiled emerging markets during the summer, remain a wild card. As shown in panel 8, the renminbi has resumed depreciation this month following a period of relative stability. Our forecast is for the renminbi to remain flat over the next year, as Chinese officials balance concerns for financial stability with a desire to staunch reserve outflows. However, further depreciation is a risk, with the potential to spill over to other emerging markets. Although the staff baseline projection is not premised on significant further appreciation of the broad dollar, the sharp run-up in the dollar since July 2014 continues to weigh heavily on the outlook for U.S. net exports—the subject of your next exhibit.

The top two panels of your exhibit provide some detail on how the dollar affects our outlook. The panel on the left shows data and our forecast for real export growth (the solid black line), as well as an estimate from our trade model (the black dots). The model takes foreign GDP and the dollar as its inputs, with the contribution of each of these variables to export growth measured respectively by the green and blue bars in the panel. As shown by the blue bars, the drag due to dollar appreciation is expected to be both large and long lasting, with the peak negative effect not hitting until the first half of next year and the drag lasting into 2018. The dollar also boosts imports, as shown by the blue bars in panel 2, further pulling down the net export contribution to GDP. Here, too, the dollar has large and persistent effects, with the peak boost to imports projected to occur in the first half of next year.

Overall, we expect the contribution of net exports to remain negative throughout the forecast, as can be seen in line 3 of the table. Net exports took almost 1 percentage point off U.S. real GDP growth in the first half of 2015 but are estimated to have exerted less drag in the second half, as exports (line 1) remained weak but imports (line 2) slowed as well. Next year, we expect net exports to again weigh heavily on GDP growth, as exports remain about flat while imports shake off some of their second-half weakness.

To help understand the recent slowdown in imports, panel 4 highlights developments in a few key sectors. Consumer goods (the black line) have been strong, in line with the strengthening of the dollar. In contrast, imports of nonfuel industrial supplies (the blue line) and imports of capital goods (the red line) have been weak in recent quarters. In part, this weakness appears to reflect a steep decline in imports of oil extraction equipment and machinery, likely reflecting the steep fall in domestic drilling that has followed the plunge in oil prices. With U.S. drilling activity in the period ahead unlikely to keep falling so quickly, we believe that a flattening out of these imports will allow a pickup in overall import growth next year. Thank you. Jason will now continue.

MR. WU.<sup>3</sup> Thank you, Joe. I will be referring to the packet labeled “Material for the Briefing on the Summary of Economic Projections.”

Exhibit 1 summarizes your economic projections, which are conditional on your individual assessments of appropriate monetary policy. As shown in the top panel, most of you project that real GDP growth will be at or slightly above your assessments of its longer-run pace this year. Almost all of you see growth picking up next year before converging toward its longer-run rate in 2017 and 2018. The medians of your projections regarding growth this year and over the next two years are a bit above the 2 percent median of your longer-run projections. As shown in the second panel, all of you project that the unemployment rate, after reaching 5 percent this year, will be at or below its longer-run value over the forecast period. As can be seen in the third panel, the median of your projections of headline PCE inflation moves up from 0.4 percent this year to 1.6 percent in 2016, climbing further to 1.9 percent in 2017. Most of you project that, by 2018, headline PCE inflation will reach the Committee’s goal of 2 percent, while a few of you indicate that inflation would still be 0.1 to 0.3 percentage point below 2 percent at that time. As shown in the bottom panel, almost all of you expect core inflation to increase gradually over the next three years.

Exhibit 2 compares your current projections with those in the September Summary of Economic Projections and with the December Tealbook. As can be seen in the top panel, the median path of your projections regarding real GDP growth is little changed from September, and is slightly below the Tealbook forecast in the near term and slightly above it over the medium term. The median of your forecasts of the unemployment rate, shown in the second panel, edged down 0.1 percentage point over the next three years. Many of you revised down your projection of the longer-run normal rate of unemployment slightly, although these revisions did not change the median projection or the range for the longer-run rate. A few of you cited the stronger-than-expected labor market data in recent months as a factor explaining the change in your unemployment forecasts.

Although many of you revised down your projections of total PCE inflation in 2016 by 0.3 percentage point or more, with some of you citing further declines in oil

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<sup>3</sup> The materials used by Mr. Wu are appended to this transcript (appendix 3).



prices as a contributing factor, the median projection for that year, shown in the third panel, did not change materially. At longer forecasting horizons, most of you did not change your projection of total PCE inflation. The median path of your forecasts of core PCE inflation was also little changed from September, as indicated by the final panel, although many of you made small downward adjustments for core PCE inflation over the next two years. For both inflation measures, the median paths of your projections are slightly more optimistic than the staff's forecasts in the Tealbook.

Exhibit 3 provides an overview of your assessments of the quarter in which you currently judge the first increase in the target range for the federal funds rate to be appropriate and of the economic conditions you anticipate at that time. The top panel shows that all but two of you view this meeting as appropriate for the first increase. With the appropriate commencement of policy normalization deemed imminent, your projections of the unemployment rate and core PCE inflation rate at liftoff, shown in the bottom left, gravitate toward your projections for 2015, the medians of which are 5 percent and 1.3 percent, respectively. A couple of you stated in your comments that a decision to not lift off at this meeting would be a risk to the Committee's credibility and could also provoke a negative financial market reaction.

Exhibit 4 provides an overview of your assessments of the appropriate level of the federal funds rate over the forecast period and in the longer run. The medians of your funds rate projections, indicated by the red lines in the top panel, stand at 0.4 percent at the end of 2015, 1.4 percent at the end of 2016, 2.4 percent at the end of 2017, and 3.3 percent at the end of 2018. Since September, a majority of you revised down your projected path of the federal funds rate over the next two years, while the ranges for these two years have gotten narrower. In addition, many of you also lowered your projection for 2018. Most of you judged that economic conditions will likely justify a gradual rise in the federal funds rate, citing continued low readings of actual inflation and inflation compensation, and other headwinds that will likely dissipate only over time, such as slow global growth. In addition, some of you noted that a gradual increase in the federal funds rate would be commensurate with the expectation that the equilibrium real interest rate will rise slowly over the next few years. With respect to the longer-run nominal funds rate, four of you lowered your projections, three by 25 basis points. A sizable majority of you project that at the end of 2018, the appropriate level of the federal funds rate will still be below, albeit quite close to, your individual judgments of its longer-run level—a larger number of you than in September.

As shown by the red diamonds in exhibit 4, the medians of interest rate prescriptions based on a noninertial Taylor (1999) rule, given your projections of core inflation, the unemployment gap, and the longer-run nominal federal funds rate, have shifted down for this year and the next two years compared with September. The decline in the 2015 interest rate prescription is the most pronounced and is driven by lower projections of inflation and the longer-run normal rate of unemployment. Over the next couple of years, the declines are attenuated by downward revisions to the projections of the unemployment gap. Despite the downward shift in the Taylor rule

prescriptions, almost all of you continue to project levels of the federal funds rate over the next three years that are below the prescriptions of the rule. Indeed, for most of you, the gap between your projections of the federal funds rate and the rule's prescriptions has widened over the next three years.

The final exhibit shows your assessments of uncertainty and risks surrounding your economic projections. As shown in the figures to the left, your views regarding uncertainty have not changed in a material way since September. Almost all of you judge the level of uncertainty about your individual projections of GDP growth, the unemployment rate, and inflation as broadly similar to the average levels over the past 20 years. Since September, your assessment of the risks to GDP growth and unemployment has become more balanced. As shown in the panels to your right, only three of you see the risks to real GDP growth as weighted to the downside—four fewer than in September—and only two of you see the risks to unemployment weighted to the upside—also four fewer than in September. Diminished risks to U.S. growth arising from conditions abroad, together with strength in recent labor market data, were cited by a few of you as the reasons for risks being viewed as now broadly balanced. Notwithstanding the majority view that risks to growth and unemployment are nearly balanced, many of you continue to judge that risks to inflation are weighted to the downside, while none of you see the risks weighted to the upside, as reported in the third and fourth panels on the right. Several of you highlighted declining inflation expectations and the continued strength of the dollar as contributing to these downside risks. Thank you.

CHAIR YELLEN. Thank you. Questions? President Evans.

MR. EVANS. Thank you, Madam Chair. I have two questions. First, on the SEPs. Exhibit 3, inflation versus the unemployment rate in the lower left—I started staring at that, and all of a sudden I started feeling calm, and I started thinking about alt-B, and I started thinking that maybe alt-B was better, and I felt more calm [laughter]. It is rather hypnotic, isn't it?

Okay, anyway—back to the real question. The economic outlook, exhibit 2, the medium-term outlook, real GDP. Looking at potential GDP growth, I was reminded of something I have asked questions about in the past—in 2014, the potential output growth looks like it was quite low. And then I wondered if maybe I hadn't prepared carefully enough. So I went back to look at the Tealbook chart that has that, and 2014 was buried in an average of 2011 to 2014, which was 1.1 percent. I had sort of forgotten that we have 0.4 here for 2014. I guess the question is—and, John, you are the perfect person, as I understand it, to answer this, since it is based upon

your research on Kalman smoothing and things like that. What is the basis for thinking about this? And since it is so amazing, the question really is, does this provide a lesson for the future? Because it is a rather dramatic step-down in potential output growth. If we had found something like that at a period featuring less resource slack, maybe we might think that some inflation will be coming our way. I'm not sure how to think about it.

MR. ROBERTS. We tried to get the improvement in the output gap right for 2014. Of course, the changing output gap is just the difference between real GDP growth and potential GDP growth. And we saw in 2014 that labor market conditions were improving very rapidly. The unemployment rate was coming down quite a lot, so we thought, "Oh, the output gap must be improving a lot."

So what we essentially did was to say, "Hmm, with GDP growth not as strong as it should be to get that kind of an improvement in the output gap, there must have been some measurement error in the actual GDP numbers." And because we don't have room in our accounting system right now for measurement error, we put the measurement error in potential GDP.

This is something we are thinking a lot about. In the research of mine that you cite, we do have an explicit role for measurement error, but that isn't something that's in our traditional accounting systems. One could imagine a more elaborate system in which you break down real GDP into not just the two components, of potential output and the output gap, but into three components: potential output, the output gap, and measurement error. So that's what's going on there.

MR. EVANS. That is a little less satisfying than I was expecting, because if my memory is right, I thought that was the occasion when the first-quarter winter was really dastardly.

MR. ROBERTS. Exactly.

MR. EVANS. And we just made this judgment call to take it all as potential output.

MR. ROBERTS. That is exactly right, and that is what I am calling “measurement error.”

MR. EVANS. Right. So I understand that kind of swag, I guess. But on the other hand, GDP was 2½ percent that year, right?

MR. ROBERTS. Yes. But you are exactly right. We are putting a lot of weight on what we thought was an anomalous Q1 number.

MR. EVANS. Right. Okay. Thank you.

MR. WILCOX. GDP growth was 2½ percent, and the unemployment rate was coming down a lot, so unless you posit a big discrepancy between the growth of actual GDP and potential GDP, it’s really hard to reconcile a substantial decline in the unemployment rate. So we sort of “squeezed the balloon,” and, as John Roberts described, we squeezed it into here.

Now, we are in the process, as John Roberts mentioned, of inventing a more elaborate system that would allow us to do something that we can’t do at the moment, and that is, have a smooth series for potential GDP that probably accords a little more with our economic intuition so that potential GDP growth is driven by things like trend multifactor productivity, capital investment, population growth, those sorts of things. What we’d like, ideally, is to have a smooth series for potential GDP that represents that, and we would also like to show you an output gap that itself is also smooth and accurately represents pressures on resource utilization.

At the moment, absent, as John was describing, a third category for—in the Kalman filter world, it is called “observation error.” Absent an explicit designation of observation error, we

can't do those two things. So as an imperfect parking place, we have put the noisiness into potential GDP growth. That's what's going on in the—

MR. EVANS. I think it was a good decision. I think we are well served by that type of good judgment, just put all the pain in one place and let the analytics go forward on a more reasonable—no, I'm not questioning that, I'm just trying to understand it. Thank you.

CHAIR YELLEN. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. I have a question on John's exhibit 4, "A Recession at the ZLB," which obviously was also in the alternative scenarios in Tealbook A. As I read from the text and from your presentation, if I look at the blue dot-dashed line—which indicates that you are not imposing a zero lower bound, you are not imposing anything—you are actually doing two things with the funds rate here. You have a baseline assumption about some kind of Taylor rule with inertia, but then you are also dropping the funds rate by 275 basis points to show a typical or a strong reaction to the recession. So it is a combination of these two effects. And then, on the zero lower bound, you are constraining it at essentially 10 or 12½ basis points.

I have one technical question, which is, I am puzzled by the fact that the red dashed line with the zero lower bound is almost always—by just my looking at panel 5 in the exhibit—above the blue dashed line, which goes against economic intuition. I understand it is above at the zero lower bound, but it wouldn't be that way, for example, for 2018. Even though the economy is worse off, the funds rate is higher. So I was curious about really what's going on here.

And the second issue, which is kind of more related to the box in the Tealbook about the effective lower bound, is I would be very interested to see what would happen if, when you do these kinds of scenarios, instead of a zero lower bound, you used a negative 50 basis point or a

negative 100 basis point lower bound, given the experience in Europe, and in light of what we've learned from that, which is reported in the Tealbook, just to kind of give us a flavor of, in a situation like this, if we could go to negative rates. And if we had a view on how that would pass through to financial conditions, how much of an extra kick would that give us before going to, say, QE4 or some other tool?

MR. ROBERTS. Let me answer your first technical question. We assume that there is the initial kick-down in the federal funds rate, and then, after that, it just follows the inertial Taylor rule. That is sort of what is going on in the blue dot-dash line. The reason the red line is above the blue dot-dash line is basically the inertia. The inertial Taylor rule has a lot of inertia, and so you're inheriting zero rather than negative 1, and it is persistent, so that is why it is above. So that was your first question.

Your second question, why not—

MR. WILCOX. Is that clear, John?

MR. WILLIAMS. It's clear, but it's not satisfactory, really, because if you think about it—and I have talked about this so many times—these kinds of arbitrary “I am pushing the funds rate in one, and I am putting inertia in the other,” and you are getting what are nonsensical responses that one path is above the other, even though the economy is worse. I would prefer to see something like an optimal control exercise, in which you are really doing something that is apples-to-apples, so that I could see what the different outcomes would be if I was trying to do something that is consistent with our views. But this is something that we can, you know—

MR. ROBERTS. Yes, that's something that we've been thinking about.

MR. WILCOX. This is pretty simple. It is a mechanical application of the inertial rule. The inertial rule is simply feeding off a lagged value that's zero when the ZLB is imposed, and

the inertial rule is feeding off a negative number when the ZLB is not imposed. It, obviously, would be possible to do an optimal control version of the same kind of exercise.

MR. ROBERTS. So your second question—I would suggest averaging the blue line and the red line. If the federal funds rate could go to minus 100, then the outcome would probably be somewhere in between where it is when it goes to minus 200 and when it's stuck at zero.

MR. WILLIAMS. I'm really thinking ahead to, if this really happened, what the cost-benefit analysis, or at least the benefit analysis, would be in terms of macroeconomic stabilization if we really thought that the effective lower bound was something lower. You know, giving us a little more information in these kinds of scenarios of, "Hey, if you guys were willing to go to minus 50, you wouldn't get an unemployment rate of nearly 7, you might get an unemployment rate that peaked at  $6\frac{1}{4}$ ." So that's where I'm going with this, thinking ahead to the staff analysis.

MR. LAUBACH. Madam Chair, may I briefly—the staff is in the process of evaluating various technical, legal aspects of our actual ability to implement negative short-term interest rates, on the basis of the experience abroad.

MR. WILLIAMS. Thank you.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I want to follow up with President Williams on the same exhibit 4, "A Recession at the Zero Lower Bound." I agree with President Williams, to do this experiment in which we lower the funds rate to implausible levels and then trace out the response—I'm not sure that's the most useful thing to show to the Committee. I'll suggest an alternative experiment, which is: You do have this constant probability of recession. If a recession occurred in 2016, I think what the Committee wants to know is, how much QE



would you have to do to mitigate the recession and what does the staff model say about that?

And then, as an alternative, you assume the recession does not occur until 2019 or something like that, when the funds rate is much higher or in a much better position, and then presumably you might not have to do any QE, or might have to do much less or something like that. But otherwise we're comparing to something that, you know, we can't do. So that's kind of distressing.

On exhibit 7, which is entitled "Liftoff" and is about the dollar, figure 2, "Dollar Moves Around the Start of a Tightening Cycle," shows the average of past tightening cycles, and the black line declines—which I guess is a depreciation of the dollar in the months following these four previous historic tightening cycles. So I thought you were going to show me an alternative scenario of "what if that happened?" And that isn't actually the alternative that you showed me in figures 3, 4, and 5 here. You showed me further tightening. So I guess—

MR. GRUBER. That's right.

MR. BULLARD. —what's the connection?

MR. GRUBER. I think you're right, your interpretation of the black line is correct here. On average in previous tightening cycles, we have seen a slight depreciation of the dollar, because tightening likely has been priced in before the actual event of the interest rate increase, as you would expect. Honestly, this was just highlighting the risk more. What people probably are seeing is the risk of the forecast. But I think you're exactly right, we don't really have a very good idea of what's going to happen to the dollar post-liftoff, and it's possible that it would fall.

MR. POTTER. So in most of these episodes, China's not important. In 2004, they're important. They start appreciating against the U.S. dollar in 2005.

MR. BULLARD. Oh, sure, you're averaging across these past periods, which are different. Absolutely.

MR. GRUBER. So the currency composition—

MR. POTTER. But the China one would be a big one.

MR. GRUBER. We took this to basically a further 10 percent appreciation of the dollar just because I think that's the risk that we had in mind, but that's not to say that's the only thing that could happen.

MR. BULLARD. Well, one interpretation of this figure 2 is that a lot of the action is ahead of the tightening cycle because it's all pulled forward in financial markets. Then, after you get past the initiation of the cycle, other things happen in the economy, and you don't know what those are.

MR. GRUBER. That's in line with our forecast, I would say, with this relatively flat forecast path of the dollar.

MR. KAMIN. President Bullard, I think I would add, exactly apropos of the point that you made, that we have another alternative simulation in the Tealbook that highlights the possibility that foreign growth is a little faster than we expect, and as a result of that faster growth, the dollar depreciates. And that's exactly the type of thing that could be reflected in the depreciation of the dollar, shown in this average of past tightening cycles, that the FOMC tightening is already built in beforehand, and then new information arises afterward. And, as a result, the dollar can go up or down.

MR. BULLARD. All right. Thank you, Madam Chair.

CHAIR YELLEN. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. Number one, still on panel 2 of exhibit 7, am I not correct, Joe, that the past tightening cycles that you've averaged were ones in which there was already a fair amount of divergence between U.S. policy rates and policy rates in at least two out of the three important central banks for our purposes, which is to say, the Bundesbank, the ECB, and the Bank of Japan? And, number two, in none of these circumstances, obviously, have there been six years of more or less coincident rates, right?

MR. GRUBER. That's correct. I think you're right in pointing out that in 1994, there was policy divergence already at that point, but like you said, we were both headed in the same direction, but basically at different paces. So in some sense the divergence is a little different this time because we've had six years, basically, of the same rates, and things are going in different directions at this point. And so you see that the much faster realized appreciation of the dollar going into this tightening episode is probably a reflection of that, right? So we've had, what, a 16 percent rise in the dollar since middle of last year, and I think that's not something we've seen around other tightenings.

CHAIR YELLEN. Further questions? [No response] Okay. Why don't we begin the round, and I'm going to call on President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. My SEP submission is qualitatively similar to the Tealbook forecast. I expect real GDP growth over the next two years only somewhat above 2 percent, the unemployment rate at the end of 2017 at 4.6 percent, and a return of PCE inflation to 2 percent by 2018. My policy rate assumption is also qualitatively similar to that of the Tealbook, with a 25 basis point increase at every other meeting. In summary, a boring forecast, but for a central banker, boring is good.

Because my modal forecast is basically more of the same economic outcomes that we have been experiencing over this past year, the mode may not be the most interesting aspect of the outlook. Instead, this may be a good time to consider what could make our modal forecast go wrong.

My primary unease with my modal forecast concerns inflation. Core PCE inflation is currently at 1.3 percent. While I'm reasonably confident in my modal forecast based on continued tightening of labor market conditions, an alternative case is not hard to justify. Although the current spread between the core CPI and core PCE is certainly not unprecedented, it is large relative to the spread we've experienced over the past five years. If core PCE inflation tended to revert to core CPI inflation, we might be more confident of a return to our 2 percent goal. Unfortunately, that does not seem to be the case. When my staff ran error correction models in the two core series, core CPI tends to converge to core PCE and not the other way around. The implication is that we should not take much solace in the higher value for core CPI inflation.

With tighter labor markets, one might expect that surveys and financial market indicators would provide more confidence in the projection of reaching our 2 percent inflation target. However, the SPF PCE median expectation for the next 10 years and the 5-to-10-year-ahead TIPS measures of inflation expectations have recently fallen and now are at or near 10-year lows.

The difficulty returning to our inflation target is a global problem. Central banks in developed economies are significantly undershooting their inflation targets. Their attempts to restore inflation to their 2 percent targets have depreciated their currencies against the dollar, a development that is likely to conflict with our own attempts to return to our inflation target. With market expectations tentative and the global low inflation environment potentially

inhibiting our own efforts, this is a risk that, if it materializes in coming quarters, could alter my desired monetary policy path.

But the risks are not completely asymmetric. The most significant risk that would argue for a tighter monetary policy path than I have in my SEP arises from labor market behavior. Since the onset of the recovery, the labor market has tightened more quickly than I expected. My forecast has real GDP over the next two years averaging close to 2 percent, not much different than what we have averaged over the past several years. However, despite very modest and slower-than-expected growth, the unemployment rate over the past several years has fallen more than expected. Compounding that risk, we also do not have a particularly good record of stabilizing the unemployment rate at its natural rate. Instead, monetary policy often contributes to a significant undershooting of our estimates of the natural rate of unemployment. This risk is mitigated somewhat by the expectation that, as in the Tealbook, some workers will be drawn back into the labor force, so that some of the remaining labor market slack not captured in the U-3 rate will diminish.

But a plausible alternative is that the unemployment rate falls well below our estimate of the natural rate of unemployment. I'm not deeply concerned that such undershooting will cause a sharp rise in inflation, but rather that our attempts to return unemployment to the natural rate will similarly result in overshooting, above the natural rate, setting off a cycle of corrections that might induce additional volatility into the economy.

I am perhaps less concerned about undershooting and overshooting than I would be if I held to the Tealbook's natural rate of unemployment estimate, as my current estimate of the natural rate of unemployment is 4.7 percent. This is starting to represent a sizable difference from the staff's forecast. But even with a much lower natural rate, if the estimate were

significantly surpassed, I would become more worried about future inflationary pressures and about inadvertently creating another recession in our attempts to avoid such pressures. In such a context, I might want a tighter normalization path to avoid such a scenario.

Finally, I do not see any imminent threat to financial stability. However, as outlined in the Chair's recent e-mail, overall financial conditions might be conducive to sowing the seeds of such problems. While macroprudential tools may be the preferred first line of defense, I have concerns about whether we have sufficient foresight, tools, and political will to use those tools to full effect. To be sure, we also do not know how effective monetary policy would be in slowing particular activity that might lead to financial instability. But we certainly have the ability to implement standard monetary policy tools if we deem them necessary and effective. Thus, I am probably more willing to lean on monetary policy tools than some others, at least until I have more confidence in the use of macroprudential tools.

I am glad that we are having a more fulsome discussion in April, but at least for me a buildup of financial-stability pressures might influence how quickly I would be willing to normalize. My baseline forecast at this time is that those concerns will not rise to the level that would alter my preferred path of the short-term interest rate, but monitoring financial conditions closely in coming quarters is certainly warranted. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. Economic conditions in the Fifth District have changed little in recent months. The overall tone of our contacts and survey respondents remains positive, though there are pockets of weakness associated with energy production and exports. Preliminary December numbers for our manufacturing composite index remain basically at a neutral level, and reports received from our contacts were mixed. Bright spots



include aerospace, power generation equipment, medical equipment, and the auto industry, in which several new plants are being built in our District. Weakness appears concentrated among export-related businesses. An illustrative comment came from a chemical manufacturer in North Carolina who said that his export business was down sharply, off 25 percent, but domestic business was up 15 percent.

Contacts at our large defense contractors are reporting a much more positive outlook as a result of the budget deal. They welcome the increased funding, of course, but they also noted that the extended time horizon was reducing uncertainty and allowed them to plan, hire, and invest.

Lower natural gas prices have resulted in reduced drilling activity in the Marcellus region. Pipeline construction to connect existing wells is still active, however.

Residential real estate markets continued to improve at a moderate pace. We hear that some homebuyers are entering the market anticipating rate increases ahead, but shortages of buildable lots and labor are said to be driving up costs and limiting single-family construction activity.

Our bankers say that demand for credit is growing and credit quality is improving, but competition is still fierce for good borrowers. They say that TRID, the new closing document requirement, is increasing mortgage origination costs, and that it is going to be difficult for small community banks to afford to do any mortgage lending.

The struggle to find qualified workers continues across a range of occupations. My favorite anecdote this time is that construction companies are posting armed guards at work sites to discourage the poaching of construction crews. And, finally, in the category of “be careful what you wish for,” we hear of sizable hiring plans at large D.C. law firms.

Turning to the national economy, I agree with the Tealbook's assessment that the outlook has not changed much since our previous meeting. I'll touch on just a few significant developments. First, consumer spending is obviously the key to the outlook. Although the reports on real PCE were weak in September and October, there were quirks each month that reduced their signal value, and retail sales ex gasoline were up significantly in November. I expect consumer spending to continue to grow at around 3 percent for at least another year, bolstered by strong income growth, good job prospects, and a solid household balance sheet.

Second, we are seeing some signs of increasing wage growth in the data, and that fits well with the many reports we have seen about shortages of skilled workers and growing wage pressures. It seems plausible now that we will see a pickup in wage gains next year, something that should support a healthy household sector.

Third, the federal budget agreement should provide a direct boost to overall economic activity next year. Not only does it add to outlays in the near term, but, as I said, some firms in our District report that it reduces uncertainty, a development that should itself encourage spending.

One source of concern of late is that manufacturing diffusion indexes have been noticeably soft, including our own Fifth District index. At the same time, though, the Board's industrial production index for manufacturing as a whole has been rising at a modest pace. Thinking about how those two types of sources aggregate disparate sectors, I am more confident in the Board's index, so I share the staff's view that total manufacturing output should continue to advance even in the face of further strength in the dollar.

In sum, recent developments line up well with the Tealbook's forecast of above-trend real GDP growth next year. I wrote down 2.4 percent, which is not that far from the Tealbook. I part

company with the staff a bit on the near-term inflation outlook, however. In the absence of shocks, I think it is reasonable to look for headline and core inflation to make substantial progress toward 2 percent next year. In any case, there is substantial uncertainty about the inflation outlook over the next two years, and we need to keep this in mind as we craft language on policy guidance. Thank you.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. The declines in energy prices and farm incomes continue to weigh heavily on the Tenth District economy. Oil prices have retreated further since our previous meeting, and our industry contacts now expect oil prices to remain depressed or to drop even further in the first half of 2016 before recovering somewhat in the second half. As a result, another round of steep capital spending cuts and associated layoffs are expected. Several District energy firms also have had their credit downgraded further in recent weeks, and contacts expect more consolidation and defaults in 2016.

Headwinds due to supply and demand factors have also created a more pessimistic outlook for farm income since the previous meeting. Crop prices remain 10 percent below year-ago levels, and we are approximately 35 percent below the five-year average following reports of near-record domestic production. Additionally, cattle prices have fallen. Little improvement is expected in the near term, as global demand for U.S. agricultural and food exports has declined in 2015 about 10 percent as a result of the strong dollar and increased competition from other major agricultural and food exporters.

Our District manufacturing survey has slipped back below the breakeven level of 50 after two months of showing signs of stabilizing. Activity is lowest in Oklahoma, but even less energy-intensive states are showing some signs of softening. Despite the headwinds arising from

commodity price behavior, we continue to see strength in other areas. Based on our surveys, the strongest employment gains are expected in the high-tech services and transportation sectors. Some employment gains are also expected in the real estate sector as home prices continue to appreciate across the District and home inventory levels remain low.

For the national economy, I expect growth of around 2 percent in 2015 despite notable drags due to weakness in net exports and lower investment in the energy sector. Looking ahead, my forecast is for growth of 2½ percent next year, as global growth is expected to be modestly higher than this year and the headwinds generated by a high foreign exchange value of the dollar begin to wane.

Conditions generally look favorable for solid consumption growth. As household balance sheets have improved, the savings rate is high compared with the past few years. House prices are rising, wage growth is showing some signs of improving, and gasoline prices are low. Even so, it is worth considering how much more headroom consumers may have, especially given the brisk pace of auto sales.

Durable consumption has historically been about 12 percent of total consumption following recessions and then rises to about 14 percent as an expansion matures. Currently, durables represent about 11 percent of total consumption, suggesting, perhaps, that some upside potential exists in terms of durable goods consumption. Also, I have noted that the average age of durable goods remains somewhat high compared with before the crisis.

My forecast for the unemployment rate relies on some further improvement in the labor market, although the decline in participation of prime-age males seems unlikely to substantially reverse. In 2010, 14 percent of prime-age males hadn't worked within the past year. This percentage is virtually unchanged today. In contrast, from 2010 to 2015, the share of these

detached workers who haven't worked in the past five years increased from 50 percent to 61 percent. The rise in detachment during a period of labor market improvement suggests that deeper structural obstacles exist that may not be easily overcome by a cyclical improvement in labor market conditions.

In terms of wages, we are seeing some signs of faster wage growth after controlling for compositional effects. For example, using the Current Population Survey, the Federal Reserve Bank of Atlanta wage tracker follows individual workers and shows that average annual wages have increased from less than 2 percent in 2010 to about 3½ percent for prime-age workers. Along these same lines, the latest NFIB survey shows a sharp increase in the number of firms planning to raise wages.

Turning to inflation, there have been considerable disinflationary pressures generated by the commodity price decline and dollar appreciation over the past year. From the third quarter of last year to the third quarter of this year, WTI prices fell 52 percent, more than they have ever fallen in periods other than postwar U.S. recessions. Over this period, the foreign exchange value of the dollar, of course, has also sharply appreciated. My staff estimates that the simultaneous drag generated by these outsized movements in both commodity prices and the dollar are subtracting about 45 basis points from core PCE inflation, an estimate that is similar to what the Chair reported in a recent speech but using a somewhat different approach. Without these headwinds, core inflation looks to be running at almost 1¾ percent.

Another factor that supports my confidence that inflation will rise is the stability of long-term survey-based inflation expectations. My own preferred survey measure is the five-year, five-year-ahead forecast of PCE inflation. This measure edged up to 2.1 percent from 2 percent in the first half of this year and has since remained relatively stable. Although the University of

Michigan survey of longer-term inflation expectations has edged down, this survey appears to be more sensitive to the drop in gasoline prices and is not necessarily a sign that longer-term inflation expectations have declined to a level inconsistent with our 2 percent goal. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. As a final sounding of my District's contacts before the possible liftoff decision at this meeting, my team met with a large number of business leaders across the Sixth District. The spread of interviews was fairly representative of the national industrial mix.

Businesses appear to be ready for and supportive of a rate increase coming from this meeting. This support seemed to be based on a broadly held view that business activity is expanding at more or less the same moderate pace that we've seen for most of the recovery. Overall, I would characterize the outlook of the majority of our contacts as "restrained optimism."

Major employers indicated that demand for workers continues to grow, and wage growth appears to be firming. Pockets of softness were reported, as expected, in regions and industries with concentrations in oil exploration and refining. Companies with significant ties to commodity production also reported slowing, as did some manufacturing firms.

Continuing heightened inventory levels were mentioned frequently as a potential source of production weakness in the near term. This contrasts somewhat with the Tealbook's more benign view of the inventory situation. Even in the auto industry, whose sales are very strong, we heard concern about inventory trends. Our director, who heads the nation's largest auto retailer, mentioned a recent surge in inventories partially fueled by imports. Apparently, auto



manufacturers with global operations had been redirecting shipments to the United States as the market they consider as having the best prospects for excess global inventory absorption. He offered the opinion that, in the near term, the pace of sales can absorb the heightened inventories, but he expressed concern about whether the historic high sales pace is sustainable.

Although earlier in the year we heard references to logistics bottlenecks—most prominently the Long Beach port strike—as contributing to the inventory buildup. In this cycle, we heard more emphasis on disappointing sales. In that regard, consumer spending reports were mixed. Several contacts said they expect significant price discounting in coming weeks to move unsold stocks.

Regarding business investment, our chair, who participates in the Business Roundtable, noted a downshift in the composite business outlook of the group and, with that, a sharp reduction in anticipated capital expenditures over the next six months.

Despite some concerns, most of our contacts are expecting continued moderate expansion of business activities. They are seeing the glass as half full. Along with their support for liftoff, we heard broad support for taking a cautious approach to the pace of normalization until underlying points of strength in business conditions can be confirmed.

In my outlook for the U.S. economy, I've lowered my forecast of near-term real GDP growth a little, in order to reflect the cautious sentiment we detected along with the mixed data picture. This puts my growth outlook pretty much into line with this meeting's Tealbook forecast. I've also lowered our projection of headline inflation for 2016, as has the Tealbook.

We recently surveyed businesses once again about their “business-input inflation” expectations. While cost expectations of firms are more or less unchanged from earlier surveys, we picked up notable differences in perspective from industry to industry. Our data on

businesses in the retail industry and manufacturing showed slippage in year-ahead cost expectations compared with this time last year. We're not prepared to conclude that these moves are an early signal of a more broadly based downshift in inflation expectations of businesses, but they may be an additional cautionary note regarding inflation expectations.

In updating my forecast for this meeting's SEP submission, the trend of inflation expectation readings was hard to ignore. Six months ago, we were getting different readings from financial markets and household surveys. Now, it's my sense that the various indicators of inflation expectations are more in alignment, and so it's a little harder to claim that expectations remain anchored at levels near the Committee's target.

In my projections for 2016, even as I've lowered my estimate of headline inflation, I'm treating recently softening inflation expectations as representing a risk to the outlook. Consistent with that treatment, my balance of risk perspective has the risks to growth and employment as balanced, while I have inflation risks showing a downside bias. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. Information received from District contacts since the previous FOMC meeting suggests that overall economic conditions continue to improve at a modest pace. Results from our business outlook survey in the District were consistent with improving conditions but did not show signs of accelerating growth.

Preliminary District employment data through October have been stronger than in previous months and consistent with modest job growth. Two notable business developments in the District were Ford's \$1.3 billion investment in the Louisville Ford truck plant and St. Jude Medical's announcement of a \$9 billion investment in Memphis. Each project is estimated to bring about 2,000 jobs to the local area.

The unemployment rate in the District measured across metropolitan statistical areas is 4.9 percent based on the latest reading, just below the current national unemployment rate and consistent with the Committee's median view of the long-run rate of unemployment for the nation. Anecdotal information received from District hiring managers continues to suggest building wage pressures. Comments from directors across a variety of industries suggest that 2016 wage pools are being set to produce wage increases of about 3 percent—that's in a world of low inflation and low productivity growth.

Nationally, the strong real GDP growth registered in the second quarter of 2015 does not appear to be carrying over into the second half of the year. The evolving data, as well as the consensus of most forecasters, suggest that the moderate growth and low inflation registered in the third quarter will carry into the fourth quarter. Indeed, the average of the Federal Reserve Bank of St. Louis's three nowcasts is 2.3 percent real GDP growth in the fourth quarter. In short, real GDP growth during the second half of 2015 has not materialized as we in St. Louis expected. Accordingly, we have reduced our growth expectations further, and we now stand at a real GDP growth forecast broadly similar to private forecasters for 2016, around 2¾ percent.

Concerning unemployment, we have been more optimistic than the median of this Committee and, hence, more accurate during the past three years. We continue to be more optimistic and have penciled in a 4.3 percent unemployment rate for the end of 2016. We think this is very reasonable provided growth comes in at 2½ to 3 percent for 2016. This forecast is more aggressive than the Tealbook and most private forecasters, but most forecasters have underestimated the pace of improvement in labor market outcomes over the past several years. Should job gains continue to average 200,000 a month, this would be far above the pace

necessary to keep the unemployment rate constant. Accordingly, we think the unemployment rate is likely to continue to fall in 2016.

Domestic inflation readings continue to be difficult to interpret as a result of continuing turmoil in international energy and commodities markets. We have been expecting oil prices to stabilize and that, given the current pace of increase in other prices, headline inflation would return to target rather mechanically during 2016. This is still our baseline, but further declines in crude oil prices in recent days bear careful watching. I continue to see lower crude oil prices as a bullish factor for the U.S. economy, as I think it is inconsistent to argue that it's both a negative factor when oil prices go up and when they go down. We have to choose one or the other. I think having lower oil prices is a bullish factor for the U.S. economy.

Nevertheless, renewed oil price declines may delay the return of headline inflation to target. We have, accordingly, moderated our inflation forecast in the current SEP round. We still expect a modest overshooting of the Committee's inflation target, with headline PCE inflation peaking at 2.1 percent year over year by the end of 2016 and stabilizing at 2 percent thereafter, provided this Committee pursues the appropriate level of policy accommodation over the forecast horizon. The extent of this overshooting has been tempered relative to previous forecasts and, in addition, has been pushed further into the future. I see recent oil price declines as a downside risk to this inflation forecast, but I'm not willing to adjust the forecast further on the basis of the information available as of today.

Our current inflation forecast is now closer to the SPF forecast than it has been but above the Tealbook. Again, I think this is reasonable provided that growth comes in at 2½ to 3 percent in 2016 and unemployment falls below 4½ percent.

Considering underlying measures of inflation, I continue to think that our so-called core inflation is not the right measure and that continued focus on this is doing a disservice to U.S. monetary policy. As Governor Fischer and, just now, President George and many others have pointed out, in the current episode of dramatic crude oil price declines, core inflation, despite the exclusion of food and energy prices, has still been importantly affected by the large energy price movement, enough to take several tenths off the year-over-year inflation rate.

Better measures of underlying trend inflation are available and should assume more prominence in the Committee's decisionmaking. A possible contender is the Federal Reserve Bank of Dallas's trimmed mean PCE inflation rate, which is currently running at 1.7 percent year over year. This is only three-tenths below the Committee's goal and is likely to rise gradually over the forecast horizon. This suggests that the Committee's inflation goal is close to being met. Another possibility would be the so-called sticky-price CPI, which came up today, at 2.4 percent year over year. The sticky-price CPI has the advantage of theoretical backing in the New Keynesian literature, which says that it's the sticky prices you should worry about in an economy in which sticky prices are the key friction. New Keynesian ideas influence a lot of the thinking around this table.

Inflation expectations have continued to deteriorate, and this is a concern to me, but these declines remain closely correlated with movements in global dollar oil prices and perhaps cannot be interpreted in a straightforward way at the current juncture. For this reason, I remain in a wait-and-see mode with respect to measures of inflation expectations. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. Our District, with the exception of manufacturing, has seen a slight pickup in activity since our previous meeting. Manufacturing

remains a soft spot for our general activity index, which returned to negative territory in December. Like the nation, we have seen resumed momentum in labor markets, with acceleration in employment growth and declines in the unemployment rate. There's also limited evidence of a slight increase in the pace of wage growth. On the upside, autos have been flying off the showroom floor, and construction growth has been relatively solid. Overall, I would continue to categorize growth in the Third District as modest.

Looking at employment growth in a bit more detail: October jobs data were strong in both New Jersey and Pennsylvania, with most of the growth concentrated in service-sector jobs. Employment growth has now accelerated to the national average, and participation rates have stabilized at around 62.9 percent. Employment in mining and drilling has declined over the past three months but is still up year over year. Notably, the tristate unemployment rate declined three-tenths of a percent in October to 5.2 percent.

One interesting feature of the labor market in my region is that Delaware is experiencing a persistent increase in labor force growth driven in part by the reentry of workers into the labor force. I don't know whether this behavior will remain special to Delaware or prove to be a harbinger of a more general labor market development, but it's worth noting that Delaware has proven to be a first state in at least one other historically significant event—go Blue Hens.

Indicators of Third District manufacturing activity continue to indicate weakness. The current activity index in our December Manufacturing Business Outlook Survey, which will be released Thursday morning, came in at minus 5.9, down from 1.9 in November—indicating that activity is slightly negative, a condition that's now prevailed for the past four months.



We did see a pickup in shipments, but it was ever so slight. However, indicators of future activity, although still solidly in positive territory, declined significantly from 43.4 to 23.0, and that number is now slightly below its nonrecessionary average.

On the other hand, activity in the service sector remains robust. In our nonmanufacturing business survey, the general activity index in November remained close to its nonrecessionary average, coming in at 26.3, down somewhat from its October reading. Respondents remain upbeat, with the future activity indexes remaining solidly in positive territory. An initial report received from a contact regarding activity on Black Friday indicated that crowd volumes were higher than they had seen in several years and that shoppers were socializing less, were more focused on shopping, and were handling multiple bags of merchandise.

Subsequent reports of holiday shopping activity in the District have been somewhat mixed. However, auto dealers are reporting brisk sales, and one executive indicated that consumers are using the fall in gas prices to upgrade the class of vehicles they are buying. This behavior was particularly influencing sales of larger SUVs.

In real estate, housing and construction are showing modest improvements largely driven by the growth in multifamily housing units. The single-family housing sector of the market remains lackluster, and house price appreciation in the region lags that of the nation.

In the pricing arena, there appear to be distinct differences across sectors. In manufacturing there is very little evidence of price pressures, with the indexes for both prices received and paid coming in negative in the December Manufacturing Business Outlook Survey. The opposite was true in the nonmanufacturing survey, with the analogous indexes experiencing increases that accelerated somewhat in November. This dichotomy carried over into our

inaugural firm price expectation survey, which measured next-year price forecasts for own prices, compensation, and overall inflation.

The median forecast among manufacturers was for their own prices to rise 1 percent in the fourth quarter of next year compared with the prices they charge this quarter, while the comparable forecast for nonmanufacturers was 3 percent. Regarding total compensation, the median expected change for both sets of respondents was an increase of 3 percent, and both groups anticipated that consumer inflation would rise 2 percent fourth quarter over fourth quarter. However, although wages are expected to rise at a somewhat faster pace for selected skills, few firms will be increasing wages at a significant pace for all workers. Also, a much larger fraction of firms are reporting difficulty finding workers with the required skills compared with six months ago.

Turning to the nation as a whole, I believe that the real economy remains healthy. My forecast is for the economy to grow at 2.2 percent in 2015, accelerating a bit to 2.5 percent in 2016, then growing at 2.4 percent and 2.3 percent in 2017 and 2018, respectively. I see Q4 unemployment at 5 percent, but I see the rate dipping to 4.8 percent in 2016 before gradually rising to 5.0 percent in 2018.

With regard to inflation, I see both headline and core measures gradually returning to target. Next year, I foresee a considerable bounceback in inflation as the effects of falling oil prices and dollar appreciation dissipate. I anticipate that headline PCE inflation will be 1.6 percent in 2016 and reach our target by 2018, and that core PCE inflation will be 1.7 percent next year and will not reach target until sometime in 2018. Thus, my forecast is a tad weaker on unemployment and slightly more optimistic on growth than the Board staff's forecast in the

Tealbook, but generally the overall contour is not appreciably different, at least in any meaningful statistical sense.

The last comment I'd like to make as we approach liftoff is that I'd like to raise concerns with respect to the phrase "data dependency." Although the Committee has been careful to emphasize that it is the trend in data, not any one data point, that matters in forming policy, this is, as we know, oftentimes overlooked by the media and the public. In particular, over the recent past, there has been a tendency for Q1 data to come in on the weak side perhaps as a result of residual seasonality. As we go forward, I believe it will be important to look at the data very broadly as we interpret and publicly discuss the consequences of our actions. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. I suggest we take a break at this point and grab some coffee and some fruit outside. We're doing very well. Why don't we return at 25 after.

[Coffee break]

CHAIR YELLEN. Let's get started again. President Evans.

MR. EVANS. Thank you, Madam Chair. The tone of my discussions with business leaders this time was cautious to downright pessimistic, but perhaps this reflects their industrial mix. I talked to a number of manufacturers with big international exposures. Conditions are particularly bad in the steel industry. Prices of some of their benchmark products are down about 40 percent from a year ago, and one of my directors mentioned that a couple of large firms may be in serious financial trouble. The heavy equipment manufacturers remain quite downbeat and for some time have been laying off workers in response to persistent low demand for mining and agricultural equipment. My steel and heavy equipment contacts did hope to see a pickup in

demand for construction-related inputs and machinery in the spring and noted that the highway bill should help. I guess this is another Federal Reserve stimulus program. [Laughter]

Looking ahead, manufacturers and my other contacts with global business presence generally see Western Europe coming off the bottom. China should either stabilize or pick up in part as a result of recent fiscal measures there, and South America, particularly Brazil, is expected to remain a mess.

The bright spot in my District is the auto industry. Of course, sales have been quite strong the past few months, and Ford, for one, is expecting only a modest slowdown in 2016 from the industry's recent pace. Their forecast is premised on only a gradual tightening in financial conditions. Something more rapid would likely hit car payments in a big enough way that consumers would delay purchases or buy less-expensive models.

Outside the auto area, the news about the consumer has been okay but not robust. For example, my director from Discover credit cards reported just moderate increases in sales and credit usage.

With regard to wages and prices, a number of my directors reported wage gains, but these were largely for upper- and some lower-tiered workers. The segment in the middle continues to miss out. Ford characterized the UAW contracts as a bit expensive on wages and bonuses. They expected some higher wage spillover upstream to parts suppliers. However, in return for higher payouts, Ford will receive some offsetting productivity-enhancing changes in work rules. Outside these few wage reports, I've not heard a thing about cost pressures or increasing prices.

In financial markets, our contacts' basic message was that credit conditions have tightened somewhat since the previous FOMC meeting, and here I should mention that all of our calls were made before last week's problems in high-yield markets. Of course, our contacts

noted that spreads are up, and they've risen more since then. They attributed these earlier increases in part to a reduction of liquidity in corporate bonds and asset-backed securities, but mostly the increases seemed to reflect repricing of high-yield debt, especially debt rated triple-C and below. We also heard of somewhat tighter credit conditions in commercial real estate, especially for new construction loans, and there most notably in the multifamily sector.

Overall, as of last week, our contacts' perception was that we are seeing a healthy repricing of riskier assets and not an unwarranted reduction in credit availability. One caveat with regard to this assessment is that our small business financing contact at PayNet noted a sharp drop in their small business lending index in October. This seems like something to keep an eye on. After all, as my large corporate contacts tell me they are either maintaining employment levels or laying off workers, I have been speculating that small and medium-size enterprises are currently a source of strength nationally.

Turning to the national outlook, on balance, the incoming data on spending have been a bit softer than we projected in our September SEP submission. We've lowered our forecast of growth by a few tenths over the next year or so. We now see GDP growth averaging in the  $2\frac{1}{4}$  to  $2\frac{1}{2}$  percent range over the projection period. Although this is faster than the Tealbook, our assumptions regarding potential GDP growth also were a few tenths higher. We see resource gaps closing in 2017 and then the economy running only a bit above potential in 2018. So my outlook does not have output overshooting potential to the same degree as the Tealbook.

We made no material changes to our inflation forecast. It looks similar to the Tealbook, with inflation slowly moving up close to target by the end of the projection period.

I did want to note President Bullard's comment about core inflation rates and trimmed mean PCE—I have not studied this carefully, but my staff had looked at the average inflation

experience over some longer period of time. For the period from 1984 to the present, trimmed mean PCE inflation is about two-tenths higher than both total PCE and core PCE inflation, which are exactly 2.3 percent, on average, over that time period. So there quite likely could be some wedge in there, and at least over that longer period of time, it was higher. It's something to keep in mind, as it's higher than our target inflation rate measured by the increase in total PCE prices.

My forecast is predicated on the key assumption that policy rates rise at a very gradual pace and that the Committee strongly communicates its state-dependent expectation that rates will follow such a gradual path. FOMC communications should also make clear the Committee's strong commitment to a symmetric 2 percent inflation target. We should actively disabuse the public of any wrong impression that 2 percent is a ceiling. Reaffirming our symmetric objective would solidify the upward pull on actual inflation from inflationary expectations. Without this commitment to symmetry, our Federal Reserve Bank of Chicago outlook would not be projecting inflation to rise to target over the forecast period.

I will also note that, largely to better reflect the reality of our Committee communications, I changed my policy rate assumptions in the SEP to have liftoff occurring tomorrow instead of in June 2016. My policy assumption includes only two moves next year and then about 100 basis point increases in both 2017 and 2018. This policy rate path is premised on the assumption that by late next year, core inflation will finally be making some visible progress toward target and real economic activity will have continued to grow moderately above trend. These developments should give us more confidence that the equilibrium real interest rate is moving up as well. This is a crucial state-dependent feature of my overall economic projection.



If we do not reach these data markers next year, then I would find it necessary to reassess the policy rate path needed to achieve our dual-mandate goals. And I believe we should clearly communicate such state dependence now. The public needs clear guidance beyond our decision tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. I have been very encouraged by recent labor market developments. Robust job gains in October and November have brought average monthly employment growth for the year to 210,000, bringing moderate further increases in resource utilization. And the continued subdued rates of nominal wage growth suggest some further slack may remain.

Among the various measures of nominal wage growth, the ECI provides the best overall measure. It is comprehensive in terms of the types of compensation it includes, representative of the “universe” of firms, and the least subject to shifts in the industry and occupation of workers.

The ECI measure increased only 1.9 percent over the 12 months ending in September, little different from the average pace of increase over the recovery. Similarly, the most recent 12-month gain in average hourly earnings, at 2.3 percent, is only slightly above this average pace. In contrast, compensation per hour in the business sector rose 3½ percent over the past year, a substantial step-up from the preceding year. However, this series is quite volatile, and its previous history suggests that rates of increase should move lower in the period ahead.

With overall unemployment already low at 5 percent, the continuing subdued rate of wage gains naturally raises the question, where are the margins of remaining slack? In this regard, a number of labor market experts have noted that the employment-to-population ratio for 25- to 54-year-olds remains 2½ percentage points below its average level in 2007 and is only

halfway back to its level before the recession. Most of the shortfall reflects lower rates of labor force participation. Of course, it is difficult to judge the extent to which secular or cyclical forces are depressing the participation rate for this group, but several factors suggest that at least some portion of this shortfall may be cyclical.

First, historically, employment rates for this group have been quite high, close to 90 percent for men and over 70 percent for women, suggesting a strong desire for employment among this age group. Second, individuals out of the labor force tend to respond to any improvement in labor market conditions with a lag because of transition costs of moving to employment from other activities such as schooling or child care. So recovery along this margin could reasonably be expected to lag conditions in the labor market. In addition, gauges of the attractiveness of the labor market, such as job finding rates, quits rates, and wages, have improved more slowly than the unemployment rate, holding out hope that there is room for further improvements in those conditions to attract workers back into the labor force. Finally, the share of employees working part time for economic reasons, at 4 percent, also remains about 1 percentage point above pre-recession norms. Again, although some of this higher level may be due to structural changes, some portion may reflect a cyclical shortfall.

Along with this encouraging improvement in the labor market, domestic demand continues to increase at a moderate pace. The recent data on consumer spending have been close to expectations—with auto sales, in particular, remaining strong—and real PCE looks to increase nearly 3 percent this year, similar to last year's pace and up noticeably from earlier in the recovery. Nonetheless, some of the supports for consumer spending are likely to moderate or diminish in the period ahead. For instance, asset prices have reached or exceeded gauges of historical levels, so future gains in wealth will likely be more moderate than earlier in the

recovery. Similarly, credit conditions have mostly normalized. In short, the strength in consumer spending over the medium term is likely to depend on further improvement in the labor market and, in particular, on a pickup in wage growth.

In addition, government purchases are likely to increase somewhat next year, given the recently passed bipartisan Budget Act. But even with this boost, the contribution of government purchases to aggregate demand will remain relatively modest.

In contrast to consumption, private fixed investment has decelerated from earlier in the recovery as pent-up demand for capital has waned. Most recently, weakness in the energy sector has weighed on investment. And with the recent step-down in oil prices, this weakness will be more persistent than previously forecast.

Developments on the second leg of our dual mandate have been significantly less encouraging. Inflation has remained persistently below our 2 percent target for six years now despite substantial monetary accommodation. Since the end of 2009, PCE inflation has averaged 1.4 percent, while core PCE inflation has averaged 1.5 percent. Over this period, we have had 70 readings on the 12-month change in core PCE. In only four months has the rate been above 2 percent, and in these four months inflation was 2.1 percent or less.

The recent price data give little hint that this undershooting of our target will end any time soon. Although there may be reasons to expect inflation to rise gradually over the medium term, the forces that have kept it below our target have been remarkably persistent. Indeed, on the basis of the descriptions of the alternative simulations in the Tealbook, it is noteworthy how hard you have to work to generate rates of inflation that exceed 2 percent in 2017 and 2018. The Phillips curve remains inert, a tiny fraction of its former self.

There are also some hints that the persistent underperformance of inflation may be beginning to have some effect on inflation expectations, as some others have noted. Although survey data had remained fairly steady, some recent readings have drifted lower. Projections in the Survey of Professional Forecasters suggest that 10-year-ahead inflation expectations edged lower this quarter, although they have remained at or very near 2 percent since the end of 2012. Over the past year, the median 5- to 10-year-ahead inflation expectation in the Michigan survey has averaged 2.7 percent, below the average reading over the past 10 years, and the preliminary December reading was 2.6 percent. This edging down in survey measures follows pronounced and persistent deterioration in market-based measures. The recent data on TIPS and nominal Treasury yields, as well as swaps, show that inflation compensation has remained near the very low levels reached at the beginning of this year. Overall, these data, together with the persistent underperformance of actual inflation, raise some risk that inflation expectations could deteriorate. I would note in that regard that roughly half of the SEP submissions now assess risks to core inflation as tilted to the downside, and, of course, I am among that half.

Finally, although the risks from the domestic components of aggregate demand appear roughly balanced overall, I continue to be concerned about downside risk arising from the foreign outlook. Although recent data suggest some improvement in foreign growth in the third quarter, growth is still very low, and risks remain, as evidenced by the recent volatility in commodities prices.

Growth in many advanced economies is quite feeble, despite unprecedented monetary accommodation. The recent data on Japan have improved, but third-quarter growth was still only 1 percent. In the euro area, GDP increased at an annual rate of only 1.2 percent last quarter, and challenges remain. In Japan, fiscal constraints threaten to derail growth in coming years, and

slow growth, along with elevated fiscal debts, make many other advanced economies vulnerable to adverse shocks.

Oil prices, as has been noted, have resumed their downward slide, with a further decline of 19 percent over the intermeeting period. And although supply remains an important driver, the 10 percent further decline in metals prices suggests weak global demand is also at play. This adds further terms-of-trade pressures to the complicated policy challenges facing many emerging markets that are contending with a significant slowing in economic growth following a prolonged period with elevated growth in private-sector debt.

Emerging market growth slowed from an average of nearly 5 percent from 2010 to 2013 to a little over 3 percent last year and to 2¼ percent in the first half of this year. As you saw in the Tealbook, although growth has moved up somewhat last quarter to 3 percent, it still remains low. If economic growth remains low and exchange rate pressures rise, the ability to service some of the earlier accumulations in debt may be called into question and financial stresses may emerge.

The transition to slower growth in China, in particular, remains an important risk to global economic and financial conditions. The recent data on economic activity have been mixed but overall suggest a continued gradual slowdown. Recent weeks have seen evidence of increased foreign exchange intervention along with additional depreciation of the currency and a widening in the spread between the onshore and offshore currency markets. Following the SDR announcement, the depreciation of the currency resumed at an accelerated pace, and we have seen a further 2 percent decline against the dollar in total during the intermeeting period. Most recently, the PBOC's suggestion of a shift to a weighted basket of currencies has raised some questions about possible further depreciation against the dollar. The continued unsettled nature

of the Chinese exchange rate arrangements pose risk of further volatility. And, of course, with China accounting for over 20 percent in the trade-weighted dollar index, further downward movements in the renminbi against the dollar could have important knock-on effects.

More broadly, the intermeeting period has seen a further 2 percent increase in the real dollar, bringing total strengthening up to about 16 percent since the summer of last year. As a result, the staff expects net exports to subtract a little over  $\frac{1}{2}$  percentage point from real GDP growth this year and 1 percentage point next year. Further appreciation in response to weak foreign demand poses downside risks to this outlook and, conversely, dollar appreciation in response to stronger U.S. growth may temper the impact of upside surprises here.

Finally, it is worth referencing the earlier presentation on the proximity of the zero lower bound, which accentuates the asymmetry in the risks to the outlook arising from adverse developments, whether foreign or domestic. As illustrated in the Tealbook, the federal funds rate has been cut by an average of 275 basis points over the five most moderate recessions since 1960. To the extent that the zero lower bound is a binding constraint, this implies a more severe recession in the event of an adverse shock. With the most recent Survey of Market Participants placing the probability of returning to the zero lower bound within the next two years at 25 percent, this is an important consideration. I may be more cautious than others around this table about the feasibility or advisability of viewing negative interest rates and QE as regular parts of our peacetime policy toolkit. I believe there are special costs and discontinuities associated with initiating such unconventional policies. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. Before I read the Tealbook last week, I had expected it to show an unchanged or weaker outlook than was presented in October. I had that

impression, I suppose, mainly because the newspapers and outside forecasters and newsletters had seemed less than positive as of late, but I guess their job is to report the bad news more than the good news. So I was pleased and a bit surprised to see that, in fact, the staff's interpretation of recent events has led to a modest strengthening of their outlook.

Further, as I read the Tealbook, I found their version of how economic events might unfold to be reasonably persuasive. Real GDP growth seems likely to continue to rise a little faster than 2 percent in the next few years, aided next year by a pickup in federal spending, and the unemployment rate seems likely to fall further.

At the same time, inflation seems likely to rise, albeit slowly. That conclusion depends in significant part on forecasts of the price of oil. In the past month or so, the price of oil has declined from levels of about \$50 per barrel, a value at which many had begun to think it would stabilize, to under \$40 per barrel. And with inventories high and OPEC no longer acting like a cartel, the price of oil may take longer to stabilize than had been anticipated until fairly recently.

The other key factor in forecasts of both inflation and output is the exchange rate, and it remains to be seen to what extent foreign exchange markets have priced in the impact of a possible change in the federal funds rate, a topic we discussed earlier in the day with the staff. Nonetheless, I believe that inflation is likely to follow approximately the path that the staff forecast and the SEP see for it.

I'd like to mention three key elements in the staff forecast. They are, first, developments in the rest of the world; second, productivity growth; and third,  $r^*$ . With regard to the first point, economic performance in the rest of the world, the staff's analysis is slightly more optimistic than it was a few months ago, with China apparently on the road to a growth rate of 6½ percent or more, and with some positive signs coming out of the euro area, with the staff expecting

growth to return to 2 percent–plus within a year from now. The ECB is clearly determined to run an accommodative monetary policy, which is far different than its behavior of a few years ago, and the euro-area economy is the second largest in the world.

Second, structural labor productivity growth over the period from 2011 to 2014 declined to an average annual rate of 0.8 percent, mainly as a result of a decline in multifactor productivity growth, which increased at a rate of only 0.1 percent per annum over that period. This year, the staff estimates that multifactor productivity growth will increase to just 0.3 percent, a rate that is expected to increase gradually to 0.7 percent by 2018. This projected increase in multifactor productivity accounts for the bulk of the increase in the staff forecast in structural labor productivity. And that increase is critical in returning potential output growth to close to 2 percent, despite the staff’s and everyone else’s predictions of continuing declines in the labor force participation rate and a slower growth of labor supply.

A third issue is the increase in the staff’s estimate of the Tealbook-consistent FRB/US-based  $r^*$  estimate. As shown on page 2 of Tealbook B, this estimate rose from 0.74 percent in October to 1.24 percent this round. This is a reflection of the staff’s view that some factors, mainly fiscal spending, have boosted the underlying strength of the economy enough that we don’t need monetary policy to be as expansionary to close the output gap as we did the previous time we estimated  $r^*$ .

That seems like a remarkably large upward revision in a forecast round in which the staff describes the revisions as a “modest upgrade.” When we discussed with the staff how this revision compares with those in the past, it turns out that revisions are often in the range of 25 basis points and that a 50 basis point move like this one is not that rare. We had another one between July and September. Perhaps that underscores why using more than one measure of  $r^*$



to gauge the stance of policy is good practice, and it also draws our attention to the fact that in the FRB/US model—and, I believe, in the real world— $r^*$  can be significantly affected by policies other than monetary policy.

The fact that the modest upward revision in fiscal spending leads to a positive growth outcome takes me to another important point. We're all typically reluctant to voice our views about the appropriate stance of fiscal policy because that isn't our job and we shouldn't presume to tell the Congress and the administration what to do. But fiscal policy has a direct bearing on monetary policy. If fiscal policy were substantially more supportive than it has been, we might have been able to get off the zero lower bound sooner and perhaps be further away from it when, inevitably, we are hit with another recessionary shock sometime in the future. In addition, if the fiscal spending were put to good use, making investments in infrastructure and technology that will eventually boost productivity, that would also make the tradeoffs that the economy faces more appealing. We don't make fiscal policy, but fiscal policy can help significantly in producing growth, and we should consider how best to draw the attention of the policy community to this consequential point.

I'd also like, possibly for the second or third time, to discuss the frequent assertion that every central bank that raised its interest rate from the ZLB has had to return it to zero. Well, I'm one of those who raised the interest rate in 2009 and later reduced it. There was nothing inevitable about the return to zero when it was raised. Israel began raising the interest rate in mid-2009, when the economy was growing well, and with inflation above the target range in large part because of increases in the price of housing. That was the appropriate thing to do. Then came the euro crisis. The Israeli economic situation deteriorated, and it became necessary to reduce the interest rate. So it's not clear to me what the message is of the much-quoted fact

that countries that raise the interest rate from the lower bound later returned it to there. By the same token, some years from now, we will be able to say that every country that reduced the interest rate to the zero lower bound later had to raise it from there. [Laughter] That would not mean that the rate should not have been reduced, but it might well mean that the emphasis on the rate having to be reduced by countries that had raised it is misplaced.

The simple question we need to answer today is whether we should raise the interest rate from its current level. And I believe the considered answer to that question is “yes,” which we’ll talk about tomorrow.

My views do differ slightly from the Tealbook on the balance of risks. On page 69 of Book A, the staff says that it says that it views the risk to the GDP outlook as “tilted somewhat to the downside.” I believe that, if anything, the risks are slightly on the upside. Let me give a few factors.

First, by sending the message that the federal funds rate is not stuck at zero, we will be encouraging potential investors to invest now before interest rates rise again. And, as I think I also mentioned before, this was the subject of Ben Bernanke’s Ph.D. thesis. It was about waiting to invest, a topic that was very important around the beginning of the 1980s when he wrote his thesis and when the economy didn’t seem to be getting off the dime.

Second, while we focus with concern on the negative effects of the latest decline in the price of oil on inflation, we should also consider its effects on demand. The robust consumer spending in recent quarters, especially the strong auto sales in recent months, may well be strengthened by the continuing decline in energy prices.

Third, if the modest upward movement we've seen in wage increases turns out to prove persistent as well, which is an upside risk, personal consumption expenditures in 2016 could turn out to be stronger than currently projected in the Tealbook.

Fourth, over the longer term, it is quite possible that we will be surprised to the upside by productivity growth. In a forum like this one, one thinks of Alan Greenspan in 1995 saying that he sensed that there was something going on with productivity, and one thinks also of Bob Solow saying that one sees computers everywhere except in the GDP data. The revolutionary changes in the way we live and work using mobile technologies, including powerful search engines for everything and the ways businesses are learning to harness robotics and machine intelligence, will eventually find their way into the productivity statistics. The delays may be long, but there is a decent upside risk that productivity growth will increase by more than we currently expect in the next few years.

I'll say more on the consequences of all this in tomorrow's remarks. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Chair Yellen. To start, let me go back and go a little deeper on the energy sector. A number have commented on it. Obviously, the overall tone has soured since the previous FOMC meeting. The attitude has now shifted to an even-lower-for-even-longer price outlook.

We have all talked about the disarray in OPEC and the lack of any pretense of a production ceiling. Market participants that we talked to in the Eleventh District believe that Saudi Arabia is quite content with the results so far of their supply strategy. They are determined to maintain their market share, and certainly any reduction in supply from Saudi Arabia is going

to have to be accompanied by proportionate declines from Russia and Middle Eastern nations, and that is really not feasible. So a reduction appears to be unlikely so far.

We think that OECD excess inventory, which we measure as the amount of inventory that is over the five-year average, is now about 300 million barrels globally. I have talked in the past two meetings about the daily supply–demand gap. By the time we end this year, we think the year will have averaged a daily supply–demand gap of about 1.7 million barrels. I think when I first started talking in September we said 2. At our previous meeting we said something lower, 1.6. We now believe—actually, today—that the supply–demand gap is 1.2 million barrels. We expect that, by the end of 2016, that gap—it won’t be linear, but it will get down to 600,000 barrels a day. And based on all that, we continue to believe that it’s probably not going to be until—as we’ve said before—if not late 2016, then sometime in the first half of 2017 before daily supply–demand gets into some amount of balance and we start working off this inventory.

If we are wrong, though, we are going to be wrong because it is going to take longer, and here is why and here is what is spooking the market. It starts with Iran. I have always mentioned that Iran was a wild card. And because it now looks much more probable that sanctions in Iran are going to be lifted, and lifted sooner than the market had expected, we now believe Iran will likely return to the market at some point in the first half of 2016. Today, they produce 2.8 million barrels. We’ve talked to market participants broadly, and we’re not sure exactly what the Iranians do with that 2.8 million barrels, but the suspicion is that they’re selling some of it, and they’re storing some of it. We know that it would be their intention to increase their supply to 3.3 million barrels a day. We also know that they currently have in storage 30 million to 40 million barrels of oil. So when you talk about those supply–demand numbers that I said earlier, they don’t factor in Iran. But these are very big numbers, and it has thrown the

market into a great amount of disarray, and it has created more uncertainty about when the balance is going to happen.

We have also mentioned Libya, but it is much smaller. That will add another 200,000 to 400,000 barrels of oil, but that is small compared with Iran.

Another thing we have learned—and this has been interesting about the structure of this industry—we've said a lot about all of the rig count cuts and the cap-ex cuts. But the truth is that U.S. production declines have been very slow to materialize, and global production declines have been slow. One of the reasons is that there have been production increases from the Gulf of Mexico, which was a very long-term project that just got activated. That went the other way. Also, there was a bump-up in oil prices at the end of the summer, which caused some shale producers who are very nimble to reinitiate production and sell in the forward curve. So that created a problem. There is also a time lag between rig and spending declines and actual production declines. Normally, producers don't just shut down a well. They let it run off, and they simply don't replace it with new supply.

Also, we're now finding that these rigs in shale are much more productive. This is one place in which we are seeing productivity growth, for better or worse, and they're producing more from wells than they may have expected. So here's what we think is happening. Because global supply has been sticky to decline, there is even more pressure domestically to decrease—and we're all seeing it. What's happening here is that there is much more pressure on domestic producers and their service suppliers, so there's going to be a further decline. It's going to happen in a step function. One of the reasons we are getting more into balance, though, is demand. Our estimate is that demand growth in 2015 was 1.5 million barrels a day, so that

helped create some of it. And we think it is going to be another 1.5 million barrels a day in 2016. So that alone will help get us into balance.

It is ironic to talk about this now, but there is more and more discussion—and it is starting to make sense to me—that by 2018, we may actually get to the point at which we're in balance, having worked off a lot of this excess inventory. We will see what decisions OPEC makes then, and there is going to be a lag to get supply back online in 2018, because a lot of the service providers and the equipment and the labor will have been taken out of commission, and people are going to be leery about getting back in. The irony is that we might get whipsawed, or we might have a price shock in 2018—probably not before then, but in 2018 and beyond there is going to be some risk of this. I have a feeling we're going to be talking about this at this table because of the damage that is being done here to domestic supply, and that OPEC might, at a future date, depending on what happens, reassert itself. So we will talk about that more. Not surprisingly, more bankruptcies, restructurings, and so on and so forth—it is going to get worse in that regard.

I'll comment on the high-yield market, which we talked about earlier, because the energy sector is a material part of the high-yield market. High-yield credit spreads have widened, and the dynamic is that, because energy is weak, there are more defaults or risk of defaults. High-yield funds used to be held by insurance companies in the old days and, yes, by some funds and others, but an increasing amount of the holdings in the high-yield market are by people who offer daily liquidity or even monthly or quarterly liquidity. And what's happening with weak energy is, you don't sell the energy because you probably can't sell it, but you will sell a double-B or other stronger credit, which widens high-yield spreads for everyone in the market. We are seeing that in the hospital sector this week—it's a great example. The hospital sector really

gapped out this week even though there's been no credit event, but that's a ripple effect arising from what's going on in energy. We're at risk of that happening again. If Iran really does come back on, and we have more shocks and this gets worse, we may have more events like we did this last week heading into 2016. We are just going to have to monitor it.

I'll briefly say a couple of words about the District. Obviously, these facts—low oil prices, a slowing international economy, a strengthened dollar—are not helpful to the Eleventh District. There has been strength in the health-care and the leisure-and-hospitality sectors. The Affordable Care Act has been helpful. Also, the drops in gasoline prices have certainly helped the leisure-and-hospitality industry in the Eleventh District.

Similar to what we've said before, I'll just summarize—from all of our surveys, the headline is: manufacturing weak, service sector remains strong. Because of the diversification of the state, we still think Texas's job growth this year is likely to be 1.3 percent. We think job growth for Texas, for the District, will be 1.5 percent next year. One of the key underpinnings of Texas's growth for all of these years since 2000 is that we have had a higher rate of migration to and population growth in the state. Our population has grown 1 full percentage point faster than the rest of the country for the past 15 years on average. The impact of this will be, if jobs grow in Texas in 2016 at 1.5 percent, that our unemployment rate is likely to go up. It will inch up because this labor flow and company migration is continuing. It may stop or slow the decline in the unemployment rate because of this.

The last comment I will make—which is not a very positive thing, but it is something we are watching—is that Texas leads the nation in uninsured. We have 19 percent uninsured, and this is the greatest percentage and number of uninsured in the country. I won't get into the debates of both sides, but we are one of the states that has not taken government money related

to the Affordable Care Act and Medicaid. Without making a value judgment on this, this is something we are watching to see how it affects economic conditions.

Regarding the national economy, I'm going to confine my comments, given time, to three or four things that we are hearing from CEOs who are domiciled in this District but do business throughout the United States. These are a few trends that struck me as we talked: Number one, most of our companies across sectors—service and manufacturing—see the consumer as healthier but as being notably cautious despite the gasoline-price dividends. Spending habits are also rapidly changing, driven by technology and globalization. Consumers are increasingly able to shop for goods, as we all know, at the lowest price, substituting private-label and non-U.S. sources for brands, increasingly using technology to find deals, and turning to disruptive models as alternatives to traditional models—famously Uber versus a car or taxi, Airbnb versus a hotel room, and Amazon versus a book store or retailer. But we are hearing these comments across sectors, including from AT&T, which is seeing this affect their business.

The impact of all of this is that consumer pricing power is driving down the price of goods and services. In their day jobs, they may not have wage and bargaining power, but as consumers, they have pricing power. Exceptions to this include prescription drugs, health and beauty aids, and so-called affordable luxury, like a Starbucks cup of coffee and other experiences. As a result, though, most companies that we talk to are continuing to search for ways to cut costs through process improvements in either manufacturing or technology they use to serve customers.

Related to this, then, is a continuing trend in the effort to improve profits and EPS growth by leveraging up, as I mentioned in the previous meeting, to buy back stock or looking to do M&A to gain efficiencies. This is highly creative. There is widespread pressure from activists



to do this. At a 2 percent plus 10-year and tight investment-grade spreads, it's hard to pass this up. Most of the businesses we talked to believe even with the first stages of federal funds tightening, it is unlikely to affect their availability of financing if they are double-B and stronger, and so they're going to continue to do this—and I agree with this. Related to this, they are continuing to be hesitant to commit resources to capital spending because they don't see the demand strength, as well as this phenomenon of downward pricing pressure, which squeezes their margins and expected ROI on projects.

My last comment is that a number of people I talked to, big and small companies, are commenting about a reduction in dynamism they're seeing in various industries. What do they mean? It is easier to exit than to enter. There are greater barriers to entry, including compliance with regulation, and, notably, this includes local regulation, licensing requirements, and harder-to-access credit. And I think President Lacker talked about the challenges faced by the community banks. This is seeping into the availability of credit if you are a small business, if you are a new entrant. Scale efficiencies are needed to increase profit. Geographic mobility of labor is tougher because of land prices—it is harder to move. So it makes it more important to have access to multiple labor pools. And so, simply, top-line growth is harder to generate, and margins are increasingly coming from scale. Thank you.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. After waiting many, many years, the whole world is holding its breath to see what happens this week. I'm referring, of course, to the plot of the new *Star Wars* movie [laughter], but we face a decision of cosmic importance here as well.

Since our previous meeting, the data have evolved largely as expected—in fact, even a little better—leaving little doubt about the strength and resilience of the expansion. Real GDP growth remains on track, bolstered by solid consumer and business spending. The economy is poised to enter the new year with good underlying momentum. Indeed, I see growth continuing above trend in 2016.

I see the risks to the outlook as balanced. On the downside, the restraining effects of earlier dollar appreciation may spill over into the coming year, and the threat of further slowdowns in the euro area or East Asia remain. By contrast, sagging energy prices could spur consumer spending further in the near term, and data on household formation suggest some upside risk in the housing market.

With continued above-trend growth, we made significant progress toward our employment goal. Job growth has been especially strong, averaging over 200,000 per month for most of the past few years, and my own District has been leading the charge. For job growth over the past 12 months, 7 of our 9 states are ranked in the top 10, and this group includes states that were hit the hardest by the housing bust and the financial crisis, such as California, Nevada, and Arizona. Clearly, these states had to climb out of a deep hole, but it is reassuring that they, too, are mostly recovered despite lingering economic and financial headwinds.

With national unemployment at my estimate of the natural rate of 5 percent, I see the labor market as very close to our maximum employment goal. Even if we consider the individuals who are not active labor market participants but state that they want a job, the news is good. The size of that broad group has fallen dramatically over the past year and is now largely in line with levels observed in the past two expansions when the unemployment rate reached 5

percent. Other labor market indicators such as perceptions of job availability, job openings, and difficulty filling jobs are near or above their levels associated with full employment.

Looking ahead, with above-trend GDP growth next year, my SEP submission has the labor market overshooting our full employment target by a substantial margin. Indeed, since our previous meeting, I've lowered my expected path for the unemployment rate. I now expect it to fall to 4½ percent this year. Looking further ahead, I see growth needing to fall back to slightly below potential in order to get the unemployment rate back to its natural rate, which I see as happening in 2018. Therefore, in my SEP submission, I actually have in 2017 and 2018 growth of about 1¾ percent, which is below my estimate of trend. Now, this has nothing to do with the Phillips curve or anything—it's simply the arithmetic of having an unemployment rate of 4½ percent and wanting it to move back to my natural rate of 5 percent in the next few years.

The sustained period of labor market overheating should increase upward pressure on inflation and offset some of the lingering disinflationary pressures associated with the pass-through of lower import and energy costs into core prices. I expect inflation will gradually move back to our target of 2 percent by the end of 2017, and I'll note that I am SEP respondent number 16. In terms of my SEP submission, I put in liftoff for this meeting and, consistent with my view of the outlook, have four increases in the funds rate next year and five in 2017. Then, in 2018, I have the funds rate reaching my estimate of the nominal natural rate of 3¼ percent.

Now I'll turn to a topic that's garnered a great deal of attention in the Twelfth District but also nationwide, and that's the burgeoning commercial real estate boom. In hot metro areas in the Twelfth District, such as Silicon Valley, San Francisco, Los Angeles, and Seattle, investor interest has driven commercial properties up to new highs. Rental rates in some cases haven't kept pace, and that's pushed cap rates way down, reportedly into the 3s for some properties.

This upward trajectory in prices and the decline in cap rate show no signs of abating. This activity has been spurred, in part, by foreign investors, especially those from China who are seeking a relative safe haven for their capital investments and who are willing to accept abnormally low returns.

The market for multifamily housing in my District's leading metro areas has been even hotter than the one for commercial real estate overall. Prices of apartment buildings in San Francisco and Silicon Valley have left their previous peaks in the dust and continue to soar. Although prices for commercial real estate have skyrocketed in these key markets, rising construction activity has been more moderate. Nonresidential construction activity has increased, but growth in this segment pales in comparison with past booms.

Construction activity in multifamily housing is up more substantially. However, this appears to largely reflect pent-up demand for new apartments and condos rather than speculative overbuilding. Indeed, my contacts tell me that regulatory constraints on new building, particularly in the hot markets in my District, have kept a lid on the construction boom, at least so far. In fact, it's one of the few times when business people have actually told me that the regulatory burden has been serving a useful purpose.

In line with the surge in multifamily construction, community banks in the Twelfth District have seen rapid growth in this segment of their loan portfolios. However, danger signs in this market, such as loose lending standards and excessive leverage, remain largely absent.

The bottom line on conditions in commercial and multifamily markets is that although they're not yet flashing red, the potential for imbalances merits close monitoring. Turning back to the national scene: The progress we've made toward our goals for the past year is remarkable. Truly with us, the Force is. [Laughter] Thank you.

CHAIR YELLEN. Governor Powell.

MR. TARULLO. Top that one, Governor Powell.

MR. POWELL. Thank you, Madam Chair. On a more serious note, my forecast has not changed a great deal since the September SEP submission. I see real GDP growth continuing modestly above the potential rate, although a bit slower in 2016 than the Tealbook growth forecast at 2½ percent, due to the headwinds arising from the external sector. The unemployment rate has declined six-tenths so far this year, and I continue to expect that it will decline to 4½ percent by the end of 2016 and remain near there in 2017 and 2018. I see core inflation moving up to 1½ percent next year and to around 2 percent in 2017, as the economy tightens and as the effects of a strong dollar and lower oil prices eventually fade.

The two strong employment reports for October and November totaling a little more than 500,000 new jobs provide solid evidence to me that the economy is continuing to expand at an above-trend rate. Payrolls are now averaging comfortably above 200,000 for all of 2015 and for the past three months. Layoffs are low and job openings are high. I see continued growth supported by solid increases in consumer spending, reflecting a much-improved labor market, rising incomes, and an elevated wealth-to-income ratio. In addition, residential investment and business investment outside the energy sector seem to be on a solid footing. Fiscal policy is now supporting the economy, rather than holding it back. The drag on aggregate demand due to the behavior of the external sector will continue, but that drag hasn't been sufficient to slow the economy below trend.

The amount of remaining slack is probably modest, but there is enough uncertainty about the location of supply-side constraints to counsel a cautious approach in removing accommodation. Without trying to address every margin of slack, I'd like to mention three areas

in support of that. First, while the unemployment rate of 5 percent is at or close to many estimates of the natural rate, I don't yet see persuasive signs of an acceleration in compensation. The one indicator that does show a strong uptick is compensation per hour, and that is the highly volatile one, just as Governor Brainard said. So I don't see a sustainable or broad-based increase at all there, much as I stare at the graph. Such signs would be a welcome indicator of labor market tightness.

Second, I would point to the labor force participation rate, which, at least to me, has been disappointing so far this year after remaining more or less flat for 18 months. It's now dropped four-tenths, but there is good reason to expect that participation will return to trend and probably exceed trend in the next couple of years on this path.

The Tealbook estimate of the cyclical participation shortfall is about 30 basis points, consistent with the canonical paper by our staff—Stephanie Aaronson, Bill Wascher, and four others. In the Tealbook forecast, participation moves sideways and in doing so reaches trend by around the end of 2016 and then actually moves slightly above trend thereafter, which is consistent with past recoveries. In fact, in the past two recoveries, participation has risen to roughly 50 basis points above trend late in the cycle when wages are rising and the unemployment rate is low.

I would also point to a good deal of interesting research that has documented the damage done to the labor force from long and deep recessions, and here I'm thinking of the work by Greg Howard, Rob Martin, and Beth Anne Wilson here at the Board, among others, for example. The bottom line is that I'm not in any hurry to conclude that the current low level of participation reflects immutable structural factors.

Inflation provides a third reason for caution. More recent movements in the dollar and oil should exert some downward pressure on prices for a while longer, although the staff estimates they would be modest. Although no one can predict the timing with any confidence, oil and the dollar will eventually stabilize, and inflation will increase mechanically as a result. That's my forecast, but I will admit that that analysis leaves me with some degree of unease.

In addition, although inflation expectations are broadly stable, they do appear to be under some downward pressure, and this is a challenge that the Committee simply has to meet. The fact that we're much more likely than anyone would like to return to the zero lower bound makes this all the more important. Market participants should look back on this period and be convinced that the Committee is determined to get back to 2 percent inflation and is willing to run some risk of overshooting on resource utilization to do that, and only our behavior can carry that burden.

With that background, I have shifted to a slightly lower path for the policy rate in this SEP. I assume liftoff at this meeting and a total of three increases of 25 basis points each for 2016 and three more in 2017. I believe that for the next couple of years, economic weakness around the world will mean that the Committee can and should remove accommodation only gradually.

I would conclude by commenting briefly on recent conditions in leveraged finance markets, which have been a topic today and for the past couple of weeks. These markets have been in a correction since about midyear, particularly for the most risky assets, such as those rated triple-C or lower or not rated at all, and particularly among energy firms. The Third Avenue announcement last week that the firm would refuse to allow withdrawals has put significant further pressure on these markets, and while the situation warrants careful monitoring,

it's worth saying that sharp changes in sentiment and liquidity are not at all unusual in leveraged finance markets. I can't say—no one can really say—whether this will portend a sustained turn in the credit cycle, but for now I don't see this correction as having important implications for the real economy or for monetary policy. In fact, given that rates are likely to stay low for several more years, there remain powerful incentives to reach for yield, and many professionals are saying that this is the best and, in fact, the first real buying opportunity in several years. This isn't a forecast, but it would not surprise me if, after all of this settles out, the leveraged finance markets return to a boil in the first half of 2016 after this correction. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. First Vice President Lyon.

MR. LYON. Thank you, Madam Chair. The Ninth District economy is expanding, but growth is modest and uneven. There's little evidence of rising inflation. The strong dollar and slower growth in foreign economies are contributing to weaknesses in the District's industrial, agriculture, energy, and mining sectors.

At the same time, urban areas are generally continuing to grow. Unemployment in the Twin Cities area fell to 2.9 percent in October, the lowest rate among metropolitan areas of 1 million or more. Notwithstanding this low unemployment, the BLS reports that the core CPI for Minneapolis–St. Paul increased only 1.1 percent from the first half of 2014 to the first half of 2015.

The same combination of modest growth and low inflation prevails nationally and bears on the Committee's deliberations. In its October statement, the Committee specified two conditions for raising rates at this meeting: further improvement in the labor markets and reasonable confidence that inflation would return to 2 percent over the medium term. I think



there's no doubt that the U.S. labor market has improved since October across a range of metrics, so I'll focus my remaining remarks on the outlook for inflation.

Core PCE inflation has been quite stable over the past year, running close to 1.3 percent. Although today's CPI report shows some improvement, the CPI data still do not appear strong enough to bring the PCE inflation rate back to 2 percent. The fact that core inflation is running consistently below target is important in light of the research literature on forecasting inflation. This literature has repeatedly shown that it's hard to improve on a forecast that equates future headline inflation to the recent trend value for core inflation. As in October, such a forecast predicts that headline inflation will run below our 2 percent target. In particular, the literature shows that adding the unemployment rate or other measures of economic activity alongside lags of core inflation does not notably improve forecast accuracy. Thus, we should not be very confident that continuing improvements in labor markets will automatically push up inflation.

It is true that headline inflation should rise toward core inflation as recent transitory declines in energy prices fade, but energy prices will likely play a minor role in the evolution of core inflation. Stabilization in the foreign exchange value of the dollar will help to stabilize import prices, which in turn will contribute to a modest uptick in core inflation. But with disinflationary trends in place in most of the major exporting nations and currency values notoriously unpredictable, we shouldn't count on import prices to restore U.S. inflation to target.

What about other ways to gauge the likely direction of future inflation? Unfortunately, as has been the case for some time, neither market-based nor survey-based measures of inflation expectations instill much confidence that inflation is returning to our 2 percent target over the medium term. Market-based measures of inflation compensation remain near their historic lows. Survey-based measures have edged downward and are also near historic lows.

In sum, I see little reason to be more confident now than in October that inflation will return to 2 percent in the medium term. In the next round, I'll discuss how this may raise communication challenges for the Committee. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. My baseline expectations have changed very little since October. The economy is chugging along at a moderately above-trend pace of growth. It's revealed enough momentum to surmount the hurdles of the stronger dollar and sluggish global economy, at least up to this point, though it doesn't seem to me that the upside risk would take us more than a couple of tenths of a percentage point higher than what people project.

Now, when I was in the corridor at the coffee break, I heard a rumor that someone tomorrow is going to propose that we increase the federal funds rate. [Laughter] I was talking to you during that period, President Williams. I wanted to address the formulation that we've had in our FOMC statements for some time with respect to improvements in the labor market and reasonable confidence that inflation would return to the target rate.

Beginning with the labor market, we've seen a few signs that wage increases may finally be picking up, though judging how much of this is attributable to labor market tightening may be a bit difficult in light of the increases in state and local minimum wages that are going into effect in 2015 and 2016, as well as some increases by some large, low-wage employers that have been prompted by political and social considerations. All of this should serve as a reminder that monthly wage numbers are pretty noisy.

On the issue of remaining slack, I think it's still hard to say anything with great assurance on how much slack remains, and Jay has already well addressed this point. Apart from the

continuing questions regarding wages, we have uncertainties about labor force participation and, more generally, the future behavior of those who are currently out of the labor market. Some have argued that nonparticipants are not a good indication of remaining slack, citing, among other things, recent declines in reentry rates from marginally attached workers and those outside the labor market.

But we've got to remember that, in many respects, we still have some quite unusual characteristics in the labor market relative to pre-crisis conditions. On this point of reductions in the reentry rate of those out of the labor force, for example, it's worth noting that the percentage of those who leave the labor force but continue to want a job is still well above levels that prevailed pretty steadily for a decade before the crisis. And as it's still the case that nearly half of those who exit the labor force from long-term unemployment will reenter within a year, this persistently large group of those leaving may—and I emphasize “may”—reflect some additional slack.

An additional point, just to reiterate, is that paying too much attention to a couple of months of data can be misleading. For example, the recent decline in the percentage of the long-term unemployed finding a job followed an earlier increase, and that recent decline has basically taken us to where we were a couple of years ago. These are yet more examples showing why I think it's hard to draw too many conclusions from one data series about the labor market. We still don't know how much of what's going on reflects secular changes from what we've seen before and how much will snap back to something more like pre-crisis conditions.

So has there been improvement in the labor market? In a literal sense, of course there has been. There's been ongoing improvement for some time now. The relevant question, to me at least, is whether the improvement that has taken place is enough to justify raising the federal

funds target range. I don't think it's consistent with our statutory mandate to treat this question as a self-contained one that is unrelated to the issue of inflation. After all, our statutory mandate is to promote maximum employment, not to promote improved employment conditions. So the limit on our efforts to promote further employment in the labor market comes from the other part of the dual mandate, that of price stability.

The formulation we adopted some time ago that it would be appropriate to lift off when labor market conditions had improved and there was reasonable assurance that inflation would return to the 2 percent objective was, I believe, a logical way of indicating that we had been falling short on both sides of the mandate in the same direction. There's no justification for removing accommodation that helps promote employment unless that stance would conflict with the price-stability side of the mandate or potentially pose a risk to financial stability that might lead to some very negative outcomes for both mandates.

What about inflation? Can we have reasonable assurance that, under current circumstances, inflation will return to 2 percent in the medium term, given that both headline and core have been running below that target for nearly the whole period since the financial crisis, and that this Committee has pretty consistently overestimated what inflation will be a year in advance?

As I understand it, the basic argument of those who have this assurance is that inflation is currently being held below that level essentially because of the decline in energy prices and the strengthening of the dollar, both of which are presumed to be transitory. With the output gap presumed to be small and diminishing, a Phillips-curve relationship will then reassert itself.

That seems to me a plausible hypothesis, but, to be honest, it doesn't seem more than that. There are several reasons of quite different types why the hypothesis may not pan out as

anticipated. First, even if one stipulates the basic argument, it might be premature to make it under current circumstances. And, as Governor Brainard pointed out, as one listened to views around the table today, this seems a somewhat unusual moment to be asserting reasonable confidence, a moment when people are marking down expectations for inflation and the downside risks associated with it. The recent additional slide in oil prices and expectations of the longer-term effect of a strong dollar may make the downward pressure on inflation last longer than had been expected, and some people began making this argument earlier this year. Alternatively, the output gap may be modestly to moderately larger than assumed. This possibility returns us to the discussions we've been having more or less every meeting for several years now, to which I alluded a moment ago.

A second reason to doubt the hypothesis cuts more deeply into the mechanics of the theory that lies beneath it. Here there are two salient points, both of which I and others have made numerous times before. One is the familiar observation that the Phillips-curve reasoning has not fared very well empirically for some years now. While nearly everyone shares the intuition that, directionally at least, a narrowing output gap should lead to more inflation, there just hasn't been very much observed data to back up that intuition for at least a decade, certainly not with anything like the precision that one would hope to find in a theory underlying important policy decisions. The second point is that the assumption of anchored expectations that plays an important role in the hypothesis is at least a little questionable. For one thing, both market and survey measures of inflation expectations are at the low ends of their historical ranges; while it may be that liquidity considerations and gas prices, respectively, help explain these current measures, their very levels remind us that there's no convincing theory—much less an empirically supported theory—of how expectations are formed, how in concrete terms anchored

expectations function in the economy to affect inflation, and when expectations may become unanchored. It has been remarkable to me to observe how much weight is placed on a concept that has worked reasonably well for projecting inflation in the recent past but for which neither theory nor practice provides much ground for determining when and how it will continue to work in the future. It seems at least worth asking whether the persistence of some developments that are characterized as shocks in the models we use may over time themselves affect expectations. Or maybe the mere persistence of below-stated-target inflation over a period of years can have this effect. If Narayana Kocherlakota were still here today, he might add that the apparent acquiescence of the FOMC in that situation might further chip away at the anchor keeping expectations in place.

A third reason to question the hypothesis is even more fundamental—that is, the possibility that current models for understanding inflation are missing a different dynamic that has taken hold in the economy. Some academics have argued as much. It certainly is not farfetched to wonder whether a shift in the so-called commodity supercycle, the slowing of emerging market growth on a secular basis, changes in U.S. labor markets, and other phenomena have worked a more basic change in the sources and path of inflation. Here, as in many other areas, the financial crisis and Great Recession may have amplified or accelerated changes already working their way through the economy. There is no particular reason to believe that the understanding about inflation developed in the Volcker and post-Volcker periods will be any more lasting than that which prevailed in the pre-Volcker period.

The obvious candidate for a quite different explanation is secular stagnation. But even short of a theory affecting the entire performance of the economy, something else may be going

on, and it is precisely at times when received wisdom is breaking down that policy missteps look, in retrospect, most likely to occur.

Now, I certainly don't think there's enough evidence of secular stagnation, or variants thereof, to justify substituting some new theoretical approach to how inflation develops. But there is a possibility that a significant shift in how the economy operates—for example, that inflation may be significantly more influenced by secular than cyclical factors right now—has been under way. This is just another reason why I've been suggesting that we should rely a little less on faith that old correlations will reassert themselves and a little more on incoming data that actually show they are working. More generally, I don't want to reject what I've termed the “plausible hypothesis” that seems to be motivating much of the Committee.

Were we currently seeing core inflation moving up, perhaps along with documented wage acceleration that seems tied to that inflation, it might well be reasonable to have confidence that inflation was finally returning to the Committee's stated target. By the way, no one—certainly not me—has been arguing for waiting until inflation actually gets all the way to 2 percent to begin acting. It's more a matter of wanting to see data that document the fact that the trend is in that direction.

So, in the end, for me this is a matter of assessing which outcomes are more likely and which risks are of greater concern. There is surely some chance that if we were to wait, the hypothesis will prove correct, and we would have to move more quickly to raise rates in the future in order to contain inflationary pressures that threaten to get away from us. Though with real GDP growth running only modestly above its trend rate, this seems to me a fairly modest risk.

In an environment, though, of global disinflation, with spreads on many asset classes already widening, with decent but mixed economic indicators, with our own statistical models suggesting that the underlying trend of PCE inflation is 1.8 percent or a little lower, and with an asymmetric box of tools with which to respond to a slowdown as opposed to more rapid growth, I think it's difficult, at least for me, to have reasonable confidence that inflation will return to 2 percent. It's not unreasonable to have that belief, but the case for it still seems to me a little soft. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. Economic conditions and business sentiment in the Fourth District remain positive and are little changed since our previous meeting. Overall, business contacts expect the expansion to continue and for wages to pick up over the coming year.

Our diffusion index of business contacts reporting better versus worse conditions rose 7 points, from minus 5 in October to plus 2 in December—suggesting little change in economic conditions.

At last week's joint meeting of the Cleveland, Cincinnati, and Pittsburgh boards, directors continued to report that in most sectors, the business climate has improved this year. Autos, aerospace, and nonresidential construction continue to be among the stronger sectors in the District, while the energy and steel sectors remain challenged by low commodity prices, the strong dollar, excess global capacity, and weak growth abroad.

While conditions in manufacturing remain generally weak, we did hear some better news over the intermeeting period from some of our manufacturing contacts outside the energy-related sector. For example, a producer of automated warehouse systems who services both traditional



and online retailers reported double-digit growth this year, and that he could have grown more had he been able to find qualified workers to expand his workforce. Construction contacts also reported that it's difficult to find qualified workers.

A director from a very large multinational retailer of consumer goods indicated that the U.S. business is doing well, with most markets showing consumer growth of 2 to 4 percent. Globally, the company is offsetting the negative effects of the strong dollar by continuing to implement cost-saving programs and productivity enhancements. She reports that the positive effects of lower energy costs are finally coming through and helping to counteract the effects of the strong dollar.

A director from a major company supplying paints and coatings to the construction industry has an optimistic outlook for the housing industry, pointing to the gap between the rate of household formation and the smaller pace of construction, combined with the very low level of existing housing stock.

Labor markets in the Fourth District continue to make steady progress. In October, year-over-year employment growth rebounded to 1.4 percent after a softer reading in September. District job growth has been running between 1¼ and 1½ percent over the past three years, which is considerably stronger than it was over the previous expansion when the region actually lost jobs. The District's unemployment rate has fallen to 4.7 percent, which is more than ½ percentage point lower than the minimum reached during the last expansion in 2007.

Shortages of qualified workers continue to be an issue in the District. This also appears to be an issue nationally, according to the results of the special questions on hiring plans and wages asked of business contacts across all Districts over the intermeeting period.

So far in our region, acceleration in wages is seen mainly in higher-skilled jobs, but some of our District contacts report that they will be implementing broad-based wage increases of 3 to 4 percent next year and significantly higher increases for high-skilled workers.

Turning to the national economy: In response to the incoming data, I've made only minor adjustments to my outlook since the September SEP. In my view, the fundamentals supporting the expansion remain favorable, including highly accommodative monetary policy, household balance sheets that have improved greatly since the recession, and sustained strengthening in labor markets.

While lower oil prices will continue to weigh on investment- and energy-related sectors, lower energy costs will help offset some of the effects of the stronger dollar on businesses and will also support stronger consumer spending. Fiscal policy will also make a modestly positive contribution.

I continue to expect GDP growth to pick up to an above-trend pace of 2.7 percent next year before moving down over 2017 and 2018 to trend, which I estimate at about  $2\frac{1}{4}$  percent. I view the current economy at or nearly at full employment from the standpoint of our monetary policy goal. The unemployment rate is now about  $\frac{1}{4}$  percentage point below my estimate of the longer-run rate of  $5\frac{1}{4}$  percent. The labor force participation rate is now only about 30 basis points below its longer-run trend rate as estimated by Federal Reserve Bank of Cleveland and Board staff.

The pace of economic growth I'm projecting is sufficient to deliver some further improvement in labor markets, with payroll growth exceeding the range of 75,000 to 120,000 per month that various models indicate as sufficient to put downward pressure on the unemployment

rate. I see the unemployment rate falling further below my longer-run rate next year, before gradually returning to that level by the end of 2018.

I view inflation expectations as reasonably well anchored despite some small movements in our measures. As the expansion continues and as the effects of the earlier and more recent declines in energy prices, non-energy commodity prices, and the appreciation of the dollar wane, I expect inflation to increase gradually, returning to our 2 percent goal sometime in 2017.

President Rosengren may feel better to know that the Federal Reserve Bank of Cleveland staff also analyzed the relationship between core PCE inflation and core CPI inflation, but they found that it was very difficult to reach any general conclusion about whether the gap between the two is usually closed by core PCE inflation rising toward the core CPI inflation rate or vice versa.

There are, of course, risks to my forecast, but I see them as balanced and not overly large. On the downside, the dollar could appreciate more than I've assumed, perhaps reflecting divergent paths for economic growth and monetary policy abroad from those in the United States. Another risk is that oil prices could continue to decline rather than stabilize. Both of these could dampen growth in the trade and industrial sectors more than I've built into my forecast. On the upside, lower oil prices may buoy consumer spending more than I anticipate. With respect to inflation risks, the effects of oil price declines and dollar appreciation may be less transient and inflation could stay lower for longer than I'm projecting. This could weigh on inflation expectations, which could then feed back into actual inflation.

On the other hand, accommodative monetary policy combined with an improving economy may lead to more-than-anticipated upward pressure on inflation over the medium run. In fact, analysis by the Federal Reserve Bank of Cleveland's staff shows that over the past 15

years, historical forecast errors of several highly regarded inflation forecasting models have been skewed to the upside—that is, the models have underestimated actual inflation.

The policy path that underlies my modal forecast has the federal funds rate moving up at this meeting and then gradually up over the forecast horizon, reaching my longer-run level of 3½ percent in 2018. Of course, if incoming economic information leads to a significant change in my outlook, I'll adjust this policy path as appropriate. I view one of the benefits of starting on this path now is that it will allow us to recalibrate policy over time as some of the uncertainty surrounding the longer-run level of interest rates, the economy's potential growth rate, and the longer-run unemployment rate are resolved.

Having policy react to changes in the outlook as informed by changes in economic conditions is how I interpret our being “data dependent.” Our policy rate path may well have to deviate from what our current expected path is if the economy's evolution turns out to be different from what we currently anticipate. I don't view this as problematic, nor do I think we should refrain from taking appropriate action based on the current outlook solely because there's some chance the outlook will change in a way that necessitates having to subsequently reverse the action. The economy is dynamic, and there are always risks associated with the forecast which may ultimately manifest themselves. Appropriate policy has to be systematically responsive to material changes in the outlook. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. On balance, I think the economy's forward momentum remains intact, but I think the risks to that growth momentum lie mainly on the downside.

While the effects of the inventory cycle will undoubtedly prove short-lived, the impact of the stronger dollar and slow foreign growth on U.S. trade performance is likely to prove more persistent, as documented in the Tealbook. The effects of this are already visible in U.S. manufacturing by some measures. I did take some signal from the most recent ISM manufacturing index, which dipped below 50 percent last month. That's the first time it's been below that mark in three years.

My concern is this: The persistent trade drag will slow the economy, and this in turn will lead to slower payroll employment growth. If that were to happen, that would cut into household income growth, and that could take some of the steam out of consumer spending. Now, we're clearly not seeing that yet—employment gains remain healthy, and the most recent retail sales report was solid—but I do think this is a real risk to the outlook.

I think the risks to the outlook are mainly about what's happening abroad. I think those risks are still very much present. The OPEC decision to increase their production quota at a time when oil prices are weak and inventories are abundant has provoked another downward movement in oil prices, and this could intensify even further from here if inventories continue to accumulate and exhaust the available storage space.

In any case, I think we're going to see a lot more stress on energy producers and major energy-exporting countries in 2016. The fact is, existing price hedges are running off, and the new hedges, if they are put in place, will be set at much lower levels than a year ago. For example, the WTI crude oil forward prices 12 months ahead are roughly \$20 a barrel lower now than they were a year ago, so the December 2016 contract is trading at around \$44 a barrel. You don't get that much if you sell oil forward anymore.

The stress, I think, on some emerging market economies also has increased further as a number of other commodity prices have hit new lows. Also, it's noteworthy that it's not like the supply is not still coming out of Spain—there are a number of large-scale mining production facilities that are going to enter the market in 2016. I think this is going to exacerbate the glut in commodities such as iron ore and copper. In my mind, not only is there a risk of still lower prices, but this stress from lower prices is likely to prove persistent for quite some time. I focus on both the degree of stress and the persistence of stress because I think that the more severe the stress is and the longer it lasts, the greater the chance of breakage. That breakage could include large corporate failures, big capital flow reversals, or pronounced currency weakness. If that were to occur, the degree of stress could increase even further. For example, currency weakness could exacerbate the burden of dollar-denominated debt, and that would increase the risk of additional breakage. The result could be a self-reinforcing dynamic that could lead to a much worse outcome than what we currently anticipate.

I see the financial crisis and the Great Recession as one example of this dynamic at work. In the fall of 2007, we did not appreciate what was going to come our way over the next few years. As the stress intensified and persisted, more and more things broke, and I think this just shows the limits of model-based forecasts that have trouble incorporating these types of reinforcing dynamics.

With respect to China, the good news is that the transition to more-balanced growth is under way, but I do think people may be a bit too optimistic about the ability of the Chinese to manage this process and the risks that have already been created by the sharp rise in indebtedness that's occurred there among major corporates and local government entities. The prevailing view about China seems to be that while there eventually could be a hard landing—the fact is the

buildup of debt there is very striking—it's not going to happen yet. That's because the government still has plenty of policy instruments that it can use to cushion the adjustment and a view that the policymakers are highly competent. Now, that's probably the right view. What happens if it turns out that the hard landing happens much sooner than what we currently anticipate?

On the inflation side of the ledger, I continue to be less worried than some of us about core inflation being considerably below 2 percent. There are several reasons for this. First, I take some signal from the fact that the trend has been sideways rather than down given the fact that we've had energy prices and non-energy import prices pushing downward, so core inflation has been flat even though we've had these downward forces. It seems to me that when those downward forces dissipate, core inflation should move back up.

Second, I do take some signal from the fact that the gap between core services inflation and core goods inflation is unusually wide right now, so that reinforces that first point. This suggests to me that inflation will likely rise as that gap is closed by core goods inflation moving higher as the effects of the stronger dollar ultimately dissipate.

Third, I think wage trends are consistent with an economy that's approaching full employment. While it's true that wage compensation trends, broadly defined, have not moved up much, I do take some signal from what we've seen because it does seem consistent with anecdotal reports in which businesses are telling us that it's harder and harder to find people for certain types of positions—"truck driver" seems to be the one that I hear the most about. Also, there may be offsetting factors holding down wage trends, such as the weak headline inflation trend and the fact that the underlying productivity growth trend seems to have fallen. So the fact that some things that might be pushing nominal wage growth down and the fact that the wage

compensation trend is broadly stable might be consistent with an economy that is, in fact, approaching full employment.

In contrast to the fact that the core inflation rate is a bit below 2 percent, which I'm not that anxious about, I do have some concerns about inflation expectations. Some of the survey-based measures of inflation expectations show a slight downward trend, and although the University of Michigan measure over the next five years ticked back up to 2.6 percent in November, it remains at the very low end of the range of recent years.

Most notable to me is the decline in the Federal Reserve Bank of New York's Survey of Consumer Expectations. This is a three-year measure of inflation expectations. So what happens? For each individual, we calculate the mean, the median, and the 25th and 75th percentile of their three-year inflation density forecast, and all of these measures have dipped notably over the past year. From January, they've declined between 30 to 50 basis points—that's the mean, the median, and the 25th and 75th percentile. What that's telling you is that the whole distribution of inflation expectations for these individuals has shifted to the left. And it seems hard to attribute this shift just to the drop in energy prices because, one, energy prices were dropping pretty sharply last January, and, two, unlike the University of Michigan five-by-five inflation expectations measure, the Federal Reserve Bank of New York three-year measure doesn't seem to be nearly as sensitive to the changes in oil and gas prices.

I want to point you to the Federal Reserve Bank of New York's Survey of Consumer Expectations because I think this survey actually has a much sturdier methodology for tracking inflation expectations compared with the University of Michigan measure. The University of Michigan survey has been around a lot longer, I know, and that's why we always cite it, but I think the Federal Reserve Bank of New York survey is actually a better survey. The sample size



is much bigger, and it's conducted so that most of the respondents are the same month to month, so you're following the same people over time, which eliminates a lot of the sampling volatility in the results. And the question about inflation expectations is better crafted to elicit well-informed responses about inflation expectations. We ask about inflation—the University of Michigan survey asks about prices. Now, of course, the survey has a much shorter track record—it only goes back a couple of years. But if it's changes in inflation expectations from survey measures that we care about, then there's a good case to put considerable weight on the New York survey results and not just always cite the University of Michigan measures.

When I put all of this together—no significant change in the growth outlook, considerable risk from abroad, and inflation expectations in some danger of becoming unhinged to the downside—that suggests to me that there's not a slam-dunk case for tightening at this meeting or, for that matter, concluding that not tightening in September was a mistake.

At the same time, these risks may not materialize, so I think it's inappropriate to wait any longer. There are always risks, and with the unemployment rate now close to most of our estimates of the longer-run unemployment rate, I don't think we should wait any longer, as long as we believe the economy is likely to continue to grow at an above-trend pace, even if only slightly.

So I think the current situation calls for a go-slow strategy until we see either the economy's forward momentum is sustained or the inflation outlook evolves in a manner consistent with even greater confidence that inflation will head back to 2 percent over the medium term or both. That's what I've signaled with the my SEP submission—only two 25 basis point tightenings in 2016, and then, as we get more confident, a faster pace thereafter. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. And thank you to everyone for a very thoughtful round of comments on the economic outlook and the risks. I would just like to wrap up with a few comments of my own, including some observations on the policy implications of the outlook and the uncertainties we face in anticipating tomorrow's discussion.

Let me start with the labor market. Back in October, I was concerned that the soft tone of the data we had received coming into that meeting might be a sign that a persistent broad-based slowing in the pace of labor market improvement was under way. Fortunately, that risk now seems far less likely, in light of the past two monthly reports, which I think everyone would agree were quite favorable. Payrolls grew about 220,000 per month, on average, from September through November, and that's about the same solid pace we observed over the past 12 months. The unemployment rate has continued to edge down in recent months, and, at 5 percent, it's 0.7 percentage point lower than last January and only a shade above the median of our projections of its longer-run sustainable level.

Broader measures of labor utilization have also improved substantially. The U-6 rate, for example, has fallen almost 1½ percentage points since the start of the year. Labor force participation has declined since the start of the year, and the employment-to-population ratio is unchanged. But these developments, nonetheless, represent a cyclical improvement in labor market conditions, in light of ongoing demographically driven declines in their underlying trends.

So, to my mind, overall, the data confirm that underutilization of labor resources has diminished appreciably over the past year. That said, I continue to think, as a number of you do, that the economy is not quite back to full employment. The unemployment rate is still ¼ percentage point above my own estimate of its longer-run level. The share of employees

working part time for economic reasons remains about 1 percentage point above its pre-recession level, and I'm more optimistic than the staff that a healthy job market will pull people back into the labor market. In addition, wage growth, as measured by the ECI and average hourly earnings on a year-over-year basis, remains soft, suggesting not only that the labor market is not all that tight, but that our estimates of the natural rate of unemployment might be too high.

That said, a number of you mentioned indications of rising wage pressures from your contacts, and it's a theme I've also heard in many recent meetings with business leaders. In addition, the recent marked acceleration in compensation per hour on a year-over-year basis, coupled with monthly gains in average hourly earnings this fall that have been somewhat greater on average than those seen earlier in the year, could be signaling the start of a sustained pickup in wages after years of stagnation. And, of course, I would also see that as a welcome development in line with the Tealbook forecast, but I agree with those of you who have pointed out that wage measures, especially compensation per hour, are very noisy indicators, and we should keep in mind that earlier this year we thought we were seeing signs of a pickup in wages, and it subsequently faded.

With regard to spending and production indicators, on balance, the incoming data point to continued moderate growth in real activity. Motor vehicle sales have been robust, retail sales are advancing at a solid pace, and consumer confidence has moved up recently and currently stands at a relatively high level. Housing continues its gradual recovery, and business fixed investment appears to be expanding steadily outside the drilling and mining sector. Even there, reduced drilling should restrain overall GDP growth much less in the coming year as the contraction bottoms out and the sector shrinks.

Of course, the relative strength of domestic spending is being partially offset by weakness in net exports, and that is a drag that is likely to persist for some time, due to the appreciation of the dollar and the current weakness in foreign growth. But the potential risks to the U.S. economy from global financial and economic developments, although still quite material, at least in my view, have diminished since late summer. Overall, I expect that real GDP growth will continue to run a bit ahead of potential output growth, thereby generating further improvements in labor market conditions in coming months.

On the inflation front, during the intermeeting period, the data have been largely in line with expectations. My outlook is little changed. For this year, overall PCE inflation appears poised to come in a bit below  $\frac{1}{2}$  percent, a shade lower than the staff projected in October. But barring some major surprise, by the March meeting, headline inflation will probably have jumped to around 1 percent on a 12-month basis, as the big declines in energy prices recorded a year ago drop out of the index. Core inflation at that point is likely to be close to  $1\frac{1}{2}$  percent, a touch higher than currently. Thereafter, although the lingering effects of recent movements in oil prices and the dollar may keep inflation subdued for much of the rest of 2016, I am at least reasonably confident that once these transitory influences finally dissipate, inflation over the next two or three years will return to 2 percent, aided by a further tightening in resource utilization.

So what does all of this imply for monetary policy? With regard to the decision at this meeting, my own judgment is that current economic conditions and the outlook, taken together, now warrant a modest increase in the target range for the federal funds rate. Three considerations lead me to this conclusion. First, as I just noted, we have seen further improvement in the labor market, and I'm reasonably confident that inflation will rise to 2 percent over the medium term. Thus, the two conditions for liftoff that we announced back in

March have now been met to my satisfaction. Second, monetary policy operates with a substantial lag, and waiting to act until we're closer to achieving our dual objectives risks disrupting the economy in the future because we might be forced to tighten abruptly. And, finally, and very importantly, monetary policy will remain appropriately accommodative if we do decide to raise the target range by 25 basis points. This assessment primarily follows from my judgment that a further fall in the unemployment rate would be desirable both to help take up the labor market slack that remains and to speed the return to 2 percent inflation.

A simple back-of-the-envelope calculation suggests that the effective stance of policy after liftoff should help to produce these conditions without being overly stimulative. Let's assume that the equilibrium real federal funds rate is currently about zero, consistent with the analysis presented at the October meeting. Increasing the target range by 25 basis points would, therefore, leave the real federal funds rate roughly 100 basis points below the equilibrium rate, as core inflation is currently running a little below  $1\frac{1}{2}$  percent. Simulations of the FRB/US model and the Laubach-Williams model suggest that keeping the gap between the real federal funds rate and the equilibrium rate constant at this level for a couple of years would be expected to push the unemployment rate only  $\frac{1}{4}$  to  $\frac{1}{2}$  percentage point or so below its longer-run sustainable level, all else being equal, providing a modest boost to inflation. This simple calculation suggests to me that we needn't be in a hurry to close the real federal funds rate gap, as the risk of excessively overheating the economy seems low. That said, our economic projections imply that the federal funds rate will likely have to rise gradually over the next few years even if we were to decide that it is appropriate to keep the gap between the real federal funds rate and the equilibrium rate constant.

As trend inflation gradually converges back to 2 percent, the nominal federal funds rate will need to move up more or less in tandem to avoid an inadvertent easing in the effective stance of policy. Similarly, the federal funds rate, both real and nominal, will need to rise over the next few years as the headwinds still restraining real activity fade—that is, if  $r^*$  rises gradually as we expect.

Of course, real activity and inflation could evolve in materially different ways from what we now expect, and so we should be wary of being too confident about the appropriate future path of policy. Furthermore, taking a cautious approach to tightening remains appropriate in light of the asymmetric risk posed by the effective lower bound in the present circumstances. And, finally, we should proceed cautiously in light of heightened uncertainty about the economic effects of higher interest rates.

In part, this increased uncertainty reflects the fact that our monetary policy is now atypically diverging from that of the rest of the world, and, as a result, we may see unusually large exchange rate effects. Other sources of increased uncertainty are the changes that have occurred over the past eight years in credit availability, capital standards, and other aspects of the financial system, which may have reduced the sensitivity of aggregate activity to interest rates. And the taper tantrum episode reminds us that the response of financial markets to a change in policy can be hard to predict.

Although these considerations argue in favor of proceeding cautiously in adjusting the stance of monetary policy, especially in the early going, they do not imply that we should stand pat for as long as inflation remains subdued. For example, if the labor market were to continue to improve markedly as we move through 2016, then further moderate increases in the federal funds rate would probably be warranted, even if core inflation was still showing no signs of

picking up. Although we might consider lowering our estimates of the natural rate of unemployment a bit in response to such developments, it would also be prudent to view them as a sign that the underlying strength of the economy was in fact increasing, and that inflation would move up as labor and product markets tighten.

Accordingly, we would want to check the pace of employment growth somewhat to reduce the risk of overheating that could eventually force us to tighten abruptly, with potentially adverse effects on the economy. Of course, if inflation were to remain persistently subdued beyond next year despite further improvements in the labor market and no special transitory factors were in play, then, in my view, a more radical rethinking of the economy's productive potential would surely be in order.

So, let me stop there with those comments. I think we have time to turn to Thomas for his briefing on monetary policy alternatives before we break for dinner.

MR. LAUBACH.<sup>4</sup> Thank you, Madam Chair. I will be referring to the handout labeled "Material for Briefing on Monetary Policy Alternatives."

One key issue for tomorrow is whether to raise the target range for the federal funds rate. Just as important, as you emphasized in your discussion at the October meeting, is that tomorrow's statement effectively communicate the Committee's current thinking about the likely future path of the federal funds rate as well as the economic conditionality of the expected policy rate path. The three draft statements in the handout provide options for addressing these two issues.

Alternatives A, B, and C offer somewhat different combinations of assessments of current and expected economic developments bearing on the Committee's decision on the policy rate. As indicated in the box at the top of your first exhibit, all three alternatives report further improvement in a range of labor market indicators over the intermeeting period and say that those developments confirm an appreciable improvement in underutilization of labor resources since early this year. On inflation, both alternatives B and C characterize inflation as continuing to run below the Committee's objective in part because of declines in energy prices and prices of non-energy imports. However, they offer somewhat different perspectives on recent movements in measures of inflation expectations. Alternative B highlights the fact that market-based measures are low and that survey-based measures have "edged

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<sup>4</sup> The materials used by Mr. Laubach are appended to this transcript (appendix 4).

down,” while alternative C characterizes those measures, respectively, as having “stabilized” and having “generally remained stable.”

In describing the outlook for inflation in paragraph 2, both alternatives B and C reaffirm the expectation that inflation will rise to 2 percent over the medium term as the transitory factors currently holding down inflation dissipate and the labor market strengthens further. And, in announcing the policy action in paragraph 3, both alternatives express reasonable confidence in that forecast. However, alternative B includes a couple of indications that the Committee is viewing the outlook for inflation cautiously. Alternative B retains the final sentence of paragraph 2 in the October statement, which says “the Committee continues to monitor inflation developments closely.” And paragraph 4 emphasizes the Committee’s intention to carefully monitor actual and expected progress toward its inflation goal.

Alternative A says that the Committee is not sufficiently confident in the outlook for inflation to warrant a change in the target range for the federal funds rate. In explaining the decision to leave the funds rate unchanged, the Committee would cite “subdued” inflation, core inflation, and gains in labor compensation and “low” measures of inflation expectations. Paragraph 1 reports that the current shortfall of inflation from 2 percent is “only partly” attributable to transitory factors. Paragraph 2 suggests a risk that too-low inflation might persist by saying that the temporary factors holding down inflation will “eventually” dissipate; paragraph 2 also reports that the Committee sees a need to “closely monitor” measures of both actual and expected inflation. If it were to adopt alternative A, the Committee would drop the criteria for liftoff that it first communicated in March. Instead, it would say that how long to maintain the current federal funds rate target would depend on “realized and expected” progress toward its maximum employment and inflation objectives, and it would add that it is prepared to provide additional accommodation if incoming information does not soon indicate that inflation is moving up toward 2 percent.

The box at the bottom of exhibit 1 summarizes how alternatives B and C communicate the Committee’s thinking about the expected policy rate path as you go forward. Paragraph 2 of alternative B indicates that the Committee’s economic outlook is consistent with “gradual” adjustments in the stance of policy. Then, in paragraph 4, alternative B describes the Committee’s expectation that “economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate.” By contrast, alternative C refers to “appropriate” rather than “gradual” policy adjustments in paragraph 2 and omits the “only” in paragraph 4. Both alternatives state the Committee’s expectation that “the funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run.”

Both alternatives underline economic conditionality by saying, in paragraph 4, that “the timing and size of future adjustments to the target range” will depend on “realized and expected economic conditions relative to [the Committee’s] objectives” and then adding that “the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.”



The next exhibit examines how your policy strategy is currently understood by financial markets. Recall that in March 2014, you first introduced statement language indicating that “economic conditions may, for some time, warrant keeping the target federal funds rate below levels” viewed “as normal in the longer run.” This message has been reinforced over the past year by your SEP submissions as well as other communications. The median of primary dealers’ modal expectations for the path of the federal funds rate, shown by the blue dots in the upper-left panel of exhibit 2, is very close to the median of your most recent policy projections, the green diamonds. In contrast, the policy rate path derived from OIS quotes continues to run well below the median of modal expectations in the primary dealer survey. Based on these quotes, the federal funds rate is expected to increase only about 50 basis points over the first year following the onset of tightening. But, as discussed in a box in Tealbook B, this gap does not necessarily imply that the modal outlook for the federal funds rate embedded in these quotes is much different from that of the dealer survey or the SEP.

As shown in the upper-right panel, market quotes point to an expected pace of tightening that is substantially slower than it was at the onset of tightening in early 1994, the blue line, and mid-2004, the red line. Whether this observation indicates a correct understanding by market participants of your intended strategy depends on the economic conditions on which this expectation is predicated. While we do not observe the expectations for economic outcomes on which these market quotes are based, the middle two panels, taken from the Survey of Professional Forecasters, suggest that these forecasters assign the highest probability to outcomes similar to those in your SEP. I was advised that these panels are a little adventuresome, so let me just quickly say that I will certainly check afterward with President Evans on the effects that these panels have on the viewer. Each column here essentially represents an SPF vintage, with the most recent one being the right-most column, and the height of the bars of different colors in each of these columns represents the probability mass placed on the outcomes being shown underneath. In particular, the dark blue portion at the right edge of the middle-left panel shows that forecasters currently see GDP growth over the year ahead in the 2 to 3 percent range as the most likely outcome, while the light blue portion at the right edge of the middle-right panel shows that they similarly place highest odds on PCE inflation next year falling in the 1 to 2 percent range.

It therefore seems plausible that if the economy evolves in a manner consistent with the median SEP outlook, market participants would be unlikely to alter their expectation of a tightening pace of 50 to 100 basis points per year. By contrast, how market expectations regarding the path of the policy rate would adjust if the economy were to surprise is less clear. Particularly striking is how little weight markets seem to place on the federal funds rate rising more than 150 basis points next year. The lower-left panel shows the probability distribution for three-month LIBOR at the end of 2016 implied by options on Eurodollar futures. The implied probability that the pace of tightening will exceed 150 basis points is merely 20 percent. Similarly, the odds that the SPF respondents place on real GDP growing faster than 3 percent or inflation exceeding 2 percent are also about 20 percent each. A more robust

economic performance could cause a sharp market response as in 1994, when the expected pace of tightening—the blue line in the upper-right panel—and longer-term rates shot up over the course of the year.

While surprisingly rapid progress toward the Committee’s objectives could pose challenges for your communications by raising the question to what extent you would still view gradual adjustments to the federal funds rate as being appropriate, arguably the opposite risk—a lack of progress toward your objectives—would present even greater challenges. One possible scenario on investors’ minds might be that inflation fails to rise as you project—a scenario that might be reflected in continued low readings of breakeven inflation.

As you know, decomposing breakeven inflation into expectations and risk premium components is challenging, and any such decomposition is model specific. The black line in the lower-right panel shows the inflation expectations component derived from the standard specification of the staff’s four-factor model including nominal and TIPS yields. That measure suggests that inflation expectations of these investors at the 5-to-10-year horizon have declined only marginally since the middle of last year. However, this result is based on the maintained assumption that inflation will return, eventually, to the 1991–2014 sample average. The red line shows that if this assumption is replaced by an assumption that inflation is nonstationary—that it need not revert to the sample average in the long run—the decline in inflation expectations since mid-2014 is estimated to have been substantially larger. In the face of substantial uncertainty about the strength of forces moving inflation back to your objective, you may view the emphasis that alternative B places on a gradual approach to removing accommodation combined with a great deal of attention to inflation developments as a prudent approach to managing this risk.

Finally, as a housekeeping item, I should mention that, since circulating Tealbook B, we made two minor adjustments to the language of the directive to the Desk, which is shown in bold blue on page 12 in your handout. The purpose of the second of these changes was to bring the language of the directive in line with the more accurate language that has been used for several years now in your postmeeting statements. So you will find that, actually, the postmeeting statement has always been talking about “at auction.” I should also mention that we are considering one other small change that I should bring to your attention. On page 13, the language there refers to the “primary credit rate,” and we wanted to add that this refers to the discount rate—and put the primary credit rate in parentheses—because prior to 2008, statements referred to “the discount rate,” and we wanted to make sure that there is no confusion that “primary credit rate” might refer to something like “prime rate.”

Thank you, Madam Chair, I would be happy to take questions.

CHAIR YELLEN. Questions for Thomas?

VICE CHAIRMAN DUDLEY. Can I ask a question that is for Simon and Lorie?

MR. POTTER. Easy question—it's late in the day. [Laughter]

VICE CHAIRMAN DUDLEY. So later this week—when are we going to know about the effectiveness of liftoff? Just walk us through Thursday, Friday—how that's going to work.

MR. POTTER. On Thursday morning, we'll start seeing quotes. The first thing to check is if the effective federal funds rate is in the 25 to 50 basis point range, assuming that you do raise the rate tomorrow. And then, as the day goes on, we'll see more quotes, and we won't get the full set of data to analyze until later that day. The briefing that we'll do on Friday will have much more data to understand exactly what happened.

MR. WILLIAMS. But you should know something on Thursday.

MR. POTTER. On Thursday, we'll get federal funds open and the hourly effective federal funds rate, so we'll be able to tell everyone very quickly if we're stuck on the launch pad. There's no doubt about that.

CHAIR YELLEN. Any further questions for Thomas? [No response] Quiet crowd. My goodness.

MR. FISCHER. We've been bludgeoned into submission.

CHAIR YELLEN. Okay. There's a reception across the way and dinner. We'll resume at 9:00 a.m. tomorrow to complete our work. Thank you all.

[Meeting recessed]

**December 16 Session**

CHAIR YELLEN. Good morning, everybody. It looks like we are ready and raring to go. Yes?

MR. LACKER. I'm sorry—are we going to start early again? [Laughter]

MS. MESTER. It depends on the clock.

CHAIR YELLEN. Do you actually consider it early? [Laughter]

MR. LACKER. It looks like it's early.

MR. TARULLO. We're not on Richmond time. [Laughter]

MR. LACKER. I'm fine, I'm fine.

CHAIR YELLEN. I'm going to call this “on time” [laughter], and we're ready to begin the policy round. President Williams is going to start us off.

MR. WILLIAMS. Thank you, Madam Chair. I unequivocally support alternative B as written. The data convincingly support this decision, according to the conditions that we laid out. Job growth has come in stronger than expected, and broad measures of labor underutilization have continued to improve. It appears likely that the economy will exceed full employment next year by even more than I had anticipated just a few months ago.

Incoming price inflation data remain low, but this weakness largely reflects dollar appreciation and declines in energy and commodity prices. These transitory factors should dissipate as labor markets really start to be stretched next year, and I'm confident that inflation will move back to our 2 percent target over the next couple of years.

The downside risks to the outlook have also fallen substantially. Fears of a sharp slowdown in China have diminished, and a federal fiscal battle appears to have been avoided.

The resilience of the economy over the past few months in the face of those headwinds has also been encouraging.

Of course, the flip side of starting normalization now is, we can signal that the appropriate path will also be quite gradual, and the language in the statement does just that. Slow and steady increases in the funds rate should provide an appropriate tightening of broader financial conditions to maintain moderate growth and full employment in the face of continuing headwinds.

I also support the language in paragraph 5 that signals that the reinvestment will continue until the funds rate normalization is well under way. This approach is supported by both communications and risk-management considerations. For the next year or so, it's desirable to keep policy focused on our traditional tool of monetary policy, the short-term interest rate. Such a focus will concentrate the public's attention on our policy message; center policy rate expectations; and, I hope, minimize confusion. Thank you.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. I can support alternative B today, in large part because of its important state-dependent characterization of our gradual adjustment path.

I find today to be a tough call. I think the risk-management case for delay until mid-2016 remains strong. Core PCE inflation continues to run well below our 2 percent objective. Some of our best medium-term  $r^*$  measures are at zero or below, and the statistical models suggest they could be very low for a long time. In a global environment full of low-inflation risks, I think uncertainty arguments weigh strongly for further delay while we monitor inflation for signs of revival toward 2 percent. After all, we know how to raise rates if inflation heads too high, but we don't like our toolbox nearly as much if we face renewed disinflationary pressures. But the

big weakness in the argument for alternative A today is that most of our recent monetary policy communications by this Committee have signaled that data conditions and our outlook have met the threshold for liftoff.

Acting today seems appropriate to me as long as our first move is accompanied by a communication strategy that indicates that our initial adjustments will be gradual. This strategy also needs to be clear that the path is state dependent, based on further confirmation that we are on track to achieve our dual-mandate goals over the medium term. I believe that alternative B as written provides this clarity and strikes a reasonable balance among competing concerns.

Another important feature in alternative B is the language in paragraph 4 stating that the shortfall of inflation from 2 percent means the Committee needs to give special consideration to actual and expected progress toward our inflation target. This language recognizes reality. It acknowledges that the main challenge we face today is getting inflation back up to target. It appropriately emphasizes our concern over this policy shortfall, and it seems about as close as we can get today to saying that we are committed to a symmetric inflation target.

As I've discussed here many times before, if we act as if our target is actually a ceiling, it will be all that much harder for us to ever achieve our policy mandate. Most of us have said that we think we have a symmetric inflation target. Let's make sure we also act as if we do. And I hope that we will talk more about symmetry in January during the annual review of our longer-run goals and policy strategy. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. I support alternative B as written. It is positive news that the economy is finally at the point at which it is appropriate to get off the zero lower bound, a point we should continue to contemplate.

Labor markets have certainly improved, and it was good news that the past two employment reports have been so positive. I am reasonably confident that inflation will reach 2 percent, at least in part based on the current tightness in the labor market. However, as I highlighted yesterday, the biggest risk to my forecast is that inflation does not rise to 2 percent as anticipated, similar to the comments that President Evans just made.

As we raise rates, I would suggest that we continue along that path only as our confidence that our inflation target will be met improves from reasonable to high. Since I expect the tangible evidence of movement toward our inflation target to be slow, I am quite comfortable with a normalization path that incorporates only a gradual increase in rates. If we don't move from reasonable confidence to high confidence, I could easily imagine a pace of normalization slower than in my SEP.

Today we do not need to decide the path, and I am confident that it is appropriate to raise the target range for the federal funds rate at this meeting. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I'm afraid I'm going to make a longer statement, but with the same result. I favor raising the target federal funds rate to a range of 25 to 50 basis points. Because the FOMC has not raised the federal funds rate for nearly 10 years, because the rate was at its effective lower bound for more than 7 years, and because it was reduced to its present level at the height of the worst U.S. financial crisis of the past 80 years, this move has acquired a significance that goes beyond the impact that would be expected on the basis of a 25 basis point increase in the federal funds rate in more normal circumstances.

The decision is significant also because it is the beginning of the process of normalization of monetary policy. As the Chair and other members of this Committee have emphasized, most

members of the FOMC expect that the normalization process will be gradual. But we are all quick to add that the process will be data and outcome dependent, and that if prices and employment increase more rapidly than we currently anticipate, the future path of the interest rate will be steeper than we now anticipate. We should and do emphasize, no less, that if the economy falters and prices and employment increase more slowly than we currently anticipate, the future path of the interest rate will be shallower than we now anticipate, and shallowness includes the possibility that the interest rate path may reverse its slope.

Yesterday, colleagues around the table made impressive presentations, setting out some of the downside risks of the decision we will be making in a few hours. I thought as I listened that it was a privilege to be a member of this Committee as we discuss the nation's monetary policy with a seriousness and a level that is appropriate to the significance of our task. For that we owe and express thanks not only to one another, but also and particularly to the Chair and to the staff.

We said in March that we would move to raise interest rates as long as labor market conditions continued to improve and when members of the Committee were reasonably confident that inflation would return to its 2 percent target level over the medium term. I believe those conditions have been met. This conclusion depends on my belief that, over the medium term, the Phillips-curve relationship will reassert itself, and I think we are beginning to see some signs of that in the behavior of labor compensation, but only faintly so.

What other factors are relevant? Let me list only eight. One, the increase in the interest rate is very small. We will be moving from an ultraexpansionary monetary policy to an extremely expansionary monetary policy.



Two, what happens next? On that issue, members of the FOMC have been clear, as I just said, that we expect a gradual process of normalization and recognize the possibility that the rate may also decline.

Three, we should not minimize the uncertainties we always face about the future, especially in a situation such as the one we face today when we're about to implement a new monetary policy mechanism designed to operate with our extremely large portfolio and with large countries, including China and Brazil, facing major economic policy challenges.

Four, the Federal Reserve System has developed and tested the approach we will be using to raise the interest rate. At one stage, it seemed useful to describe it as a corridor system, but it is more accurate to describe it as a two-story system. Not only has the system been tested, but the staff has also developed other mechanisms for use in a circumstance under which the two-story system does not do the job it is designed and expected to do.

Five, we're sending a signal not only about our expectations regarding the future, but also about what has been achieved so far: a return to near normal in the labor market, which is an extraordinary success for the policies this Committee has implemented since the end of 2008—but, six, at a time when largely temporary forces are keeping the inflation rate significantly below its target level. There are good reasons to expect that the continuing declines in the price of energy and in the appreciation of the dollar are temporary.

Seven, many colleagues are concerned about indications that the expected rate of inflation has declined somewhat during recent months. I am also concerned, but I think that the more significant phenomenon is how little expected inflation has declined over the very long period that the actual inflation rate has been well below the target level of 2 percent.

Eight, the economy has, during the course of the past year, withstood powerful headwinds and continued to increase employment, with a core PCE inflation rate that has remained above 1 percent and expected inflation rates that have stayed close to 2 percent.

In sum, our economy has done a superb, albeit not perfect, job in the continuing task of restoring a more normal labor market. And I believe we will, over the medium term, return to the vicinity of our target inflation rate and to a situation in which the interest rate will again play its role in the allocation of resources, including the allocation between financial activities and real investment.

Why move now? Why not wait longer? First, as the Chair has emphasized, our actions become effective with a lag. Second, there are some signs of accumulating financial stability problems. And, third, the signal we will be sending will reinforce the fact that our economic situation is continuing to normalize.

It is, of course, our duty to consider the many ways our expectations could be driven off track, but we also have to assign probabilities to the shocks that might drive us off track and to our ability to deal with them. My conclusion is that we're more likely to continue along a positive track and to withstand the negative forces with which we will certainly have to contend as events unfold and which may temporarily drive us off course.

I'd like next to turn, but briefly, to a few issues that continue to crop up. First, are we about to repeat the experience of 1936 and 1937, as one hears? No. The financial system is currently in good shape and will remain in good shape so long as we successfully manage financial stability, as I believe we're doing now. And, no, because there is no intention of tightening fiscal policy, as was done 80 years ago.

Second, are we too late to move? No. The financial system is basically in good shape, although there are some signs of instability in very localized instances, and employment continues to grow. But what if growth ceases? Then we can reduce the interest rate. I do not expect that we will have to do that, but I do believe we need to reconsider the argument that we should stay at the zero lower bound because if we try to get away from it, we will have to return to it. That will always be a possibility for any country that decides to raise the interest rate above the ZLB, for negative shocks happen. But that possibility should not keep us at the zero lower bound forever. It is not enough to give an example of countries that have had to return to the zero lower bound. One has to consider the expected value of trying to move away versus the expected value of staying put. The possibility that we will have to move back should not keep us at the zero lower bound forever, for the outlook is positive, and positive shocks also happen even if, by definition, we do not know when shocks will happen.

Third, isn't the rest of the world in too fragile a state for us to move? Most of the rest of the world is not doing well, but this economy has succeeded in increasing employment at a rapid rate despite the appreciation of the dollar and the decline in net exports. Expectations are that the growth rate of foreign countries will increase in 2016. Further, the exchange rate will cease appreciating at some point—and we saw some suggestions yesterday that it could be soon.

I believe that as we look to the future, we should address several worrisome developments with respect to our ability to do our job, particularly the constraints placed on our ability to act as the lender of last resort in a crisis and the shortage of policy tools to deal with financial stability. There are other monetary policy topics we will need to address in the period ahead, particularly the role of forward guidance, the monetary mechanism toward which we are evolving, and the possibilities of finding new tools to deal with the zero lower bound.

So, to conclude, we're setting out on a new journey with the same goals we've always had—maximum employment, stable prices, and financial stability. The journey is difficult and daunting, but we can take some comfort from the successes of Federal Reserve policy since the end of 2008, even while we need to remember the warning sent by the fact that there was a global financial crisis that began in September 2008.

As always, we're operating in a world in flux. At this time, a world that, after the historical entry of China into the modern world economy and the likely entry down the road of India into the modern world economy, the world may well be more like the world economy of the pre-BRICS era than we expected just a few years ago.

Of course, we are not the only policymakers whose actions affect the economy. Of course, we do not have some of the tools that we need to manage financial stability. But we have a job to do—monetary policy—and we have the tools to manage it. I expect that we will continue to do our job well, and that the decision we are likely to take today will be part of doing that job well. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I support alternative B, and I'm satisfied that the statement as written will serve as effective communication of the Committee's momentous decision in alternative B.

I'd like to spend a couple of minutes sharing some anticipatory thoughts on possible implications of the sentence in paragraph 4 that begins "In light of the current shortfall of inflation." This sentence calls out inflation as the focus of attention as we go through 2016 and, since the Committee's decisions will be data dependent, suggests that the inflation data will significantly influence subsequent policy rate decisions.

The SEP dot chart looks as though it will set up an expectation of rate increases on a schedule of every other meeting. The word “gradual,” used twice in the alternative B statement, will, to some extent, take its definition from the SEP. So, assuming a move in January is a virtual nonstarter, which I do, the expectation will be for a second policy rate move in March.

In the spirit of an “eyes wide open” approach, I think it’s worth considering what we will likely know at the time of the March meeting. We will have the February CPI data arriving on the second day of that meeting. We will have PCE price data only through January. With the continuing softness in oil, gasoline, and commodity prices, it seems to me likely that the inflation data we will have in hand will be very weak. The Tealbook, in fact, suggests zero for the headline inflation number for the first quarter. At this juncture, I have no reason to dispute the Tealbook projection. The Chair pointed out yesterday that we might have a small uptick in the year-over-year headline and core PCE readings because January 2015 was extremely weak. Even so, an inflation-data-dependent decision to raise the policy rate a second time in March could be problematic, it seems to me.

As I said at the beginning of my comments, I support the statement as written. Nonetheless, I’m a little concerned about how we will operationalize the criterion of actual and expected progress toward our inflation goal in the early part of next year. I doubt we will have inflation statistics that are supportive of a conclusion that progress is being made. We may have to rely once more on employment data, along with the faith-based expectations drawn from our forecasts. The emphasis may have to remain on the expected, rather than the actual, inflation evidence.

My overall point is a small one, really: It’s one thing to project from the SEP exercise a forecast-based median level of the funds rate at year-end 2016. It may well be another thing to

make post-liftoff rate decisions in real time, especially in March, before those forecasts have had much validation. So before the ink is long dry on today's statement, we may well be advised to start thinking about how to make subsequent policy decisions and, very importantly, how to communicate the nuances of data dependence when the data are less complete or more ambiguous than we would like. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. For the past several meetings, I've been convinced that economic conditions warranted an increase in our target federal funds rate range. This was based on a sense that labor markets were in line with our best assessments of what constitutes full employment and on confidence that inflation will move back to 2 percent once the most recent disinflationary impulse has passed. Since then, as I discussed in our earlier go-round, the economic reports for the United States haven't appreciably altered that assessment. So I continue to see a rate increase as well justified, and I support alternative B. It's great to be able to say that.

With this first rate increase effectively behind us, market attention is going to focus on the guidance we provide in the statement regarding the prospective funds rate path. Many Committee participants, myself included, have been saying that they expect the pace of the funds rate increases to be gradual. As a result, market participants probably expect to see the word "gradual" in the statement. As drafted, the statement does a great job of that. It includes it twice—once in paragraph 2, in which we refer to "gradual adjustments in the stance of monetary policy," and then again down in paragraph 4, in which we refer to "only gradual increases in the federal funds rate." These are both new elements. My sense is that this statement could well

push down the expected path of short-term rates. I don't think pushing down the expected path of short-term rates would be a desirable outcome.

As we saw yesterday, markets already expect a funds rate path substantially below the path embodied in the median SEP or the staff's forecast. And according to the Tealbook, the market's uncertainty about the pace of tightening is well below the levels seen during the previous tightening episodes, and I thought that evidence was quite striking.

Under those circumstances, we should avoid pushing down market expectations of the funds rate path even further, but I'm willing to support the statement as written. However, I think we're running a risk here of exacerbating the disconnect between the market's expectations of the funds rate path and ours, and I hope that doesn't happen.

I also see a risk that emphasizing a gradual path could reinforce the excessive sense of certainty in markets about that path, and that that could impede the adjustment of market expectations if the economic outlook starts to change materially in either direction, as Governor Fischer emphasized. We should provide guidance to markets about how we will react to incoming data whenever we can, and I think the new sentence in paragraph 4 that President Lockhart discussed, which refers to the current shortfall of inflation from 2 percent, seems to be a constructive element that does so. But a heavy stress on the word "gradual" could dampen the market's responsiveness to incoming data. If anything, based on the Tealbook's assessment of the market's current lack of uncertainty about rates, I think it would be worthwhile to encourage markets to be less certain about the future path of rates.

I have a suggestion regarding communications for use either in the press conference or more generally for all of us, and this is a "bipartisan" suggestion. Lately, the answer to questions about the pace of increases seems to be a one-word mantra, "gradual." And it seems to have

emerged as this cycle's replacement for the two-word mantra of "measured pace," which, during the past tightening cycle, came to be understood to mean precisely a quarter-point increase per meeting. So I'd suggest that our mantra should be a four-word phrase, "gradual but data dependent," in order to emphasize that responding to economic conditions takes precedent over implied past promises to proceed at any particular pace. In other words, we shouldn't say the word "gradual" without saying "but data dependent." Thank you.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. As everyone will have inferred from my remarks yesterday, I don't think it's appropriate policy to raise rates today. Even if one is inclined toward the transitory factors hypothesis, today seems an odd moment to declare reasonable confidence that inflation will return to the Committee's stated 2 percent target, what with the further declines in oil prices, the expected extension of strong dollar effects, the CPI reading earlier in the week, and the number of concerns expressed here yesterday about inflation expectations. In light of the number of important questions about whether inflation dynamics have changed in recent years, as well as about the labor market, I continue to believe it more prudent for the Committee to act more on evidence than on faith that traditional economic patterns and relationships will reassert themselves.

Again, I don't deny that these patterns may reemerge, but it's far from certain. And with numerous tightening tools available in an economy that is not running very hot but with an unappealing set of options were more accommodation to be needed, I think it wise to be particularly certain of the directions of inflation and the economy before raising rates, thereby diminishing the chances of this latter eventuality. My policy preference is captured fairly well



by alternative A, though I would remove the sentence in paragraph 3 about providing additional accommodation.

Of course, I've asked myself what the best argument for acting today is and have listened to or read the views of many others on this topic. It seems the best reason to act lies not in the economics we face at today's meeting, but in the fact that many on the Committee and, more recently, a particularly influential member thereof have intimated that we're going to do so. I've noted in the past that one shouldn't follow through on an ill-advised policy just because one has said one might adopt that policy, but I have to admit that, at this point, the credibility of the FOMC is at some risk since many in the markets and the public believe that the FOMC promised September, then didn't act, and has now promised December.

This poses some disturbing institutional issues—most important, the question of whether the Committee is to be pushed into action through arguably premature or overbroad public statements. That is an important issue, and maybe it should bear discussion at some point in the Committee. But, speaking for myself at this meeting, I wasn't a part of this, and, as many will recall, I've advised against this pattern of frequent public comments with frequent references to particular meetings.

Despite all of that, I will reluctantly go along with alternative B today for two reasons. First, there is the institutional reality that there's enormous significance attached out there to a member of the Board voting against the Chair's position. Perhaps this shouldn't be this way and we might be better off with the culture of the Bank of England's Monetary Policy Committee, but reality is what it is. This moment of liftoff after seven years would be a particularly bad time to enter a dissent and thereby risk the Chair's leadership position at a critical moment in monetary policy, which may face some considerable challenges in the months ahead.

Second, the Committee's decision today as shaped by the Chair is, at least by its terms, not just for the rate rise, but also for an approach to monetary policy over the next year, one that is presumptively gradual and, with the addition of the language on inflation to paragraph 4, emphasizes what I've been suggesting—that is, it pays particular attention to whether inflation plays out as today's SEP suggests it will. I requested such language and feel that its inclusion provides some basis for my going along with what is a broader policy orientation than just the federal funds rate increase. And, as I suggested yesterday, the transitory factors hypothesis is plausible.

I hope this orientation will mean that I'll be closer to the majority of the Committee in assessing the economy—and inflation, in particular—as we go forward. After all, even though I do think some secular changes in the economy may be playing an important role in affecting inflation, my baseline expectation is still for a gradual upward movement next year. Because of the questions that I discussed yesterday, I just don't have enough confidence to act on those expectations right now.

I was going to omit this statement. I had written this out last night, and I crossed it out this morning. But, having just listened to several other comments, I recognize that others may differ, and I may be left concluding at a future meeting that faith has trumped empirics too much. I have to confess, I already hear some effort to undermine the language that has been inserted, so I'm afraid I do anticipate that I may have some differences with the majority of the Committee in the future. I hope not.

I have one final point, though. My focus on evidence and pragmatics is not one way. It's not a position of principled or devoted dovishness. If, for example, inflation were to begin moving well ahead of what the Committee expects in a way that suggested a trend, I would not

be averse to taking quicker action despite my current instinct that things have changed in the economy in some pretty basic ways over the past 10 or so years. And it's for that reason that I actually would not want any stronger language in the statement committing us to a gradual approach or to reinvestment. I never thought that it's a particularly good idea to remove the kind of optionality that one wants to maintain up until the point of a decision. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Chair Yellen. I am in favor of alternative B as written. I believe it is time to begin the process of normalizing policy, and I am very mindful of the fact, as we have discussed, that monetary policy operates with a lag.

I do believe we will likely need to maintain some level of accommodation for some period because of slower growth outside the United States—in particular, severe overcapacity and overleverage in China, which will likely push down rates of growth there for some extended period; aging demographics in the United States, which are likely to negatively affect workforce participation rates; and, in addition, the end of the so-called debt supercycle globally, which means that if there are debt increases in the future, they will need to be primarily supported by income growth.

In light of all of these factors, though, I agree with the plan to remove accommodation gradually and assess and reassess conditions as we go. I also agree with the tone of our statement and ongoing communications, which emphasize our intention to move gradually; an explanation that this means we are likely to remain accommodative even after this increase, and that, even after a couple of more moves, that still means we have some degree of

accommodation; and an emphasis that we will be data and state dependent on the upside as well as the downside.

In 2016, I expect to see GDP grow 2 or 2½ percent, driven primarily by strength in the services sector, and that manufacturing will remain weak. I do expect the unemployment rate to continue to decline, further reducing labor market slack, and I think that inflation will move up, but gradually, eventually converging to 2 percent.

As we do this, I do believe markets have been well communicated with or set up, so they should be able to process these moves, although there will be bouts of volatility and some market illiquidity because of the structure of the investment industry, particularly as it's developed in the past number of years. This volatility may be driven higher, particularly if corporate earnings continue to be sluggish, which I think is a distinct possibility. Some amount of market revaluation may be healthy, though, particularly with P/Es and market-cap-to-GDP measures at historically elevated levels. So I wouldn't want to necessarily over-read or overreact to some level of market volatility, although I'm sure we'll discuss this further as we go forward. Thank you.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. I'm heartened by the continued progress on getting Americans back to work and by the prospect that there's room to pull more prime-age workers back into the labor force. By contrast, I'm uneasy about the inflation leg of our mandate, and it would be difficult for me to point to any developments in the intermeeting period that have raised my confidence that core inflation will move to our 2 percent target in the next two to three years.

For six years now, PCE inflation has averaged below 1.5 percent. As this is despite substantial monetary accommodation and a substantial gain in resource utilization, it really does suggest that the Phillips curve is inert. In addition, I'm troubled by hints that the persistent underperformance of inflation may be having some effect on inflation expectations. Although previously, survey data had remained fairly steady, recent readings of both the Survey of Professional Forecasters and the Michigan survey—and, of course, as Vice Chairman Dudley pointed out yesterday, the Federal Reserve Bank of New York surveys—have drifted lower. This follows a pronounced and persistent deterioration in market-based measures.

Moreover, while the risks to domestic activity look relatively balanced, I am wary regarding the fact that that foreign developments could continue to pose downside risks to economic activity and financial conditions. China is in the midst of navigating a complex of difficult cyclical and structural challenges. Recent further sharp declines in oil and metals prices underscore ongoing risks to a broader set of emerging markets, which are confronting challenges of their own that could be exacerbated by further terms-of-trade deterioration, weak growth prospects, and difficulties associated with elevated debt burdens. It would be unwise to dismiss lightly the risk of further bouts of currency volatility or pressure on these economies.

I'm also mindful of the fact that there are important risks on the other side—in particular, the risk that inflationary pressures may emerge with greater force than is expected today. As I take into account the risks on both sides, the combination of asymmetrically greater room to tighten than to ease through conventional means; core inflation stubbornly below its target, with the deterioration we've seen in inflation expectations; and downside risks arising from abroad leads me to place somewhat greater weight on the possible regret associated with tightening too

early than on the possible regret associated with waiting a little longer to see some of these risks play out before moving.

I respect, of course, that many other members of the Committee, after lengthy deliberations, have come to a different conclusion. In that context, those same risk-management considerations argue for great care in what we communicate about the path forward. Let me highlight three specific aspects. First, in light of the persistent low readings on inflation, the deterioration in measures of inflation expectations, and the fact that we will be lifting off when actual inflation remains well short of our goal, it's very important to me to emphasize that future monetary policy will be importantly shaped by the credibility of our commitment to move inflation back to our target. In our discussion of the likely future path of monetary policy in paragraph 4, I put a lot of weight on the language that calls out inflation developments and progress toward our 2 percent goal as importantly influencing the stance of future policy.

Second, the combination of a low neutral rate with slow progress on inflation suggests a greater likelihood of hitting the effective lower bound than in previous decades, when the nominal neutral interest rate was probably much higher. The lower the longer-term nominal neutral rate is, the smaller in magnitude an adverse economic shock must be to push growth sufficiently below potential to necessitate a nominal federal funds rate well below zero to provide accommodation. As a result, monetary policy is likely to remain more constrained at the effective lower bound than to be operating at interest rate levels above it. As the probability of hitting the effective lower bound increases, that asymmetry in our flexibility becomes more pronounced.

For this reason, it's very helpful that the statement provides additional guidance reflecting the Committee's consideration of our reinvestment policy. The language in the fifth

paragraph clarifying that the Committee anticipates continuing reinvestments “until normalization of the level of the federal funds rate is well under way” helps clarify that future changes in monetary policy initially will rely primarily on the funds rate—our best-understood and most tested policy tool—and will provide more room to respond to negative shocks through conventional monetary tools.

Finally, it’s very important to communicate that, based on our understanding of the neutral rate, the path is likely to be more gradual and move to a lower level than has been the case in past tightening cycles. Recent research by the staff and others has shown that the current neutral rate is extremely low by historical standards and has persisted at a very low level for some time. Furthermore, persistent changes in demographics, productivity growth, risk premiums, and foreign growth suggest that it may remain at a low level well into the future. As these circumstances are highly unusual, it’s necessary to communicate to the public the effects they will have on monetary policy—namely, that normalization of the policy rate will likely be more gradual than in previous tightening episodes and likely move to a longer-run policy rate below historical norms. Moreover, the “gradual and low path” message should help reduce the risk of a “tightening tantrum” reaction to liftoff—a reaction that could slow progress toward both of our goals. For all of these reasons, I place a lot of weight on the message that the pace of normalization is likely to be gradual, albeit data dependent.

Let me conclude by saying I appreciate the careful and exhaustive preparations that have been undertaken by the staff, as well as the thoughtful approach of the Chair and the Committee over the past many months to ensure liftoff is operationally well managed and to align public expectations with the Committee’s policy reaction function and outlook. At this critical juncture, I place a very high premium on ensuring the credibility of monetary policy and demonstrating

effective control over monetary policy right out of the box. For that reason, I support the Chair's preferred approach as laid out in alternative B. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I support alternative B for today. I'm going to react a little bit to comments that have already been made. Generally speaking, I think we're in good shape for this meeting, and congratulations to you, Madam Chair, for maneuvering us into this position.

My basic position has been that labor markets are largely healed, certainly as measured by the unemployment rate. Also, if you look at the level of the labor market conditions index that the Board staff has, you will find that that index is well above its average level since 1976.

I also think that inflation can be interpreted as more or less soft but as only a little bit below target net of the big oil price shock that we're dealing with globally. I interpret that oil price decline as great news, really, for the U.S. economy ultimately, even though it's disrupting our interpretation of the inflation data.

We're actually very close to our goals on both employment and inflation if you take the interpretation I'm suggesting. Internationally, I agree with the staff judgment that, in 2016, emerging market economies' growth will improve to 3½ percent, and advanced foreign economies' growth will increase to 2 percent. Obviously, forecasts are forecasts, but that's probably the best judgment about what's going to happen globally.

For these reasons, I think we're in very good shape to start normalizing at this meeting. I do think it's the end of an era. It sends a positive signal concerning the future of the U.S. economy, and I agree with President Rosengren on that comment. I think sending negative signals has plagued us since the end of the recession. We've been worried about the economy.



That worry has transmitted into private-sector expectations and perhaps been damaging. So, when we can say we do see healing and we're willing to acknowledge a better performance than what we had a couple of years ago, that's a positive thing for the U.S. economy. We'll see how that plays out once we get going here.

I agree with President Evans on the symmetry argument about inflation. I've never considered 2 percent inflation to be a cap, and I don't think most people on the Committee think of the 2 percent target as a cap. So I agree with the idea that we should emphasize the symmetry of our inflation target. We do that in our public commentary. I do feel very strongly, however, that this should be a forward-looking statement, because that's the way the Committee has behaved in the past. In the current era, right now, we've missed to the low side, but we've repeatedly said we think it's going to come back to target. Similarly, in the 2003–07 era, when we missed to the high side, arguably also because of commodity price movements, we repeatedly said during that era, "Yes, we've missed to the high side, but we think inflation is going to come back to target."

So, given the way that the Committee actually behaves, the number of misses on one side or another, even if they're persistent, isn't really the big factor. The big factor is, can the Committee make a reasonable case that they think inflation is going to come back to target? That's what we did from 2003 to 2007. That's what we're doing again now. Of course, there are all kinds of debates about how good that argument really is, and that does affect policy. But I feel strongly that if we're going to talk about symmetry, it should be symmetry in the sense of "We'd be worried if we couldn't make a good case that inflation's going to come back to target from wherever it is."

I have three main concerns about our current decision today. One is, we're normalizing but possibly so slowly that it's really almost no normalization at all. I think you have to take that into account. We could easily get hit with weaker data. We've had a lot of residual seasonality in the first quarter, for instance. I was talking to President Harker about this yesterday. You could easily get weak data in the first half of next year, and you really don't get going very far on a normalization process.

I think we have to face up to the idea that we may not ever be able to get truly off the effective lower bound in a meaningful way, and that we might have to operate in an environment of low nominal interest rates for a very long time. We may not be able to return to the equilibrium of the period from 1984 to 2007, which is the equilibrium on which most of our empirical work is based, most of our theory is based, and most of our intuition is based. We may not be able to get back there, and we have to think about how we would conduct monetary policy in an era that's like that.

Another aspect of this is, yes, we're trying to normalize, barely—25 basis points here today. But the G-7 isn't normalizing, and they're not particularly close to normalizing. Even in my head, I think we've still got this yearning to go back to the 1984–2007 era, and you have to recognize that we may not be able to get there. I hope we can, but we may not. And the gradual pace, in combination with what the data might possibly hand us, makes me think that we may not be able to get there.

The second concern is the possibility that we will be insufficiently state contingent in the normalization process. The 2004–06 normalization cycle included 17 straight meetings by this Committee—a few of you were here—that had an increase in the policy rate of 25 basis points at every single meeting. That does not look very state contingent. In retrospect, I'm fairly certain

it was not optimal policy during that era. In addition, it ended very badly for the U.S. economy and for the global economy. Governor Tarullo used the phrase “maintaining optionality,” which, historically, has been very popular around here, and it’s popular with me. I think you definitely want to maintain optionality. The Committee desperately needs to be more flexible, sometimes speeding up and sometimes slowing down in response to macroeconomic events.

I’m not quite sure how we can actually get to a situation in which we’re willing to make one decision at one meeting and a different decision at the next meeting. But we cannot let “gradual” become the new “measured pace,” with the Committee just marching on regardless of what the data are saying. I agree with President Lacker that we could try to phrase something like “data dependent gradualism” or “gradual but also data dependent” or something like that. We’ve used the “data dependent” phrase so much that it may be losing effectiveness anyway because no one is sure if that really means trends in the data or the latest reading on a particular element of the data just days before a particular meeting. So I think we still have work to do on this dimension. There’s a lot of risk that we get into a “measured pace” sort of scenario. That did not work out well from 2004 to 2006.

My third concern, and my last comment here, is that I don’t think we have enough headroom on the balance sheet. The Committee remains unwittingly committed to QE as the main policy tool should a recession develop over the policy horizon, and the staff reminded us that the unconditional probability of a recession in any year is probably 15 percent. So it could easily be that we get hit by bad data and go back into recession sometime over the forecast horizon. A prudent policy would be to allow some runoff in the balance sheet to reduce it and at least move it a little bit toward a more manageable size, in order to give us more headroom in the circumstance of a new recession. I don’t think that ending reinvestment would have much of an

effect on the macroeconomy today, but it would give us a little more room should we have to return to QE.

Now, I know that the Committee, across the “hawk/dove” spectrum here, has basically sworn off QE. But I don’t think it’s realistic to swear this off until you get to a fully normalized policy rate. Until we get there, we’re probably dependent on QE. Once the crisis hits, there’s going to be tremendous pressure on us to do something, and this is really our main tool. So I think we want to ask ourselves, are you willing to go to \$6 trillion, \$7 trillion, or the kind of balance sheet that the Bank of Japan has?

I really think it would just be prudent to allow some runoff. I don’t think it would have much impact on the economy today, but it would be a way to create a little more headroom in case we got into that scenario. I don’t want to get in that scenario, and you don’t, either. But that’s the reality of our situation while the policy rate remains very low. So I urge the Committee to give some thought to creating headroom on the balance sheet by ending the reinvestment. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I will support alternative B today. The Committee has said that it will raise the federal funds rate when there has been further improvement in the labor market and when the Committee is reasonably confident that inflation will return to the 2 percent objective in the medium term. I see those tests as met today. The inflation part of the test, for me, is a closer call, particularly in light of uncertainty about inflation dynamics. The Committee will need to monitor closely the progress of inflation, and, under the Chair’s leadership, I am more than reasonably confident that we’ll do that.

As I mentioned yesterday, I think it's likely to be necessary for the economy to run above trend for some time to ensure that inflation does reach our 2 percent target. If the economy evolves about as expected, I'm prepared to support a very gradual path for rate increases to achieve that outcome. The statement is up to the task of signaling that the Committee expects to move gradually—again, assuming that the path is about as we expect. And I would single out the mention of “gradual” twice, which will certainly be noticed. Let me say that I'm fine with that and am happy to support this statement as written.

Finally, I do think it's right that the market observers will read the SEP and think, “Four increases,” and they know the press conference schedule, so “Let's focus on March.” There will be a natural tendency to assume that there's another increase in March. Let me just say now that that is not my prior at all. I have no prior about March. I wrote down three increases, not four. I'm very happy to go through, therefore, a six-month period of no rate increases next year, and I would like to see that decision remain open and evolve according to the incoming data. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. In line with my economic forecast, my position on policy remains that we should raise rates at this meeting, and that the path of future funds rate increases should be gradual and data dependent, to use President Lacker's language.

Given my inflation forecast, I anticipate that this will lead to a rather gradual tightening of policy, and that policy will remain accommodative for some time. I adopt this position based on the fact that inflation has remained persistently below target and I thus attach some uncertainty to our ability to achieve our inflation target over the medium term.

Placing some weight on these risks implies a policy rate path that is somewhat more accommodative than would be implied by historical behavior. In particular, I envision at most four rate hikes next year, leaving the funds rate at, say, 1.38 percent at the end of 2016, with subsequent increases to 2.63 percent in 2017 and to 3.5 percent at the end of 2018, which is my view of the long-run neutral funds rate. However, I should stress that my perspective will be continually updated by the data. Therefore, I support alternative B, which I believe is in accordance with these views.

I would suggest one small change in the language, and that is to delete the clause “and recognizing the time it takes for policy actions to affect future economic outcomes” in paragraph 3. Now, I understand the logic behind the addition of this phrase, but it seems innocuous at best and may just add confusion. This may be idiosyncratic to the Federal Reserve Bank of Philadelphia, but, in a discussion of what the wording could possibly mean, there were as many views among the people who were in the Philadelphia Reserve Bank staff’s briefings to me as there are among FOMC participants. The views ranged from signaling to the markets that the current move should not be interpreted as having any immediate economic effect to indicating that the current move was being made to prevent the Committee from “falling behind the policy curve.” I think we should, therefore, admit that this language, at least to us at the Federal Reserve Bank of Philadelphia, is unclear, and I believe we should avoid adding uncertainty to our current policy decision. While I understand that a change in the language of alternative B at this time is highly unlikely, it is wording I would not want to see carried from statement to statement. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. I support alternative B. The economy's progress over the past five years is notable, and today's action is fully consistent, in my view, with our longer-run goals for promoting maximum employment, stable prices, and moderate long-term interest rates.

The four policy rules in Tealbook B indicate liftoff is appropriate, and the real federal funds rate lies below the Tealbook-consistent measure of  $r^*$  by the widest margin within the past 10 years. Of course, we know the focus now turns to the path. As the box in Tealbook B highlights, markets largely expect action at this meeting and then anticipate a gradual pace of rate increases.

In addition, uncertainty associated with the path is lower than at the start of the 1994 and 2004 tightening cycles. The market-implied path is a bit lower than that in my own SEP submission, but my path is also quite gradual relative to past tightening cycles. A gradual path does stand in sharp contrast to the optimal control exercises in Tealbook B, which show a rather steep pace of rate increases. Earlier, optimal control exercises were informative regarding delaying liftoff, though it's notable how they now resemble the "late and steep" option that the Committee discussed a year ago, which is a reminder for me that the Committee's next steps are likely to prove as challenging as the path that led to today's decision. Thank you.

CHAIR YELLEN. Thank you. First Vice President Lyon.

MR. LYON. Thank you, Madam Chair. In October, the Committee stated that it would be appropriate to raise the target range for the federal funds rate if two conditions were met: First, we saw some further improvement in the labor market, and, second, the Committee was reasonably confident that inflation would move back to its 2 percent objective over the medium term. In the previous go-round, I noted that the labor market has improved since October, but

indications of future inflation have changed very little. Alternatives B and C would raise the federal funds rate target, but neither offers as complete a rationale for this decision as I would have preferred.

As I discussed in the previous go-round, our best statistical forecasting models, as well as market- and survey-based forecasts, suggest that inflation is likely to remain below target over the medium term. To maintain its credibility, the FOMC must ensure that the public fully understands how monetary policy decisions relate to the Committee's stated objectives and plans. In turn, credibility is crucial for keeping inflation expectations well anchored. I therefore believe it would be useful to offer a more complete and explicit rationale for raising rates at a time when the modal outlook still calls for very tame inflation. Such an explanation could build on concerns that if we delay raising rates, we face the risk of having to eventually tighten rapidly and disruptively in the event of a rapid increase in inflation.

If this concern or other risk factors broadly reflect the Committee members' thinking on why a rate increase is appropriate at this time, then I would encourage the Committee to take every opportunity to explain these concerns in its communications. Thoroughly explaining the key factors in the decision will help build public understanding of the Committee's reaction function and ensure that we maintain the credibility of our 2 percent inflation target.

I believe that effective communication will become even more important as normalization proceeds. The SEP suggests that the Committee is likely to raise rates by about 100 basis points in the first year—in other words, at only about half of the meetings. I'm concerned that such a pace may prove particularly challenging to communicate. The Committee will need to explain why it's adjusting the funds rate target at some meetings but not others,



without tying policy too tightly to volatile incoming data but also without committing to a fixed path of increases that cannot react to data at all. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. I support the action of raising the federal funds rate target range by 25 basis points at this meeting and the language in alternative B. In my view, the criteria we've set out for liftoff have been met. We've seen some further improvement in the labor market, and economic developments support being reasonably confident that inflation will move back to our 2 percent objective over the medium term.

It's well accepted that monetary policy needs to be forward looking. On the basis of the economic outlook, I believe it is prudent to take the first step today on the path of gradual normalization of interest rates. I believe we will be able to implement this policy change with the tools at our disposal. I appreciate the analysis and testing of the tools undertaken by the New York Fed and Board staff that have led to more confidence in our tools. But I also believe the careful monitoring of developments in financial markets post-liftoff is very appropriate and will help us calibrate the tools to hit the federal funds rate target range.

Communications leading up to and subsequent to this action have played and will continue to play a significant role in shaping the expectations and interpretation of future policy. I commend the Chair on the communications she's undertaking during the intermeeting period to help ensure that market participants and the public are ready for this change. I don't think she could have done anything more to prepare them.

Despite the preparation, I do expect some reaction in the financial markets. It is, after all, the first change in the federal funds rate in seven years and the first rate increase in nine and a half years. But I don't expect the volatility to be economically significant.

Alternative B, as amended and published in the Tealbook, seems to do a plausible job of capturing the various views expressed around the table and explaining the various factors that had to be balanced in deciding to take this action. That said, I continue to think we could evolve the statement in a beneficial way by putting less emphasis in paragraph 1 on small, short-run changes in the economic data. The description of economic developments in paragraph 1 tends to reinforce the natural inclination of market participants and others to focus on short-run developments in the economy rather than on the medium-run outlook, which is the more appropriate time horizon for monetary policy decisions. But that's a longer-run issue and not one for today.

In light of an action today, the focus from now on is going to be on the future policy rate path. The statement walks the careful line of explaining that we currently expect the economy to evolve in a way that warrants, for some time, keeping interest rates lower than the level we expect to prevail over the longer run while conveying the idea that policy will respond appropriately to changes in the outlook. Thus, there is uncertainty about our policy rate path because there's uncertainty about the outlook. Our actual policy rate path could turn out to be shallower or steeper than currently anticipated. Here I think the SEP and its dot plot of federal funds rate projections, as well as the evolution of that plot over meetings to come, will serve the Committee well by giving the public a very good sense of the current views of FOMC participants of the future policy rate path.

Another focus of the public will be on reinvestment policy. The language in the statement that we anticipate continuing reinvestments until rate normalization is "well under way" may hold off people for a time. But, as they say, inquiring minds will want to know what we mean by that. On this matter, I think it would be beneficial to clarify in the press conference

or testimony that we're thinking about state-contingent criteria for ending reinvestments and not time-dependent criteria.

Finally, I think we have to recognize that today's move won't stop the questions leading up to each meeting about whether the Committee will raise interest rates at that meeting. Because we currently anticipate moving rates up more gradually than we did in the past two cycles, this is to be expected. Clear communications will continue to be a challenge, but it also presents a good opportunity because it can help the normalization process go more smoothly and effectively and can help preserve our ability to use the nontraditional policy tools of the future. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I support alternative B as written. I think the time has come to begin the monetary policy normalization process. We've made considerable progress toward our dual-mandate objectives, and I expect that progress to continue. Even after today's move, monetary policy will remain accommodative.

On the one hand, this is a very historic day because this will be the first rate hike in nearly 10 years. On the other hand, we shouldn't really overstate this. A move of 25 basis points is not going to affect the stance of monetary policy in a very large way, especially as we're starting from the effective lower bound and we still have a very large balance sheet. So it's an interesting tension between those two things.

The risks we take, I think, are that the economy turns out to be weaker than we expect, that this initial move leads to a more dramatic tightening of financial market conditions than we desire or anticipate, or both. But I think the risks of not moving at this meeting are even greater. With regard to the first risk of a forecast error, that's always a risk. But because I judge such

risks to be two sided, I don't see this as a reason to wait any longer. On the risk of financial market conditions tightening too much, that also remains a risk. But not tightening because financial conditions could tighten unduly doesn't seem compelling to me, either.

In terms of the risk of financial conditions tightening, I judge the risk of another taper tantrum as quite low for two reasons. First, other than in the high-yield market, which is undergoing a lot of stress, financial conditions have not tightened appreciably, even as the probability of a tightening move this year has moved up to a 90 percent probability today from a 30 percent probability a few months ago. In areas outside the high-yield market, there's been some movement, but that doesn't seem inappropriately sized relative to that shift in monetary policy expectations. Since the October FOMC meeting, equity markets are little changed, the dollar is slightly firmer, and bond yields have risen modestly.

Even in high yield, which is under considerable stress, much of the deterioration, to me, seems fundamentally driven by the persistent weakness in energy prices. That said, it will be interesting to see how the high-yield debt market performs over the next few weeks. I would say, "So far, so good," but this could intensify into something more substantial. However, it's not a reason to delay at this point.

Second, I think we've reduced this risk of a sharp tightening in financial conditions—those are famous last words by me—by emphasizing that the upward path of short-term rates is likely to be shallow, and that the balance sheet will stay large for a while longer. The language in alternative B that investment will continue "until normalization of the level of the federal funds rate is well under way" is helpful in this regard. If we go more slowly in raising short-term rates, this will likely push back the expected timing of ending reinvestment, and that should

reassure investors that there won't be a flood of new supply any time soon. That will also help reduce the risk of a near-term taper tantrum.

In terms of the risks post-liftoff in achieving our objective of lifting the effective funds rate into the new target range and also raising other money market rates, I fully expect that our tools will work. Our testing has shown that the overnight RRP facility can put a relatively firm floor under money market rates. The fact that we'll be operating the overnight RRP without an explicit cap initially, limited only by the size of our portfolio of Treasury securities, will also help by reassuring people that we will not run out of headroom here. I also think it will help by underscoring our commitment to monetary policy control. That's our first and foremost priority here. Having both a belt, which is the IOER, and suspenders, the overnight RRP, is a very good thing.

I also think that it's important not to overreact to any short-term sloppiness should that actually occur over the next few days or weeks, especially if we view it as related to the particular circumstances of year-end. Year-end will generate its own set of unique pressures related to bank balance sheets, and I would be very hesitant to overreact to something that might prove short lived. That said, should the effective funds rate trade persistently outside the target range, then I would favor adjusting the parameters of our tools. Obviously, how we would respond would depend on our judgment of why this was occurring and how it was perceived by others in terms of our ability to maintain monetary policy control. In other words, if people weren't upset about it, then we probably shouldn't be too upset about it, either.

But we do have a number of levers to push and pull. We could change the level of the IOER, the level of the overnight RRP rate, or both. We could raise the maximum bid amount limit to do term RP or use our Term Deposit Facility. I don't think any of this is going to be

necessary, but I'm glad that we have these options available, and that we have these briefings scheduled over the next few days so that we can all be kept fully informed and can respond quickly should that prove necessary.

Finally, I want to commend the Chair for all you've done to prepare markets and bring this Committee along in a united fashion. Well done.

CHAIR YELLEN. Thank you very much. Okay. Well, we're close here. I heard considerable support for alternative B as written, although President Harker did make one suggestion pertaining to language. If I see some overwhelming support for making that change, let me give you an opportunity to express it.

MR. BULLARD. Madam Chair, I thought that phrase was acknowledging the lags in monetary policy, and I'd like to hear what you thought.

CHAIR YELLEN. It was meant to explain why, at a time when inflation is low and we've not overshot our employment goal, we would be raising rates.

MR. BULLARD. Right. So maybe the Federal Reserve Bank of Philadelphia staff doesn't believe in lags. [Laughter]

MR. HARKER. I'm just reporting what they said.

CHAIR YELLEN. Okay. I propose that we vote on alternative B as written and the associated directive. Let me call on Brian to explain exactly what we're going to vote on and call the roll.

MR. MADIGAN.<sup>5</sup> This vote of the Federal Open Market Committee will be on the statement for alternative B as presented on pages 7 and 8 of Thomas's package of briefing materials from yesterday. It will also be on the directive as included in the draft implementation

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<sup>5</sup> The materials used by Mr. Madigan are appended to this transcript (appendix 5).

note on page 1 of the package labeled “Updated Implementation Note,” which was distributed this morning. This directive would supersede the resolution on overnight RRP test operations that was approved by the Committee at its December 16–17, 2014, meeting.

Chair Yellen	Yes
Vice Chairman Dudley	Yes
Governor Brainard	Yes
President Evans	Yes

MR. MADIGAN. Governor Fischer.

MR. FISCHER. May I enter a divided vote? I would not like the word “unanimously” to appear in the fourth line of the implementation note. There is, in the fourth line—

CHAIR YELLEN. We haven’t voted on that yet.

MR. FISCHER. Oh, it’s going to be a separate vote?

MR. MADIGAN. Well, let me first mention that there’s no vote on the implementation note per se.

MR. FISCHER. Oh, I thought I heard you saying there was.

CHAIR YELLEN. We’re going to have some further votes, and we’ll see if they’re unanimous or not.

MR. FISCHER. Okay, fine—I’m in favor of alt-B.

MR. MADIGAN. Thank you.

President Lacker	Yes
President Lockhart	Yes
Governor Powell	Yes
Governor Tarullo	Yes
President Williams	Yes

CHAIR YELLEN. Okay. We have some further votes to take, and these will be votes of the Board of Governors. First, on interest rates on reserves, I need a motion to increase to

50 basis points from 25 basis points the interest rates paid on required and excess reserve balances, effective December 17, 2015. Do I have a motion?

MR. FISCHER. So moved.

CHAIR YELLEN. Second?

MR. TARULLO. Second.

CHAIR YELLEN. Without objection? [No response] Okay. Very good.

Now let's turn to discount rates. The vote on discount rates is also a vote of the Board of Governors, and it is going to cover three discount rate actions. They are, first, to approve the requests of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, Dallas, and San Francisco to increase the primary credit rate to 1 percent from  $\frac{3}{4}$  percent, effective December 17, 2015.

Second, the vote will encompass approval by the Board of Governors of the establishment of a 1 percent primary credit rate by the remaining Federal Reserve Banks, effective on the later of December 17, 2015, and the date such Reserve Banks inform the Secretary of the Board of such a request. The Secretary of the Board would be authorized to inform such Reserve Banks of the approval of the Board of Governors upon notification by the Reserve Banks.

Finally, this vote will also encompass approval of the renewal by all 12 Federal Reserve Banks of the existing formulas for calculating the rates applicable to discounts and advances under the secondary and seasonal credit programs. I need a motion that would cover all three portions of that.

MR. FISCHER. So moved.

MR. TARULLO. Second.



CHAIR YELLEN. All in favor? [Chorus of ayes] Any opposed? [No response]

Okay. Well, we have now taken the steps toward implementing our policy. Let me just mention something. Because I think many of the people around this table have joined the System since the last interest rate cycle and may not be entirely familiar with what I'll call standard procedures regarding discount rates, let me mention that, commonly, when the discount rate is changed, which occurs usually commensurate with a change in the federal funds rate target that's approved by the FOMC, some, but not all, Federal Reserve Banks have requested that change. This time, we have 10 that have requested it. So the standard practice is that the boards of the remaining Reserve Banks, within about a day of the FOMC announcement, request the same change in their primary credit rates—it's called a conforming rate request—to bring the discount rate up to the approved new national average in all areas of the country.

Now, in many Reserve Banks, this requires a vote of the board of directors of the Bank. In some others, I think this decisionmaking authority is delegated to a committee of the board rather than the full board, or, in some cases, it can be delegated to the president by the board of directors. So there may be different procedures in different Banks, but I did want to note that it is quite standard—and this should occur very rapidly, within 24 hours—that Reserve Banks that have not requested an increase would return to our Secretary of the Board with a request for a conforming change. And, the Board of Governors has just voted to, essentially, preapprove those requests.

You know that the implementation note that was just distributed will be published today as an addendum to the Committee's policy statement, and it includes the domestic policy directive verbatim. Then what we've agreed is that if, during the intermeeting period, we need to

make changes to policy tools to implement the stance of policy agreed upon in the FOMC statement, we will issue a new implementation note that we will vote on.

In addition, let me mention that the Desk will be releasing, also at 2:00 p.m., a Desk statement on implementation, and tomorrow the Desk will be releasing a statement on term RRP. Let me call on Lorie to discuss that statement.

MS. LOGAN. Matt is handing out a table that I'll refer to, so I'll just wait until those are passed out.

MR. LACKER. Madam Chair, is this implementation note we got this morning different from the one we got yesterday?

CHAIR YELLEN. I think the blue changes, too, were there yesterday. On page 2, I believe the phrasing "the discount rate" is new. I think it previously said "primary credit." We thought that might be confusing.

MR. LACKER. Oh, I see. That part is new? Okay. Thank you.

CHAIR YELLEN. The public knows about the discount rate.

MR. LACKER. Brilliant changes.

MS. LOGAN.<sup>6</sup> In light of the Committee's policy decision to increase the target range and to temporarily suspend the cap on the overnight RRP, we wanted to summarize plans for the already announced term operations that cross year-end. These details are shown in the table of your handout, which is labeled "Material for Briefing on Term RRP Operations over Year End."

The Chair approved plans to offer \$300 billion in three term operations with 17-, 12-, and 6-day maturities and to offer sizes of \$50 billion, \$100 billion, and \$150 billion on each of these days, respectively, with any unused capacity from the first two operations rolling into the third.

However, unlike the previous term operations—and as shown in the fifth column—these will be offered at a zero basis point spread to the overnight RRP rate. Without offering any financial incentive for investing funds for term instead of overnight, we anticipate there to be limited interest, other than perhaps some modest

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<sup>6</sup> The materials used by Ms. Logan are appended to this transcript (appendix 6).

interest coming from those who value the convenience of not having to reinvest maturing proceeds each day.

The Desk plans to release these remaining details at 4:00 this afternoon, and we'd be releasing two other forms of information, also at 4:00 this afternoon.

CHAIR YELLEN. I see—at 4:00 rather than tomorrow.

MS. LOGAN. Right. And those would be the FAQs associated with the overnight RRP as well as the FAQs on reinvestment policy that I mentioned in the Desk briefing yesterday.

MR. POTTER. We have those available, if people need to look at them.

CHAIR YELLEN. Are there any questions for Lorie or Simon? [No response] Okay. I have a couple of more things. Our next scheduled meeting will be on January 26 and 27.

That takes me to the issue of our plans for post-liftoff briefings. As we've previously agreed, starting tomorrow, we will have briefings, possibly for as many as two weeks. Or, if things are going very smoothly and we decide they're no longer necessary, we will cancel them. But the first briefing is scheduled for tomorrow at 4:00 p.m. The remaining briefings, with the exception of two, are scheduled for 2:00 p.m. On two dates—Thursday, December 24, and Thursday, December 31—we hope we will be able to cancel briefings, but if we need to have them, they've been scheduled for 10:00 a.m.

Let me say about these briefings that if we do decide we need to change any of the tools or make intermeeting adjustments, all of these briefings can be converted, even midstream, into FOMC meetings. I'd like to remind you that, whether they're briefings or turn into FOMC meetings, FOMC meeting attendance rules will apply to the briefings. Our plan is to record and prepare transcripts of all of these briefings/meetings, even if they're briefings and don't turn into meetings. If they do turn into meetings, then minutes will be prepared and published with the minutes of the January FOMC meeting. Let me say that the difference between a briefing and a meeting is that, in a briefing, you're welcome to quiz staff members and ask them questions, but

if it looks as though we need to deliberate on policy and make comments that are real policy deliberations, we will need to convert the briefing into a meeting.

I think that's it, other than to say that we have boxed lunches available, and anybody who—

MR. FISCHER. May I ask a question?

CHAIR YELLEN. Yes.

MR. FISCHER. I'm sorry to return to this point, but, in the "Decisions Regarding Monetary Policy Implementation," the word "unanimously" appears twice in square brackets. Since the extent of the majority by which this decision is being made by the Board is of no consequence whatever to how we do the monetary policy implementation, I don't know why we need the word "unanimously."

CHAIR YELLEN. No, we do because these are Board votes, and we're reporting Board votes. If they're not unanimous, anyone who dissented would be listed explicitly as a dissenter, potentially with some short statement as to what the dissent was. So we're formally recording here, in the implementation note, votes of the Board of Governors.

MR. FISCHER. Okay. Thank you.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Madam Chair, in the past, when we've had briefings, have we prepared transcripts and then distributed the transcripts?

CHAIR YELLEN. No, we haven't. But, in light of the fact that any of these briefings could turn into meetings and there would seem to be some historical value for the public in understanding what happened and what our discussions were in the aftermath of this decision,

we thought it wise to actually make transcripts of the briefings to have that historical record. We will need it, of course, if any of them turn into meetings.

MR. BULLARD. Okay. So the plan is that they will be released after five years with everything else?

MR. MADIGAN. If they are turned into meetings. A decision has not yet been made if they're just briefings.

MR. BULLARD. I see. If they're just briefings, then they may not be. I see, all right. Thank you.

CHAIR YELLEN. President Evans.

MR. EVANS. If I could just clarify what you meant by the distinction between a briefing and a meeting, in a briefing, it's like a game of *Jeopardy!* in which all of the comments have to begin with a question. [Laughter]

CHAIR YELLEN. If we need to change the interest rate on excess reserves today to make our policy work, yes, that—

MR. EVANS. Right. But as soon as somebody opines in a policy way, that's not according to the rules. That's the way I remember the FOMC briefings in the past, during the crisis.

CHAIR YELLEN. That's right. We've had these briefings before.

MR. EVANS. Well, President Williams reminded me of that, too.

CHAIR YELLEN. You mean that you can ask a question that—

MR. WILLIAMS. You just don't opine or bring up the discussion regarding, for instance, the ON RRP rate or something, but you can ask the question.

MR. EVANS. So it has to be, "Isn't it true that we need to . . ." [Laughter]

CHAIR YELLEN. “If we don’t change the overnight RRP rate in this meeting . . .”—something like that. Yes, you can do that type of thing, but if it looks like members of the Committee will need to talk to one another about changes, the intention will be to turn it into a meeting.

MR. EVANS. Thank you.

CHAIR YELLEN. Okay. Boxed lunches will be available. If anybody wants to watch TV in the Special Library and see me get skewered at the press conference, please feel free. I will do my best to communicate the points that have been made here.

END OF MEETING