

**Meeting of the Federal Open Market Committee on
September 20–21, 2016**

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, September 20, 2016, at 1:00 p.m. and continued on Wednesday, September 21, 2016, at 9:00 a.m. Those present were the following:

Janet L. Yellen, Chair
William C. Dudley, Vice Chairman
Lael Brainard
James Bullard
Stanley Fischer
Esther L. George
Loretta J. Mester
Jerome H. Powell
Eric Rosengren
Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine,
Alternate Members of the Federal Open Market Committee

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

Brian F. Madigan, Secretary
Matthew M. Luecke, Deputy Secretary
David W. Skidmore, Assistant Secretary
Michelle A. Smith, Assistant Secretary
Michael Held, Deputy General Counsel
Richard M. Ashton, Assistant General Counsel
Steven B. Kamin, Economist
Thomas Laubach, Economist
David W. Wilcox, Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, Stephen A. Meyer, Ellis W. Tallman, Geoffrey Tootell, 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

Matthew J. Eichner,¹ Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

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

David Bowman, Andrew Figura, Joseph W. Gruber, Ann McKeehan, and David Reifschneider, 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

Eric M. Engen, Joshua Gallin, and Michael G. Palumbo, Senior Associate Directors, Division of Research and Statistics, Board of Governors

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

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

David López-Salido, Associate Director, Division of Monetary Affairs, Board of Governors

Elizabeth Klee and Jason Wu, Assistant Directors, Division of Monetary Affairs, Board of Governors; Shane M. Sherlund, Assistant Director, Division of Research and Statistics, Board of Governors; Paul R. Wood, Assistant Director, Division of International Finance, Board of Governors

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

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

Sophia H. Allison,¹ Special Counsel, Legal Division, Board of Governors

Jonathan E. Goldberg and Francisco Vazquez-Grande, Senior Economists, Division of Monetary Affairs, Board of Governors

¹ Attended through the discussion on financial developments and open market operations.

² Attended Tuesday session only.

Paul Dozier,¹ Senior Financial Analyst, Division of International Finance, Board of Governors

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

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

David Altig, Kartik B. Athreya, and Daniel G. Sullivan, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, and Chicago, respectively

Mary Daly, Evan F. Koenig, Susan McLaughlin,¹ and Paolo A. Pesenti, Senior Vice Presidents, Federal Reserve Banks of San Francisco, Dallas, New York, and New York, respectively

David Andolfatto, Vice President, Federal Reserve Bank of St. Louis

Thomas D. Tallarini, Jr., Assistant Vice President, Federal Reserve Bank of Minneapolis

Satyajit Chatterjee, Senior Economic Advisor, Federal Reserve Bank of Philadelphia

Cindy Hull,¹ Markets Officer, Federal Reserve Bank of New York

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September 20 Session

CHAIR YELLEN. Good afternoon, everyone. Let's get under way. Today's meeting, as usual, will be a joint meeting of the FOMC and the Board of Governors, so I need a motion to close the Board meeting.

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. Without objection. Our first agenda item is the selection of a Committee officer. As many of you know, Michael Held, who is seated near the anteroom door, has been appointed general counsel and executive vice president of the Federal Reserve Bank of New York. I am pleased to recommend that the Committee select Michael as its deputy general counsel. Consistent with the Committee's standard practice for appointment of its officers, this selection would be effective until the Committee's first regularly scheduled meeting in 2017. Michael has been with the New York Federal Reserve for the past 18 years and is a highly experienced central banking attorney. Vice Chairman, would you like to make a comment?

VICE CHAIRMAN DUDLEY. Yes. First, I'd like to second the notion of him becoming the deputy general counsel for the FOMC. He has big shoes to fill with Tom Baxter retiring from the New York Fed, but I'm sure he will do so very ably. I've worked with him for many years, and I very much trust his knowledge and his judgment. It's nice to have him here at the FOMC on a more permanent basis, taking a seat next to Scott, who's not here today, but—[laughter]—we will be seeing Michael there on a regular basis. I'm very pleased. Thank you.

CHAIR YELLEN. Thank you. Any discussion or any objections? Okay. Seeing none, the selection is approved unanimously by the Committee. And congratulations, Michael, we are looking forward to working with you in your new role.

That takes us to the second agenda item, which concerns proposed revisions of the documents governing foreign currency operations. As you know, the staff has been engaged in a long-term effort to develop proposed revisions to the Authorization for Foreign Currency Operations, the Foreign Currency Directive, and other related documents. You all received memos on the proposal from the staff in mid-August, and last week we sent a short additional memo from the Foreign Currency Subcommittee. This project has required a lot of careful analysis involving staff from both the New York Federal Reserve and the Board. That work was carried out under the general oversight of the Subcommittee, and I'd like to thank the staff for what seems to me to be an excellent proposal. In my view, it meets the important objectives of the project.

I might note that the proposal provides that the Subcommittee, in consultation with the Committee, may give additional instructions to the Desk regarding holdings of foreign currencies. As I mentioned, the Subcommittee recently sent the Committee a short memo, which included draft instructions that the Subcommittee would plan to issue to the Desk. Unless there are objections, the Subcommittee would issue these instructions within a few days following this meeting. The Committee will not be asked to vote on those instructions. Let me now turn to Simon, who's going to summarize the proposal.

MR. POTTER.¹ Thank you, Madam Chair. I'd just like to say that some of the staff involved in the project are in the room today, including Paul Dozier and Mike Leahy from IF; Cindy Hull from the Desk; and Sophia Allison, who is sitting next to Lorie, from the Board's Legal Division.

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

I'll be discussing important changes to the Authorization for Foreign Currency Operations (the Authorization), the Foreign Currency Directive (the Directive), and the Procedural Instructions with Respect to Foreign Currency Operations. As discussed in the memo the Committee received in August titled "Proposed Revisions to Authorization for Foreign Currency Operations and Related Organizational Documents," the revisions are intended to meet three objectives: first, reflect the current operating environment; second, clarify guidance to the Selected Bank by updating governance for each operation; and, third, simplify the structure of the documents.

Proposed changes to the document structure are summarized in the top-left panel of your exhibit. The proposed documents are organized to consolidate authorizations and directions into the Authorization and the Directive, respectively, and to clarify governance and guidance relating to specific operation types. All text authorizing an operation and any language regarding its purpose is in the Authorization, while specific direction to the Selected Bank to conduct each operation is in the Directive. In both documents, text for each operation type is grouped together, in contrast to the format of the current documents. Also, the existing Procedural Instructions are eliminated, as language from the document is incorporated into the Authorization and Directive. This proposed two-document organization structure now aligns with the one used for domestic operations. The staff also proposes to move both the definition and governance of the Foreign Currency Subcommittee, currently in the Authorization, into the Rules of Organization and Rules of Procedure, respectively.

The staff also proposes several substantive changes to foreign currency operation procedures and governance. These changes are designed to reflect the current operating environment and to clarify guidance to the Selected Bank. These changes remove the discretion that the Selected Bank has in the existing governance framework to determine whether to execute foreign currency operations and how to set parameters for investing the foreign currency holdings. The proposed framework now authorizes the Foreign Currency Subcommittee to both determine whether to execute interventions within specified limits and provide additional instructions regarding the management of the foreign reserves. The staff proposes assigning these responsibilities to the Foreign Currency Subcommittee primarily to accommodate the often time-sensitive nature of decisions that must be made regarding implementation of intervention operations as well as to facilitate coordination with the U.S. Treasury or foreign central banks.

The proposed documents are organized into five operation types: interventions, warehousing, reciprocal currency arrangements, U.S. dollar and foreign liquidity swaps, and foreign currency holdings. I will now address major changes made to the documents according to each of these operation types. Additional proposed changes are listed in the appendix of your exhibit.

The top-right panel of your exhibit lists major changes to foreign exchange intervention operations. The proposed documents remove the Selected Bank's discretion to determine whether to execute as much as \$600 million in intervention

operations per intermeeting period. For some brief background, this discretion was given to the Selected Bank in 1976, when the documents were first established, a time when intervention operations were somewhat routine. The Selected Bank has not used this discretion in more than 20 years. However, because intervention operations are now rarely conducted, the proposed documents eliminate this almost 40-year-old provision. The proposed documents provide that all such operations require prior approval from the Committee or Subcommittee. Other limits in the existing framework on the Selected Bank's intervention discretion, including a list of authorized currencies and a \$25 billion cap on the overall size of the foreign currency holdings, are also eliminated.

The existing documents authorize the Subcommittee to direct the Desk to execute intervention operations up to \$1.5 billion per intermeeting period. The proposed documents increase the limit to \$5 billion; any interventions above this limit could only be approved by the Committee. As the existing \$1.5 billion limit was last updated in 1993, the proposed change aligns the size of the Subcommittee's approval authority with the more than fourfold increase in the FX market size.

The middle-left panel of your exhibit lists major changes to the second operation type, warehousing. Warehousing is essentially a swap operation with the U.S. Treasury in which its Exchange Stabilization Fund, the ESF, sells foreign currency to the Selected Bank for U.S. dollars; at the outset of the transaction, the ESF agrees to repurchase the foreign currency at a set future date and exchange rate. Under current practice, the Committee delegates to the Selected Bank the authority to approve Treasury requests to use the warehousing facility of up to \$5 billion via the annual Desk Authorization process each January. However, the existing Authorization documents do not explicitly mention warehousing and instead provide only general authority for the Selected Bank to conduct operations with the ESF. To improve transparency, the proposed documents include a provision expressly authorizing the \$5 billion warehousing arrangement with the Treasury. The proposed directive now also instructs the Subcommittee to internally approve warehousing transactions before the Selected Bank can execute them with the U.S. Treasury.

The middle-right panel of your exhibit summarizes major changes for reciprocal currency arrangements and standing liquidity swap lines, the third and fourth types of operations. Reciprocal currency arrangements are swap arrangements with the central banks of Mexico and Canada that were established in 1994 under the North American Framework Agreement. The existing documents authorize the Subcommittee to approve drawings up to certain size limits. However, because these are expected to be used only rarely, the proposed documents now require the Committee to approve all drawings under these arrangements.

More familiar to the Committee are the standing liquidity swap lines. These arrangements are maintained with a network of five foreign central banks for the provision of U.S. dollars from the Federal Reserve and the acquisition of foreign currency from the foreign central banks. The swap lines are routinely used to provide dollars to some foreign central banks in the network. In the existing and proposed

Authorization documents, the Committee is charged with approving new swap arrangements and the Chairman is delegated authority to approve changes to the terms of existing arrangements.

The Chairman is delegated authority to approve individual dollar draws on the swap lines and can also further delegate approval of such draws to the SOMA manager. Under current practice, foreign central banks present calendars of proposed dollar auctions to the Federal Reserve on a monthly basis and seek assurance that the Federal Reserve intends to approve swap drawing requests associated with these calendars. The Chairman reviews and typically approves the foreign central banks' proposed dollar auction calendars. The Chairman also typically delegates to the SOMA manager the authority to approve requests to draw on the swap lines to fund these scheduled operations. The exception is for initial draw requests, where "initial" is understood to refer to the first drawing by a central bank since the swap arrangements changed from temporary to standing arrangements in January 2014. In that case, the Chairman retains authority to approve the drawing.

The proposed documents establish a governance process on the basis of whether the draw is associated with a schedule of potential drawings the Chairman has approved in advance. The proposed documents authorize the Chairman to approve a schedule of potential drawings and to delegate to the SOMA manager authority to approve any draws made in accordance with that schedule. All unscheduled dollar draws must still be approved by the Chairman.

The existing documents also delegate to the Chairman approval authority for foreign currency draws by the Federal Reserve. Because such foreign currency draws are expected to rarely occur in the current operating environment and would occur because of developments in the United States, the proposed documents now require prior approval of such draws from the Committee.

The bottom-left panel summarizes proposed governance changes to the final operation type, management of foreign currency holdings. With respect to management of the foreign currency holdings, the proposed documents establish a new governance framework that is intended to complement the updated investment framework presented to the Committee in April of this year. First, the proposed documents set forth three investment objectives for the Selected Bank: The Selected Bank must manage the foreign currency holdings primarily to ensure sufficient liquidity to enable the conduct of foreign currency operations, secondarily to have a high degree of safety, and, subject to these two objectives, to achieve the highest rate of return possible in each currency. Second, the Subcommittee, in consultation with the Committee, is delegated the authority to provide additional instructions to the Selected Bank regarding investments of foreign currency holdings. This new provision removes the Selected Bank's current autonomy, such as the ability to determine the riskiness of the portfolio, the degree of portfolio liquidity, and the specific issuers and asset classes in which to invest. The proposed governance structure contemplates that risk constraints will no longer appear in the Authorization documents but instead may appear in the additional instructions that the

Subcommittee may provide to the Selected Bank. Note that issuance of these instructions would not prevent the Committee from issuing additional direction to the Selected Bank regarding the management of the foreign currency holdings. Finally, the existing average duration limit of 24 months is removed from the Authorization.

If the Committee adopts the proposed governing documents, as the Chair pointed out, the Subcommittee plans to issue additional instructions to the Selected Bank shortly after the conclusion of this meeting. The Subcommittee provided a draft of these instructions to the Committee last week together with the memo titled “Additional Instructions of Foreign Currency Subcommittee to Desk Regarding Holdings of Foreign Currencies.”

I would like to highlight two other proposed changes relating to governance, listed in the bottom-right panel of your exhibit. The first is a provision to delegate any authority of the Subcommittee to the Chairman if the Subcommittee cannot convene in the time available. The second provides that in emergency circumstances, the Chairman may approve actions otherwise reserved for the Committee. These changes are intended for use only in cases of emergency. Under modern communication technology, it is expected that these would be used only rarely. Additional proposed changes are listed in the appendix of your exhibit.

Please note that if you approve the proposed documents, they will first be made public in the minutes of this meeting, and the changes will thus remain confidential until the minutes are released.

Before the Chair requests a vote on the foreign authorization documents, the Rules of Organization, and Rules of Procedure, we would be happy to answer any questions on the proposed changes.

CHAIR YELLEN. Are there questions for Simon? Discussion? President Bullard.

MR. BULLARD. Thank you, Madam Chair. I think it's a nice proposal. There's a lot of references to “Chairman” in this, and it's a little bit of residual language. Could we perhaps switch it to “Chair” and not have “Chairman” in it?

MS. ALLISON. Actually, “Chairman” is the term that's used in the Act. So that's why we've retained it in these documents.

MR. POTTER. I did feel strange saying that throughout the briefing, but it was to conform with the Federal Reserve Act. So it's the “Chairman” writing a particular check.

VICE CHAIRMAN DUDLEY. Maybe we need to update the Federal Reserve Act after all. [Laughter]

CHAIR YELLEN. Not touching that. Okay. Other questions or comments? President Lacker.

MR. LACKER. As many of you know, the Federal Reserve Bank of Richmond has a long tradition of raising concerns about foreign exchange intervention on the grounds that, if they're sterilized, they're meaningless. If they're not sterilized, they imply a change in monetary policy stance, which would imply some compromise of our monetary policy independence from the Treasury. I realize we don't have a vote, but, on principle, historically, the Richmond Federal Reserve has dissented on anything having to do with foreign exchange authorizations. I mention this, first, to avoid disappointing those who might have been expecting me to mention this any time a foreign exchange matter is brought up, but also to say that these new documents strike me as the right way for one to authorize foreign exchange operations, if one must. And I commend the staff on a very thorough and excellent review of these things.

More broadly, though, foreign exchange operations increasingly seem to be an anachronistic tool. Back in the day, in the old operating regime, if we were going to maintain an interest rate peg, we had to sterilize them, so they were kind of meaningless. If we didn't sterilize them, they'd drive the rate down. Nowadays, it's not obvious that they should be expected to have any meaningful economic effect. It might be worthwhile in the not-too-distant future to give that more thought and maybe give some thought to the role played by our foreign exchange operations. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Other comments or questions? Okay. If there are no further questions or discussion, we'll now vote on the proposal. This vote will be to approve all

four of the revised documents in the staff proposal—namely, the Authorization for Foreign Currency Operations, the Foreign Currency Directive, the Committee’s Rules of Organization, and the Committee’s Rules of Procedure. These documents are included in Simon’s briefing package. With the proposed changes to these documents, the procedural instructions with respect to foreign currency operations would no longer be necessary and would be rescinded. Is there a motion on this proposal?

VICE CHAIRMAN DUDLEY. So moved.

CHAIR YELLEN. Thank you. And a second?

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. Any objections? Okay. Without objection, the proposal is approved. Thank you. We are ready to move on to our third agenda item, and Simon is going to begin with the Desk briefing.

MR. POTTER.² Thank you, Madam Chair. For much of the intermeeting period, most asset prices traded in tight ranges amid low volatility. This calm was broken in the past couple of weeks by shifts in sentiments about the future policy actions of the ECB and Bank of Japan, sparking some steepening in global sovereign yield curves. On net, changes in major asset prices were modest and had mixed implications for financial conditions, shown in the first column of the top-left panel of your first exhibit. The dollar depreciated a touch and credit spreads narrowed, while Treasury yields and dollar funding rates such as LIBOR increased slightly and the S&P 500 index was down a bit. Lorie will touch on the drivers and implications of this increase in LIBOR later in the briefing.

The survey- and market-implied paths of the target federal funds rate were little changed, as shown in the top-right panel, as market participants balanced generally softer-than-expected economic data against Federal Reserve communications that were somewhat less accommodative than expected. In the Desk’s most recent surveys, the average probability attached to a rate hike at this meeting was 15 percent and the average probability attached to a rate hike at the December meeting was about 40 percent, shown on the left side of the middle-left panel. These levels are generally consistent with the probabilities currently implied by market prices.

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

The market-implied probability for a September hike had reached as high as 30 percent over the intermeeting period. As market participants have lowered their assessment of the likelihood of an increase at this meeting, the probability of an increase this year has remained relatively steady, with the marginal probability of a December hike increasing. Last year, when the FOMC did not raise rates at its September meeting, we saw an increase in the survey-implied probability for a rate hike occurring at the December meeting, from 25 percent to 40 percent immediately after, as shown in the shift from the dark to light blue bars on the right side of the middle-left panel.

The market-implied paths of most advanced-economy central bank policy rates are shown in the middle-right panel. The Bank of England joined the ranks of advanced foreign economy central banks pursuing further monetary easing, with details of its comprehensive package shown in the bottom-left panel. And while the Bank of England decided not to take its Bank Rate into negative territory, the United States is the only economy among the G-4 with an upward-sloping policy rate curve over the next three years. And even in the case of the United States, the projected rate increases are very modest. The low level of rates has produced a number of innovations in how central banks provide accommodation at the zero bound, and the intermeeting period witnessed a range of reactions in financial markets to central banks' ongoing use of these tools, particularly large-scale asset purchases.

In the initial weeks of its new purchase program, the Bank of England paid substantial premiums over prevailing market prices in several of its long-dated gilt purchase operations as a result of the reluctance of long-term investors—namely, pension funds and insurers—to part with their longer-dated gilt holdings. The operations have been very effective in bringing down long-dated gilt yields, which declined by as many as 40 basis points following the program announcement and the initial rounds of purchases. Investment-grade corporate bond spreads also narrowed 25 basis points in the days following the announcement. Overall, the market reaction to this package has been encouraging, as it suggests no decline in the efficiency of central bank asset purchases in lowering sovereign and private yields.

In July, the Bank of Japan introduced a limited set of additional easing measures and announced that it would undertake a “comprehensive assessment” of the effect of its current monetary easing programs, sparking speculation among market participants as to whether the Bank of Japan is nearing operational limits in its current policies. The results of the comprehensive assessment will be announced overnight. Market expectations are dispersed, with a lack of conviction on the next policy move by the Bank of Japan.

The ECB's actions at its meeting earlier this month were interpreted as less accommodative than expected. The ECB left its asset purchase programs unchanged and stated that it did not discuss extending the program beyond the current stated time frame of “March 2017 or beyond,” versus expectations that an explicit extension might be forthcoming. There was also speculation that the ECB would adjust the parameters of the program to address self-imposed constraints in its existing program,

which it did not do, though President Draghi did say that it was investigating the issue. Paul will discuss these foreign central developments further in his briefing.

Amid these actions and communications, the yen and euro strengthened by 3 percent and 2 percent, respectively, against the U.S. dollar over the intermeeting period. Sovereign yield curves also steepened, with 30-year Japanese bond yields higher by about 30 basis points and the German 30-year bond yields higher by around 20 basis points. As shown in the bottom-right panel, long-dated sovereign yields in the United States increased roughly 20 basis points as well, with contacts primarily pointing to effects from foreign developments, especially the ECB meeting.

Partly as a result of this steepening in sovereign yield curves, global bank stock prices outperformed over the period, as shown in the top-left panel of your second exhibit. Recall that, at the beginning of the year, bank stocks had declined notably after advanced foreign economy central banks introduced new easing measures, including negative rates from the BOJ and further rate cuts into negative territory by the ECB.

The outperformance of bank stocks over the period came amid perceptions that some foreign central banks are trying to address the adverse effect their easing policies may have on financial institutions' profitability. Market commentary has recently speculated that the Bank of Japan may aim to steepen the Japanese yield curve in order to reduce any adverse effect on financial institutions. Meanwhile, the Bank of England introduced the Term Funding Scheme, which is similar in many ways to the ECB's TLTROs in providing cheap term funding to banks to facilitate the pass-through of rate cuts to borrowers.

Market participants also highlighted the outperformance over the period of certain fixed-income assets, shown in the top-right panel. The outperformance was reportedly fueled by ongoing "reach-for-yield" behavior among long-term investors, driven to a large extent by continued portfolio rebalancing induced by large asset purchase programs. As emerging markets witnessed increased investor inflows, their bond spreads to Treasury equivalents tightened, despite some recent volatility. Meanwhile, high-yield credit spreads fell to their narrowest levels year-to-date, and MBS option-adjusted spreads narrowed amid reportedly strong demand from foreign investors.

Contacts have noted that low levels of volatility earlier in the period were especially supportive of the "reach-for-yield" behavior that led to these assets' appreciation, on net, over the period despite the recent steepening of advanced-economy yield curves. Measures of option-implied volatility across equities, rates, and currencies reached their year-to-date lows in August. As shown in the middle-left panel, implied volatilities for equities, the blue line, and for both short- and long-term rates, the red and gray lines, were roughly one standard deviation below their long-term averages for much of the period before an increase in market volatility that followed the ECB's decision.

In the Desk's most recent surveys, respondents were asked to rate the importance of various factors in explaining the recent low levels of implied volatility through the first week of September. As shown in the middle-right panel, the most importance, on average, was placed on advanced foreign economy central bank communication and action, followed by Federal Reserve communication and action.

While the PBOC's FX policy was generally viewed as consistent and predictable over the period, Desk survey respondents did not rate emerging market central bank actions as an important factor behind the low levels of cross-asset volatility. As shown in the bottom-left panel, over the intermeeting period, the renminbi was little changed against the dollar, though on a trade-weighted basis the renminbi did depreciate roughly 1 percent, and market participants expect further depreciation. The recent stability of the Chinese currency might reflect the PBOC's desire for a smooth introduction of the renminbi into the SDR on October 1.

Survey respondents also did not assign much importance to reduced political uncertainty globally as contributing to low implied volatility, with a few respondents suggesting that political developments may, in fact, be adding volatility. One source of political uncertainty noted by market participants is the upcoming U.S. election, although so far the only substantive market effect has been on the Mexican peso. As shown in the bottom-right panel, three-month option-implied volatility on the peso–U.S. dollar exchange rate increased sharply when the November U.S. election date rolled into the option window, and more recent increases in implied volatility have been attributed in part to higher uncertainty over the U.S. election. Specifically, market participants have noted downside risk to U.S.–Mexico trade and economic linkages related to the election outcome, including the potential for trade barriers and restrictions on remittances from the United States to Mexico. Lorie will continue.

MS. LOGAN. In exhibits 3 and 4, I'll cover money markets and Desk operations. The major focus in money markets this period continued to be the upcoming implementation of the SEC money market mutual fund reform measures on October 14, both in terms of its effect on market conditions and potential implications for Federal Reserve operations.

As shown in the top-left panel of your third exhibit, more than \$800 billion in assets under management has left prime and tax-exempt money market funds since October of last year, reflecting conversions and closures of funds undertaken by asset managers as well as investor redemptions. The vast majority of this outflow has been reallocated to government funds, leaving overall money fund AUM relatively little changed.

Prime fund managers remain highly uncertain about additional outflows, which have picked up recently, averaging about \$46 billion per week in September versus \$24 billion per week in July and August. In a Desk survey of money fund managers conducted earlier this month, the average expectation for total prime fund outflows from the end of July to mid-October was more than \$500 billion, shown in the left-

hand column of your top-right panel. If fully realized, this would leave prime fund AUM at approximately one-third the size of a year ago.

Consistent with trends seen to date, market participants anticipate that most of the outflows will continue to be allocated to government funds. Survey respondents' expectations for the investments of these inflows are shown in the right-hand column. While a majority of the inflows are expected to be invested in government securities and private repo, around \$100 billion is anticipated to initially be invested in Federal Reserve ON RRP, the light blue area in the chart.

As shown in the middle-left panel, usage of the ON RRP facility increased modestly over the period, with much of this increase coming from government funds. However, their usage of the overnight RRP facility as a proportion of their overall AUM remains little changed. Market participants have suggested that we could see a particularly notable increase in overnight RRP usage around the September quarter-end, and that the increase may persist a bit longer than normal, due to the combination of money fund reform-related flows and quarter-end balance sheet adjustments.

The middle-right panel shows that prime funds have been reducing the weighted-average maturity of their holdings in preparation for additional outflows. Industry WAMs, shown in red, are already at multiyear lows and are widely expected to fall further. The decline in both WAMs and AUM has led to a sharp decline in prime funds' holdings of CP and time deposits, shown in blue.

This reduction in term lending from prime money funds has had a material effect on the cost of term funding. As shown in the bottom-left panel, the three-month LIBOR–OIS spread—a common measure of bank funding pressure—has widened since late last year to around 42 basis points, a level last seen during the 2011 European sovereign debt and banking crisis. Rates on certificates of deposit and financial CP have risen by similar amounts to LIBOR, and rates on short-dated U.S interest rate swaps, which settle to three-month LIBOR, have increased. In the municipal debt market, short-term yields have also increased notably as outflows from tax-exempt money funds that invest in short-term municipal securities have accelerated.

With prime money fund AUMs and WAMs expected to decline further, both survey- and market-implied measures point to a modest further widening in LIBOR–OIS spreads as the implementation date approaches. By early December, however, the spread is expected to narrow. The expected narrowing could result from prime funds extending their WAMs amid reduced uncertainty about further outflows and from lending in somewhat larger sizes if AUMs rebound modestly. However, the cost of borrowing from prime funds—as reflected in LIBOR, CP, and CD rates—will likely remain elevated by historical standards because prime fund investors are expected to require relatively higher returns to invest in those funds following the implementation of reform.

The adjustments in pricing and issuance of financial CP and CDs, while notable, have been relatively smooth, without disruptions in funding to issuers. However, market participants note some unease that there could be more abrupt liquidity needs as the reform implementation date approaches. The bottom-right panel shows upcoming weekly maturities of financial CP and CDs with tenors from one month to one year, broken out by the domicile of the issuer. The countries highlighted in the chart represent the top four in terms of the volume of CP maturing between now and October 14, and cumulatively they make up over half of the roughly \$350 billion maturing over that period. These maturities will likely necessitate further changes in issuers' funding profiles through a combination of paying higher rates to reissue or shifts to alternative funding sources.

Market participants have been particularly focused on the funding and liquidity profiles of Japanese banks, shown in red, as their reliance on CP and CD issuance to U.S. money funds for dollar funding remains large relative to other countries.

Concerns over the effect of U.S. money fund reform on Japanese banks' U.S. dollar funding have contributed to the continued upward pressure on the U.S. dollar–yen swap basis, shown as the dark blue line in the top-left panel of your final exhibit. Recall that the basis indicates the implied cost of borrowing U.S. dollars offshore through the foreign exchange market, above what it would cost to borrow dollars directly at U.S. dollar LIBOR. Contacts expect the basis could widen further around the September quarter-end and as the money fund reform implementation date approaches because Japanese banks may need to seek dollar funding through alternative sources. This is important to note because, as we have observed, if the implied average cost of U.S. dollar funding materially exceeds the costs on foreign central banks' dollar liquidity operations, draws of the swap lines may increase.

Despite these sizable effects across money markets, money fund reform has not had a notable effect on overnight secured or unsecured interest rates. As shown in the top-right panel, these rates remained within ranges seen over recent months. The effective federal funds rate averaged 40 basis points this period, which is unchanged from last period's average.

Shifting to the SOMA portfolio, reinvestment operations continue to be executed smoothly, in line with the Committee's reinvestment policy. As shown in the middle-left panel, monthly reinvestment purchases of agency MBS have been increasing, driven primarily by the ongoing low level of interest rates and a resulting pickup in refinancing activity. The Desk expects to conduct around \$46 billion of MBS reinvestment purchases in September, which would be the largest monthly reinvestment amount to date.

Finally, in light of the Committee's approval of the Foreign Authorization documents and the pending instructions from the Foreign Currency Subcommittee, we plan to implement the new investment framework we discussed at the April FOMC meeting. As you may recall from that discussion, the Desk undertook a strategic review of the foreign reserves management framework, as our overall

approach had not been formally reviewed for about a decade. The negative interest rate environment in the euro area and Japan, which has resulted in negative total income on the foreign portfolio in recent months, also reinforced the need to revisit our approach. The new framework, summarized in the middle-right panel, involves a more explicit process for assessing policymakers' investment preferences and uses a mean-variance optimization approach to establish a benchmark portfolio for asset allocation.

With the new benchmark, the Desk would begin a three-month process of reinvesting maturing proceeds to match the new asset allocation, which will result in an increase in cash and a more modest increase in longer-term securities in the euro portfolio. Eligible securities for investment will now include Dutch sovereign securities in addition to French and German sovereign debt. For the yen portfolio, as we still receive a zero interest rate on deposits with the Bank of Japan, we will leave maturing proceeds from securities holdings on deposit with the BOJ for the time being. However, in view of the dynamic nature of policy in Japan, it's possible that changes to our approach for the yen portfolio may be required; we will seek instruction from the Subcommittee, in consultation with the Committee, if we need to adjust. We plan to update the Committee at the next meeting on the status of the implementation and provide quarterly updates on the portfolio thereafter.

As usual, your appendix contains a summary of operational tests performed over the intermeeting period and those planned during the next period. Susan McLaughlin will now continue the presentation, focusing on the proposed Desk counterparty policy.

MS. McLAUGHLIN.³ Thank you, Lorie. I'll be referring to the exhibit titled "Proposed Counterparty Policy."

The staff is seeking your concurrence with a new counterparty policy that we propose to publish on the FRBNY's website in early November. The policy documents, in draft form, can be found in the appendixes of the memo that we sent to you last week.

The new policy represents the culmination of a multiyear project conducted by FRBNY and Board staff to strengthen and improve the FRBNY's framework for managing counterparties for market operations. The staff also consulted with the staff in the Treasury's Office of Domestic Finance, on account of the role that primary dealers play in Treasury auctions, as well as the staff in the Treasury's Office of International Affairs, on account of their reliance on the FRBNY's foreign exchange/reserve management counterparties for Exchange Stabilization Fund, or ESF, operations. The review identified a number of improvements that could be made to the FRBNY's counterparty framework.

³ The materials used by Ms. McLaughlin are appended to this transcript (appendix 3).

Last year, the FRBNY implemented the first set of improvements from the review by establishing a single, consistent set of internal management practices and processes with regard to all Desk counterparties. We are coming back to you now to seek your concurrence with the second set of improvements to the FRBNY's public documentation on counterparties.

The proposed new policy consolidates the administration and respective expectations of all counterparty types for SOMA operations and for ESF and Treasury auctions that the FRBNY conducts for the Treasury as fiscal agent. This consolidated format clarifies for the public the overarching framework within which all counterparties for market operations are managed and highlights common themes. It may also help moderate the perception that primary dealers are special in some way by showing how they are similar to other types of counterparties and the various obligations they assume.

As panel 1 in your exhibit shows, the FRBNY is currently more transparent about its counterparties for open market operations than those for foreign market operations. We propose to eliminate this inconsistency by expanding the set of information we provide on foreign operations counterparties in two ways. First, for the first time, we will publish the lists of our FX and foreign reserves counterparties, just as we do today for primary dealers and reverse repo counterparties. And, second, we will add information on expectations and eligibility criteria for foreign reserve management counterparties to what we already publish for other types of counterparties.

The FRBNY relies on primary dealers not only for the conduct of open market operations, but also to ensure robust coverage of Treasury auctions of new securities. We propose three changes to the eligibility criteria for primary dealers that will modestly expand the pool of regulated banks and broker-dealers eligible to become primary dealers in an effort to augment operational capacity. These changes are summarized in panel 2. First, we would reduce the Federal Reserve's minimum net regulatory capital, or NRC, threshold for broker-dealers to \$50 million from the current \$150 million level. Second, we would increase the minimum Tier 1 capital threshold to \$1 billion to better align and scale it for the new NRC threshold. Third, we would establish a 0.25 percent Treasury market share threshold to accompany the new minimum capital thresholds.

I would note that reducing the minimum NRC threshold to \$50 million is likely to have a fairly modest effect on the number of primary dealers in the near term, as shown in panel 3. Our impact analysis was based on an examination of the 168 broker-dealers that are registered with the SEC, had NRC in excess of \$50 million as of year-end 2014, and are not already primary dealers. Of those 168, only 25 appeared to act as market makers in Treasury securities. And 13 of these 25 firms already had NRC in excess of the current \$150 million threshold, leaving only 12 additional dealers that would become eligible to apply at the new \$50 million NRC threshold.

I would also like to clarify why we are proposing to increase the minimum Tier 1 capital threshold for banking organizations with subsidiaries or branches as primary dealers to \$1 billion from the current level of \$150 million as we reduce the minimum NRC threshold. While NRC is a net measure of capital at the broker-dealer subsidiary level, Tier 1 is a measure of capital supporting all operations of a holding company; the two measures are not equivalent. In trying to ascertain the level of Tier 1 capital that is analogous to NRC, we looked at the Tier 1 and NRC levels of current primary dealers and found that they differ widely with respect to the scale and scope of businesses their Tier 1 capital supports. In the absence of a clear relationship between NRC and Tier 1 capital, the staff judged that \$1 billion was a reasonable complement to the new NRC threshold proposed. Like the NRC threshold, the Tier 1 threshold is a gating mechanism rather than a mitigant of counterparty credit risk.

Finally, we plan to establish a 0.25 percent Treasury market share threshold for primary dealers in order to better gauge new applicants' ability to meet our transaction needs. As shown in panel 4, Treasury market share has in the past been used as a gauge of primary dealer capabilities. You may recall that between 2013 and 2015, the Desk conducted two yearlong pilot programs with small firms, first as participants in our Treasury purchase operations and then as participants in our MBS purchase operations. Our experiences with these pilots suggest that having an explicit, quantifiable criterion like market share may become more important as we consider applications from smaller firms. We selected the 0.25 percent threshold on the basis of Treasury market share data received from a number of primary dealer applicants and Treasury pilot applicants over the 2010–14 period; these data are summarized in panel 5.

Expanding the pool of applicants to some smaller firms will require a few changes to our processes for monitoring counterparty credit risk. Currently, most primary dealers are affiliated with or are branches of publicly traded banks or other publicly traded companies, and FRBNY has access to a range of market-based and supervisory or regulatory information to use in monitoring them. The others are affiliated with companies that issue debt in the capital markets and are thus subject to SEC filing requirements and rating agency analysis that FRBNY uses in its monitoring process. Because firms with NRC below \$150 million are unlikely to have either of these characteristics, much of the information on which FRBNY currently relies will not be available in the case of these firms. FRBNY will develop an equivalent monitoring process that is appropriate for these firms before taking any new applicants on board.

The staff would appreciate any feedback, either now or in the coming weeks, that you may have on the policy materials. If the Committee is generally supportive of the approach, we plan to publish the documents on November 9 after incorporating any comments. Thank you, Madam Chair. That concludes our prepared remarks. We'd be happy to respond to your questions.

CHAIR YELLEN. Any questions for the presenters? President George.

MS. GEORGE. I had a question for Lorie on the reinvestment purchases. At one point, the expectations were that we would cease reinvestments when we'd get to a federal funds rate of 1 to 1¼ percent. Are those expectations of when people expect us to cease reinvestments moving at all relative to expectations for the funds rate, and how would they compare with our own?

MS. LOGAN. The reinvestment expectations in the policy survey are adjusting to changes in expectations for the rate level, so they've been consistently moving out as expectations of the path of policy have moved out. That relationship has stayed fairly stable.

MS. GEORGE. So with our projections coming out, they are likely to change.

MR. POTTER. So 1¾ is the median estimate of where the federal funds rate will be.

MS. GEORGE. Thank you.

CHAIR YELLEN. Any further questions? We do not need a vote on the new counterparty policy, but I would like to see whether there is general support for the Desk to go ahead with the plans as we've discussed.

MR. FISCHER. Yes.

MR. DUDLEY. Yes.

CHAIR YELLEN. Okay. You have general support. And I do need a vote to ratify domestic open market operations.

VICE CHAIRMAN DUDLEY. So moved.

CHAIR YELLEN. Thank you. Without objection. We're ready to move along to the economic and financial briefings, and David Wilcox is going to start us off.

MR. WILCOX.⁴ Thank you, Madam Chair. I will be referring to the packet titled "The U.S. Outlook." The staff economic projection is not much revised since our assessment in either June, which is the last time you provided forecasts for the

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

SEP, or compared with July, so I'll summarize the current economic situation with greater brevity than usual and will then make the briefing longer than usual overall by reviewing in some detail the comparative labor market experience of blacks, Hispanics, and whites over the past couple of decades.

Real GDP growth during the first half of this year is currently estimated to have been noticeably weaker than we anticipated in July, but a shortfall in inventory investment below our expectations more than accounted for the downside surprise. The growth of private domestic final purchases during the first half of the year was, according to current estimates, as strong as we had expected. As shown in panel 1, the available indicators as seen through the lens of the various nowcasting models in operation around the System suggest that real GDP growth has rebounded in the current quarter, a view with which we concur. Indeed, as you will see from the path of the black line, our judgmental assessment is that the rebound has been a little stronger than we anticipated at the time of the July meeting, even taking on board last Thursday's slightly disappointing retail sales release. Our forecast of real GDP growth over the year as a whole is now unrevised from the July Tealbook.

As you can see from panel 2, our September Tealbook forecast of real GDP growth over the medium term is just a shade weaker than the one we had in July, largely because we trimmed our assumption for potential GDP growth and let that show through to actual GDP. Overall, the picture remains one of steady growth, modestly faster than the growth of potential GDP and slowing slightly toward the end of the projection period as the normalization of monetary policy takes firmer hold and discretionary fiscal policy actions add a little less to the growth of demand.

As shown in panel 3, we estimate that the output gap has essentially closed—an assessment very much in line with the range of four models that we track and that produce their own independent estimates of an output gap. Over the medium term, we expect that output will move above its potential, with the differential reaching about 1½ percent of potential GDP by the end of 2018. As a result, the unemployment rate, shown to the right, continues to drift down, reaching a low of 4¼ percent in 2019.

As shown in the bottom two panels, the outlook for inflation is also essentially unrevised. The most noteworthy development here since the July meeting is that we've received some hard data corroborating our earlier expectation that core inflation would step down in the second half of the year. We had expected a combination of residual seasonality and the absence of elevated readings in a few idiosyncratic categories to bring core quarterly inflation down into the neighborhood of 1¼ to 1½ percent in the second half of this year, and that reduction seems to be in train—an assessment that survived the publication late last week of the PPI and CPI for August.

As shown in panel 7 on the next page, our forecast for top-line PCE inflation this year is unrevised, on net, since December of last year when you first raised the funds rate 25 basis points, reflecting a fortuitous counterbalancing of weaker-than-expected

food prices against stronger-than-expected core inflation. As shown to the right, we parse the changes in core inflation into the yellow box for “other” price inflation in 2016. Inflation mavens will recall that there were some price spikes early in the year in categories such as jewelry, apparel, and nonmarket prices—categories that historically have not had much signal value for future inflation. Thus far, the call not to carry any of those higher readings forward into the second half appears to have been the right one. In 2017 and 2018, a variety of very small factors have caused us to trim a cumulative 0.1 percentage point per year out of our projection. The most easily identifiable of these factors is that, back in March, we took down our assumption for the underlying pace of inflation this year 5 basis points.

I will now turn to reviewing the comparative labor market outcomes of blacks or African Americans, Hispanics or Latinos, and whites over the past couple of decades. A high-level summary is that overall labor market conditions have continued to improve over the past several years, and that this improvement has generally been broadly shared across major racial and ethnic groups. In relative terms, conditions on at least some dimensions have been improving more rapidly of late for African Americans and Hispanics than for whites. However, in absolute terms, labor market conditions remain notably worse for African Americans and Hispanics.

The following three panels illustrate the overall improvement in labor market conditions. As shown by the black dashed line in panel 9, the national average U-3 unemployment rate has continued to trend down in recent years, and, as shown by the other lines, this is true for blacks and Hispanics as well as for whites.

As shown in panel 10, the broader U-6 measure has also generally continued to trend downward, though progress on this measure appears to have been more uneven in recent months for blacks and Hispanics. Panel 11 shows employment-to-population ratios for these same groups, focusing here on persons between the ages of 25 and 54 in order to limit the influence of the marked differences in age structure across racial and ethnic groups. The EPOPs for all groups have trended up over the past several years, with the EPOP for blacks or African Americans making especially notable gains after having suffered especially severely during the Great Recession and having lagged the recovery experienced by other groups.

Thus, the labor market experience of Hispanics and African Americans has improved considerably during the past few years. That said, it remains notably worse in many respects than the labor market experience of whites. Starting with the most obvious fact to illustrate this point, the unemployment rates for blacks and Hispanics remain much higher than that for whites. For example, 8.7 percent, on average, for blacks over the 12 months ending in August, 5.9 percent for Hispanics, and 4.4 percent for whites. Moreover, panel 12 on your next page shows that, at every age, unemployment rates are higher for blacks and Hispanics than they are for whites.

Similarly, panel 13 shows that, with only one exception, unemployment rates for blacks and Hispanics at every level of educational attainment are higher than they are for whites of the same educational attainment. An especially sobering take on the

relative experience of blacks or African Americans compared with whites is revealed by comparing unemployment rates across levels of educational attainment.

Remaining in panel 13, for example, comparing the blue bar in the rightmost cluster with the green bar just to the left, we see that during the 12 months ending in August, blacks with a bachelor's degree or more experienced unemployment at the same 4.2 percent rate as whites with only some college or an associate's degree. Moving to the left, blacks with some college education but not a bachelor's degree experienced a higher unemployment rate than did whites with only a high school degree. And blacks with a high school degree experienced more unemployment than did white high school dropouts.

Another aspect of the labor market reality of blacks and Hispanics over the past two decades has been that they have tended to experience a "high beta" version of the unemployment variation of whites. Panel 14 on the next page provides a scatter plot of the unemployment rate for blacks, plotted against the y-axis, against the unemployment rate for whites, plotted against the x-axis. The red dots show unemployment rates from 1994 through 2007, while the blue dots show rates since the beginning of 2011. As you can see from the red trend line for the early dots, a 1 percentage point increase in the unemployment rate for whites before the Great Recession was associated with a 1.8 percentage point increase in the rate for blacks. The bad news is that nothing has changed more recently: As shown by the trend line for the blue dots, exactly the same relationship holds in the more recent period. The good news, to the extent there is any here, is that this high-beta relationship implies that unemployment rates have been coming down more rapidly for blacks lately than for whites.

Panel 15 provides a similar comparison of Hispanic unemployment rates to white unemployment rates. In this case, and viewed through this simple lens without controlling for other workforce characteristics, there seems to have been some convergence in unemployment experience from the 1990s compared with more recently. As denoted by the red dots, the multiplier for the Hispanic rate during the 1990s was more than 2, and the level of rates was consistently higher. Since the turn of the century, the level of the relationship seems to have rotated downward, but still, the multiplier for Hispanics during the past decade and a half has run in the neighborhood of about 1½.

An obvious question is what the underlying cause of this high-beta experience of blacks and Hispanics might be. One prominent author has suggested that much of the high-beta experience of blacks and Hispanics can be attributed to the disproportionate employment of blacks and Hispanics in the highly cyclical manufacturing and construction industries. Another prominent author has attributed the phenomenon to discrimination. A third possibility is that it might reflect different age structures or levels of educational attainment across racial and ethnic groups.

To shed light on the plausibility of differing educational attainments as an explanation for the high-beta experience of blacks and Hispanics, I stratified the earlier scatter plots by level of educational attainment. The four panels on your next

page show the results for blacks. For example, the panel in the upper left compares the unemployment experience of blacks with less than a high school degree with that of whites with the same educational attainment. As you can see, the multiplier in this educational group has averaged 1.7. The remaining panels perform the same exercise for successively higher levels of attainment. The counterintuitive result here is that there is no attenuation of the high-beta experience as education goes up: Even for blacks with a college degree, if the unemployment rate of their white counterparts goes up 1 percentage point, their own unemployment rate goes up 1.8 percentage points on average. The data point furthest to the northeast in this panel—that is, the lower-right panel—is for 2011: In that year, the unemployment rate for whites with a BA or more peaked at 3.9 percent, while the rate for their black counterparts hit 7.1 percent.

Your next page presents the analogous results for Hispanics, limiting the sample to 2002 and forward. In this case, the results differ much more across levels of educational attainment. In particular, there's no significant difference between the cyclicality of unemployment of Hispanics and whites who have less than a high school degree (the top-left panel) and a notably smaller difference in the case of those who have a high school degree (shown in the top right). On the other hand, the unemployment beta for Hispanics who have some college education (in the bottom left) is about 1.3, and the beta for those having a bachelor's degree or more (in the bottom right) is actually a little higher than in the aggregate.

This investigation is far from providing a complete answer to the question of why the black and Hispanic unemployment rates historically have behaved like an amplified version of the white unemployment rate. But it suggests to me that even if disproportionate employment in manufacturing and construction is part of the explanation for the high-beta experience of blacks and Hispanics, more may be going on. In particular, I am struck by the fact that, at least in the case of African Americans, the high-beta behavior manifests at all levels of educational attainment, including among those with a college degree or more. But, for sure, more work needs to be done here.

Before closing, let me briefly note that blacks and Hispanics have worse labor market experiences in other dimensions as well, aside from unemployment. To give two quick illustrations: As shown in panel 18, blacks and Hispanics report experiencing involuntary part-time employment for economic reasons at considerably higher rates than do whites. And, as shown in panel 19, blacks experience longer spells of unemployment than do whites. You can see this latter result by noting that relatively less of black unemployment relative to white unemployment is accounted for in short-duration spells, to the left of the graph, whereas relatively more of black unemployment is taken up in long-duration spells, to the right of the graph. And I haven't even touched on the issue of wage equity across racial and ethnic groups.

The bottom line that I take away is this: Much progress has been made in recent years in overall labor market conditions. Moreover, in relative terms, blacks and Hispanics have gained disproportionately during the past few years. However, in

absolute terms, the differences across groups remain large and disturbing. Much more work remains to be done about why this is so and what can be done about it. Paul will carry on with our briefing.

MR. WOOD.⁵ Thank you. This has been a relatively quiet round for international developments. Global financial and commodity market settings have not moved much since your previous meeting, and, similarly, the outlook for foreign growth and inflation is little changed from what we presented in the July Tealbook. Moreover, the hubbub over Brexit has died down for now, with financial markets continuing to recover from the initial declines and economic data showing less near-term effect on the U.K. and euro-area economies than originally feared. In the July Tealbook, we had based our estimates of Brexit effects on measures of economic uncertainty (panel 1) and related financial stress. Although those measures initially spiked, they have come down considerably. However, we still expect negotiations between U.K. and EU authorities over their future trade relationship will be a source of uncertainty that will weigh on both economies during the forecast period. In addition, we expect some drag on U.K. economic growth from the long-run effects of reduced trade and integration with the rest of Europe.

For the overall foreign economy, the second-quarter pothole in GDP growth was even larger than expected, mostly because temporary factors weighed heavily on the output of our North American trading partners. In Canada, oil production was disrupted by wildfires in May but started to recover by June. In Mexico, economic growth suffered in part from weakness in U.S. industrial production. However, foreign growth excluding Mexico and Canada (the red line in panel 2) held up better in the second quarter. With those two countries bouncing back, total foreign growth should recover to around 2½ percent in the second half and stay near that rate through the forecast period.

As shown in panel 3, in most advanced foreign economies, inflation on a four-quarter basis remains near zero, partly because of past declines in energy prices. With oil prices stabilizing, we see a rebound in headline inflation over the next year, but even by the end of 2019 we project inflation at only 1½ percent in the euro area and 1 percent in Japan. The sharp sterling depreciation following the Brexit vote is expected to push U.K. inflation above 2 percent next year, but the Bank of England has said it will “look through” that rise as it counteracts some of the real effects of the Brexit shock.

As Simon discussed, the Bank of England provided further stimulus in early August. In contrast, the ECB held off on easing at its recent meeting, and the Bank of Japan announced only modest further stimulus in late July, even though inflation in those economies remains well below target and long-term inflation compensation (panel 4) is low. In the euro area, it has declined in recent years from around 2½ percent to less than 1½ percent. Japanese inflation compensation was boosted by

⁵ The materials used by Mr. Wood are appended to this transcript (appendix 5).

Abenomics in 2013, rising as yen depreciation spurred actual inflation, but it has fallen back to near zero.

Amid questions on why its stimulus has failed to durably raise inflation, the Bank of Japan is undertaking a “comprehensive assessment” of its unconventional policies to be released tonight following its policy meeting. More generally, foreign central banks are grappling with the effectiveness of further stimulus and what form it should take. The asset purchases and negative policy rates pursued by the ECB and Bank of Japan have provided stimulus, including through reduced domestic borrowing rates. As seen in panel 5, since the ECB took its deposit rate negative in mid-2014 and began large-scale sovereign bond purchases in early 2015, interest rates on loans to nonfinancial corporations have declined significantly in the core euro-area economies and even more sharply in the periphery.

Yield curves in the euro area and Japan (panel 6) also have shifted down and flattened. However, with both short and longer-term interest rates so low, there are questions of whether pushing them further down will encourage additional borrowing and spending or provide further stimulus through other channels. In addition, flatter yield curves tend to hurt the profitability of banks, which generally borrow short and lend long, and thus could reduce the transmission of monetary stimulus through the bank lending channel, which is important in both of those economies.

Concerns about the bank lending channel arise even at low positive interest rates, prompting the introduction of programs such as the Bank of England’s Term Funding Scheme. But those concerns intensify as policy rates turn negative, squeezing net interest margins for banks (panel 1 of your next exhibit) if they reduce lending rates but are unable to pass on negative rates to retail depositors. These potential side effects are leading foreign policymakers to worry that the effective lower bound on the policy rate may not be determined by substitution into cash but by concerns that further rate cuts could be counterproductive. ECB officials have stressed that lower interest rates also have some positives for banks, including capital gains on bond portfolios and lower charge-offs as a result of improvements in credit quality, and they point to increased bank lending in recent years. Nonetheless, as shown by the blue line in panel 2, we believe the ECB is inclined to pursue other types of stimulus and will leave its deposit rate unchanged at negative 0.4 percent for most of the forecast period. By the same token, Bank of Japan Governor Kuroda recently acknowledged that negative policy rates can hurt banks’ margins while arguing that rate cuts still have greater benefits than costs. We expect that, in its comprehensive assessment, the Bank of Japan will conclude that its negative rate policy is effective, opening the possibility of further rate cuts. However, assuming the Japanese economy achieves the tepid growth and meager rise in inflation projected in our baseline, we currently anticipate the Bank of Japan will not actually reduce the policy rate further.

Perhaps responding to the criticism that Bank of Japan and ECB policies have received from the banking community, Bank of England Governor Mark Carney has made clear recently he is no fan of negative interest rates, indicating that he sees the

effective lower bound as “a positive number close to zero.” We expect the Bank of England to keep its policy rate at its current low level as the U.K. economy adjusts to life outside the EU. But Carney’s view is not universally held in central banking circles, and some draw a different conclusion from the recent experience with negative rates. For instance, this past December, the Bank of Canada reviewed its policy tools and suggested its policy rate could go as low as negative 0.5 percent, if needed.

In addition to low rates, all of these central banks except the Bank of Canada have ongoing asset purchase programs, primarily buying sovereign bonds. Recent discussions of ECB and Bank of Japan policies have often focused on whether and how to expand these purchases. Regarding “whether,” policymakers in both institutions have been surprised by the extent to which long yields have fallen and, as I noted earlier, are concerned about their effects on bank profits. Regarding “how,” both institutions are facing issues and constraints as their asset holdings grow. The ECB’s constraints are largely self-imposed, as its sovereign debt holdings are still only a small share of outstanding euro-area sovereign debt. In particular, the ECB limits its holdings of any bond and any issuer, its purchases are allocated across countries by its capital key, and it buys only bonds that yield more than its deposit rate. These constraints interact with each other and become more binding when bond yields decline. For instance, German bonds have to make up a large share of its purchases (about 25 percent), but many German bonds yield less than the deposit rate and thus are not eligible. We expect the ECB to announce, most likely in December, an extension of its purchases to the end of 2017 from its current commitment of March 2017. To do so, it will have to relax some of those constraints, and it has tasked committees with evaluating the options.

The BOJ faces greater concerns over running out of room to buy more sovereign bonds. As shown in panel 3, it currently holds more than one-third of outstanding JGBs. Moreover, Japanese life insurance companies and pension funds have long-term yen-denominated liabilities and thus are reluctant to sell their JGBs even at elevated prices. Of course, large fiscal deficits are also increasing the supply of JGBs, and the Abe government has announced renewed fiscal stimulus. We expect the BOJ to maintain its current pace of JGB purchases for the next several years but not to increase that pace.

Given the issues associated with further sovereign bond buying, central banks are moving into purchases of riskier, private-sector assets. In July, the Bank of Japan increased its rate of ETF purchases, and we think it likely will increase its purchases of real estate investment trusts and corporate bonds, both of which it currently buys in relatively small amounts. The ECB began in June a program to buy corporate bonds, and corporate bond spreads (panel 4) have declined significantly since the announcement. In August, the Bank of England also announced corporate bond purchases as part of its stimulus program.

In sum, we believe that AFE central banks still have room to provide further stimulus, but further action comes with growing complications and side effects that

need to be managed. Hence, central banks are resorting to a widening array of instruments, and they face growing challenges of communicating simultaneously about not only the stance of monetary policy, but also its shifting composition.

Regardless of whether AFE central banks add to their stimulus in the years to come, their policies are generally expected to remain highly accommodative. As discussed in Carol Bertaut's pre-FOMC briefing, this expectation is spurring capital flows to emerging markets and boosting EME asset prices as well as reducing high-yield credit spreads in advanced economies. However, as evidenced by the backup in long yields in recent weeks, this buoyancy is fragile and could be undermined by signs that accommodation is being removed more quickly than anticipated. In this environment, the risks associated with FOMC tightening may be greater than usual, especially with regard to the dollar. Accordingly, we have chosen to increase the sensitivity of our dollar forecast to policy rate surprises, a move supported by the experience of the past couple of years. We now assume the dollar will increase by 3 percent against all floating currencies for each 100 basis points of policy rate surprise, compared with about 2 $\frac{1}{4}$ percent previously.

In addition, we reassessed our assumption about the path of the Chinese renminbi (panel 5) in light of the Chinese government's apparent willingness to allow further gradual declines in its currency. We now assume that the dollar will appreciate against the renminbi through the end of the forecast period. Previously, we had assumed the dollar would depreciate starting in the second half of 2017. All told, as shown in panel 6, we now project a steeper path of dollar appreciation over the forecast period. And, as illustrated by an alternative scenario in the Tealbook, we view the risks to our dollar outlook as toward the upside. Beth Klee will continue our presentation.

MS. KLEE.⁶ I'll be referring to the packet labeled "Material for Briefing on the Summary of Economic Projections." To summarize, while your near- and medium-term economic projections are quite similar to those you submitted in June, more than half of you reduced your estimates of longer-run real GDP growth. In addition, most of you revised down your assessments of the appropriate level of the federal funds rate through 2018 and over the longer run.

Exhibit 1 summarizes your economic projections, which are conditional on your individual assessments of appropriate monetary policy. As shown in the top panel, the median of your projections of real GDP growth this year is 1.8 percent. Most of you project that economic growth will pick up a bit next year and run at or slightly above your estimates of its longer-run rate in 2017 and 2018, and a majority of you expect real GDP growth to be at its longer-run trend in 2019. One participant did not submit longer-run projections of the percentage change in real GDP, the unemployment rate, or the federal funds rate. That fact will be noted in the SEP material that will be released to the public.

⁶ The materials used by Ms. Klee are appended to this transcript (appendix 6).

As shown in the second panel, the median of your projections of the unemployment rate by the end of this year is 4.8 percent, equal to the median of its longer-run normal level. A substantial majority of you see the unemployment rate falling to or below its longer-run normal level over the next two years. In addition, many of you see the unemployment rate edging up to or toward its longer-run level in 2019. As can be seen in the third panel, the median of your projections of headline PCE inflation moves up from 1.3 percent this year to 1.9 percent in 2017 and 2 percent in 2018 and 2019, when all of you project that inflation will be equal to or within a couple tenths of a percentage point of the Committee's objective. Turning to the bottom panel, the medians of your projections of core inflation also increase gradually over the next three years.

Exhibit 2 compares your current projections with those in the June Summary of Economic Projections and with the September and June Tealbooks. As indicated in the top panel, the median of your forecasts of real GDP growth in 2016 has fallen since June; many of you attributed the downward revision to weaker-than-expected incoming data for the first half of this year. The median values of your projections of real GDP growth in 2017 and 2018 are unchanged from June at 2 percent, a pace slightly above the median projection of its longer-run growth rate, which was revised down to 1.8 percent. As shown in the second, third, and fourth panels, the medians of your projections of the unemployment rate and of total and core PCE inflation are little changed from June. Compared with the latest Tealbook, the median of your projections of real GDP growth is a bit higher this year, moderately lower in 2017, and about in line for 2018 and beyond. The median of your projections of the unemployment rate and for headline and core inflation are generally somewhat higher than those presented in the Tealbook.

Exhibit 3 provides an overview of your assessments of the appropriate path of the federal funds rate. The median of your projections, indicated by the red horizontal lines in the top panel, is consistent with one 25 basis point rate hike by the end of this year. Thereafter, the medians of your projections are 1.1 percent at the end of 2017, 1.9 percent at the end of 2018, and 2.6 percent at the end of 2019. Compared with the June projections, which are shown in the bottom panel, 12 of you revised down the federal funds rate you expect to prevail at the end of this year; the median of your projections is now 25 basis points lower. All but a couple of you revised down your funds rate forecast over the next two years, and, since June, many of you also lowered your assessment of the appropriate pace of rate hikes in 2017. The median federal funds rate projection moves up 50 basis points from the end of 2016 to the end of 2017, compared with a 75 basis point increase expected in June, and by another 75 basis points in 2018. Many of you expressed a view that increases in the federal funds rate over the next several years will need to be gradual in light of a short-term neutral real interest rate that is currently low and will only rise slowly—a phenomenon that a number of you attributed to persistently low productivity growth and other factors. In addition, some of you cited risk-management considerations, due to the proximity of the effective lower bound, as a reason for taking a cautious approach to normalization.

With respect to the longer-run federal funds rate, 12 of you moved down your projections by at least 25 basis points, and the median now stands at 2½ percent, compared with 3 percent in June. In making the downward revisions, participants noted a number of factors, including the persistence of unfavorable global demographic dynamics; weak productivity growth; and low longer-term yields stemming from, for example, a weak outlook for economic growth abroad. As in June, almost all of you anticipate that the appropriate level of the funds rate at the end of 2018 will remain below your individual judgments of its longer-run level. Most of you expect this difference to narrow considerably by the end of 2019.

As shown by the red diamonds in exhibit 3, the median federal funds rate that a non-inertial Taylor (1999) rule prescribes for the end of this year, conditional on your individual projections of core inflation, the unemployment rate gap, and the longer-run federal funds rate, has shifted down since June, reflecting downward revisions to projected inflation and the longer-run federal funds rate as well as upward revisions to the unemployment rate. The lower Taylor rule prescriptions for 2017 and 2018 primarily reflect the downward revisions to the longer-run federal funds rate. All of you continue to project levels of the federal funds rate in 2016, 2017, and 2018 that are well below the prescriptions using your individual economic outlooks as variables in the policy rule, and only two of you project the federal funds rate in 2019 to be equal to that suggested by the rule.

Exhibit 4 compares the medians of your current projections with those from September 2015. As illustrated in the top panel, the median projections of real GDP growth in 2016 and 2017 are a bit lower than a year ago. As shown in the second panel, the median projection of the unemployment rate is modestly lower than it was in September 2015. As depicted in the third panel, the median projection of inflation in 2016 has been revised down, generally reflecting declines in energy prices and continued strength in the dollar that were not expected a year ago.

While the median projections of economic activity, employment, and inflation are little changed from the September 2015 SEP, the path of the federal funds rate that you anticipate will generate these outcomes is much lower in the current projection. In September 2015, the median federal funds rate at year-end 2016 was 1.4 percent, compared with 0.6 percent now. This gap widens through 2018. Moreover, over the past year, the median of your longer-run federal funds rate declined from 3.5 percent to 2.9 percent.

Exhibit 5 shows your assessments of the uncertainty and risks surrounding your economic projections. As shown in the figures to the left, you continue to view the uncertainty attached to your projections as being broadly similar to the average of the past 20 years. As in June, the majority of you also see the risks to your projections of GDP growth and the unemployment rate as being broadly balanced, as illustrated in the top two figures to the right, and fewer of you see the risks to economic growth as weighted to the downside or view the risks to unemployment as weighted to the upside than in June. Moving to the two bottom-right figures, a couple more of you now see the risks to your inflation projections as broadly balanced rather than as tilted

to the downside; those who revised their view pointed to an easing of concerns about global financial developments or inflation expectations remaining anchored at policy-consistent levels. Those who continue to judge that the risks to inflation are weighted to the downside cited the risks associated with encountering negative economic shocks at the effective lower bound as well as recent readings on survey-based measures of inflation expectations and financial market measures of inflation compensation, among other reasons. Thank you. That concludes our prepared remarks, and we would be happy to respond to your questions.

CHAIR YELLEN. Questions for any of the presenters are welcome. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. This is for David Wilcox. I thought the discussion and the decomposition on unemployment experiences by different racial groups was extremely interesting. It seems very important as we try to figure out where we are with regard to remaining slack and where that remaining slack may be, although it's a little unclear as to why there are these very differential experiences.

As I look at it, I thought the decomposition by education was very striking, both in terms of the variability and in terms of the levels. And, as you were talking, it seems a little harder superficially to associate that kind of a pattern with sectoral differences as opposed to potentially alternative explanations like discrimination. But I wondered whether you had any further thoughts on what this is telling you so far or what additional analysis you might think about doing to try to get further insights into that.

MR. WILCOX. I think it's a really important question to be investigated. As I said in the course of the briefing itself, I don't regard this work as having laid to rest the question. I'm a little skeptical that differential exposure to cyclical industries—in particular, manufacturing and construction—can account for the high-beta experience of blacks and Hispanics. My view on that is informed importantly by the results, perhaps most especially those in the lower-right panel in exhibit 16, which show that even for African Americans with a bachelor's degree or more, this multiplier of 1.8 pertains relative to whites. I haven't looked at the industry exposure of African

Americans and whites with a bachelor's degree or more, but I'm a little skeptical that the exposure of African Americans with a bachelor's or more to construction and to manufacturing could be significant enough to account for that. Industry exposure itself may account for some of this behavior. I am skeptical that it provides a complete explanation.

There are marked differences in the age structure of these racial and ethnic groups. For example, relatively speaking, the Hispanic population has far fewer elderly than the white population. So another avenue for investigation is something akin to what I've done that would investigate the potential role of differential age structure and account for this sort of situation. But I think there's a lot of work to be done not only here inside the Federal Reserve, but by outside researchers as well.

CHAIR YELLEN. President Williams.

MR. WILLIAMS. I thought that the box in Tealbook A, "Alternative View: A Return to the Greenspan Conundrum," was really interesting. I want to reiterate something I think I've said many times over the years—how much I appreciate the alternative view boxes. I know that you're not supporting the particular views here, but I think they are really valuable, at least for us—2,500 miles away we sit and discuss these, and it forces us to think through things in a very constructive way. So, again, I view this as a very positive exercise.

However, that one exercise did get me looking at the alternative scenario that was related to that, which was, again, named "A Return to the Greenspan Conundrum." One intriguing result of that alternative scenario was that the unemployment rate comes down to 3¼ percent in late 2019. I know that throughout my lifetime we've never had a 3¼ percent unemployment rate. I actually don't think we've had one, probably, since World War II.

MR. POTTER. You're not that young. [Laughter]

MR. WILLIAMS. Okay. Now, I don't think we've had an unemployment rate that low.

CHAIR YELLEN. No, I don't think so. It got down to about 3.5, I think, in 1999?

MR. WILLIAMS. Yes. 3.9.

CHAIR YELLEN. It has not gone to 3.

MR. WILLIAMS. No.

CHAIR YELLEN. But what about in the '60s, at the end of the '60s?

MR. WILLIAMS. It didn't go to 3 $\frac{1}{4}$ percent in the '60s.

MR. WILCOX. No.

MR. WILLIAMS. Okay. So the unemployment rate has not gone down to 3 $\frac{1}{4}$ percent in my lifetime. I'll stick with that. [Laughter] The question I have is—I think this simulation was done in the FRB/US model—if you thought through that scenario of a really strong economy, in which monetary policy, for whatever reason, is not taming output growth, do you really think the unemployment rate would go down to close to 3 percent? Or do you think that something else would give in the model? Are we pushing this model outside of the historical norms far enough that maybe labor force participation would pick up, maybe wages would pick up, or something? How do you think about scenarios of an essentially linear model when you're taking it well outside a historical norm that was estimated?

MR. WILCOX. Really tough question. I don't have a ready, fully formed answer for you. I'll answer with a partial response, which is that I suspect that a feature of a lot of these alternative scenarios in which we're stressing one aspect of the economy would entail other aspects. So the all-else-being-equal assumption would fail for sure. Now, where the rivets would pop off, I think, is what you're asking, and I don't know the answer to that. If I had thought 3.2 percent unemployment was absolutely outlandish, I wouldn't have shown the results

in the scenario. I do think it begins to push the boundaries of what we're likely to see, but, by design, this is a pretty extreme scenario. I thought it was appropriate to show that kind of an outcome even though it pushes pretty far into the tail of the probability distribution. I don't have a ready answer for how things might evolve differently from the way that the model portrays them.

MR. WILLIAMS. The question I go to is, if we look at episodes in which unemployment went very low or in which we were pushing the economy hard, did we actually see something different happening? Do we get off the linear relationships? Do wages accelerate more quickly, or does something else happen differently in those extreme scenarios? I'm thinking about the stuff that I remember Mike Kiley doing years ago, looking at how relationships work when you're at the ends of the distribution.

MR. WILCOX. As it happens, I think Mike is here.

MR. WILLIAMS. He's going to deny my referencing his work.

MR. WILCOX. Mike, do you have anything to add to this?

MR. KILEY. I think, David, the only thing that I can add is that if you look at the picture—although I don't have it in front of me—that President Williams is referring to, you can see that the confidence intervals of the unemployment rates are very low. And the folks that work on the FRB/US model are quite worried about exactly the point that President Williams is raising, that historical experience doesn't have these things. What are the relevant nonlinearities? Are they on participation? Would they be in wages? But I just don't think we have historical episodes. The one that is in our lifetime, the one in the late 1990s, was accompanied by very favorable other developments regarding productivity, et cetera. So wage

pressures or price pressures or other things weren't particularly apparent. We might imagine they might arise, but that experiment didn't particularly shed light.

MR. WILLIAMS. Thank you.

VICE CHAIRMAN DUDLEY. One comment on a point that President Williams raised. A rate of 3.2 percent today would be very different than a rate of 3.2 percent in the late '60s because the demographics of the population are quite different. So while I basically take your point, I think you'd have to adjust for the changes in the demographic structure of the economy.

I want to come back to the issue of the black and Hispanic unemployment. I think there's no question that discrimination is a factor because we have a lot of evidence on things like long-term unemployment that hurts people in terms of their ability to be hired. So while we don't know the proportion, I think discrimination definitely plays a role.

MR. WILCOX. I'm inclined to agree, and this evidence pushes me further in that direction. Another body of research that corroborates that view is the matched résumé submitting, showing that when identical résumés are sent to employers but one of the names has a stereotypical ethnic association, and callback rates differ dramatically between the two. So that, in my mind, is another piece of corroborating evidence.

VICE CHAIRMAN DUDLEY. I just wanted to make it clear that it's not up in the air. There's actually evidence.

CHAIR YELLEN. Right. There is evidence. President Evans.

MR. EVANS. Well, I agree with President Williams that extrapolations like this do make you wonder about what could go wrong, and I think there are other things that could happen, right? In a simulation like this, it could be that the matching technology for employment is better so that, in fact, labor market outcomes are more efficient and you get lower

unemployment. To the extent that there's tension, I agree it would be manifest either in wages or maybe inflation expectations. And in this scenario inflation expectations are undoubtedly anchored, but if there was a tension, I would expect that to go wrong. So that's the element of the model or the data I'd be looking for, in order to try to weigh in on that.

CHAIR YELLEN. President Lockhart.

MR. LOCKHART. We're going back and forth between President Williams's comments and the earlier comments on further study. I'd also add that gender cuts, I think, could tell us a great deal. And just yesterday in Atlanta, I attended a meeting that talked about the judicial system and incarceration rates and the effect of a record of some kind on employment. So this is a multilayered thing. If we're going to tackle it, I think we have to tackle it in a very thorough way, and that's why I mentioned the gender cuts.

MR. WILCOX. I agree completely, but despairing of being able to come to the Committee with a complete answer on all dimensions, I thought I'd come to the Committee with some evidence that I thought was pretty interesting, even if only partial.

The incarceration rates are just astonishing—not only the stock of individuals who are currently incarcerated, but those who have a previous record of incarceration. And that's bound to be a significant influence in what's going on.

With regard to gender, I absolutely agree that that's another important dimension to be explored. But, as I say, I wanted to come before my own retirement [laughter] with some kind of discussion to the Committee. Thank you.

CHAIR YELLEN. Further comments or questions? President Bullard.

MR. BULLARD. Thank you, Madam Chair. My question is on exhibit 2 in “The International Outlook,” panel 6, “Real Dollar Indexes.” We talked before about the reason we’re

projecting a stronger dollar is because we think we're going to surprise markets with our path of rate increases. So is that surprise the Taylor (1999) rule, or is it the SEP median?

MR. KAMIN. Well, the surprise is the difference between the staff assumption about the federal funds rate over the next three or four years.

MR. BULLARD. Which is Taylor (1999)?

MR. KAMIN. Which is Taylor (1999).

MR. BULLARD. Yes.

MR. KAMIN. I would just say, because the entire outlook for the U.S. and global economy is conditioned on that assumption, I wanted to make clear that it's a staff assumption about the future path of the federal funds rate, which is indeed based on Taylor (1999). It's the comparison of that and one measure of what the market expects, which is the OIS rate path. And it's that gap that represents the surprise because the markets, as represented by the OIS rates, expect a much shallower uplift in the federal funds rate than is embedded in the staff forecast.

MR. BULLARD. Would you say that this is becoming increasingly tenuous, to make this kind of assumption, because Taylor (1999) is getting further and further away from market expectations?

MR. KAMIN. Well, that's a question for my colleagues. [Laughter] The reason that we use that staff assumption about the path of the federal funds rate is so that our dollar forecast is exactly consistent with both the economic forecast and the conditioning assumption about monetary policy. Then that raises the question about what is the right conditioning assumption regarding the federal funds rate, and we have reviewed that, and I'll let one of my colleagues speak more on that.

MR. LAUBACH. In a tough spot. The one thing that I would simply note is that, as time progresses, the median expectations from the primary dealer survey, for example, are for a substantially flatter increase than what the Taylor rule applied to our economic forecast implies. So, by the end of 2019, I think you are looking at a gap on the order of about 1¼ percentage points.

MR. BULLARD. The assumption there is informing the whole outlook and sort of changing the whole context of what you're presenting to the Committee.

VICE CHAIRMAN DUDLEY. But aren't these really small effects? We're talking about, what, 3½ or 4 percent on the dollar?

MR. KAMIN. Yes. On the dollar, you can look at the picture on panel 6.

VICE CHAIRMAN DUDLEY. The uncertainty associated with that has got to be a lot greater.

MR. KAMIN. Yes, you can see that our real dollar goes up about 5 percent over the next three and a half years or so. The 5 percent is a non-negligible amount but, stretched over that long a period, it does not have very strong effects on U.S. economic growth. Now, in the Tealbook we have an alternative assumption of a 10 percent rise over a much shorter period, and that is, of course, very material. And, as Vice Chairman Dudley mentions, that uncertainty dwarfs the arguments you might have about the baseline path of the dollar.

MR. BULLARD. Well, the reason I bring this up is because it's particularly stark when you look at exchange rates because you would expect foreign exchange markets to already have encompassed assumptions about various central bank policies, and therefore you wouldn't be able to predict very well—and, in fact, you can't predict very well—what's going to happen to

exchange rates. But here we're saying we have some kind of information that the markets do not have, and then that's feeding into the entire forecast.

MR. KAMIN. That's exactly right. We do believe that the current configuration of exchange rates incorporates all information about the future that is expected both by markets and by us. In almost all areas of global economics that might influence the current exchange rate are information sets that we probably hold in common with the markets. So there's really one key area in which our views differ from the market, and that's the assumption about the future path of the federal funds rate. We also incorporate into our dollar forecast some differences in views about foreign central bank monetary policy, but they're not that material. It's mainly differences of views about U.S. monetary policy, about the federal funds rate, which in turn lead to expectations on our part that the market will be surprised. That is that one difference between our information sets and the markets' that we build into our forecast.

MR. BULLARD. Thank you.

CHAIR YELLEN. President George.

MS. GEORGE. Thank you, Madam Chair. My question is spawned by President Williams's question, only looking at the Tealbook. The Tealbook unemployment rate for 2019 of 4.2 percent, and long-run of 5—would there be historical experience to say what happens when you go from 4.2 to 5, just even in that range?

MR. WILCOX. There's not a lot. The excursions of the unemployment rate below the natural rate and then back up to the natural rate are pretty rare, and as I think Michael Kiley was referring to, one has to wonder whether at that point, with a rising unemployment rate, some nonlinear dynamics might take over and we might end up with something other than a smooth landing.

I think the record of the postwar period, in my view, is less dispositive on that point than it might first appear because many of the recessions in the postwar period were actually deliberatively induced by the Federal Reserve in order to wring inflation out of the system. This is what gave rise to the designation by Christina Romer and David Romer of the so-called “Romer dates” when they divined that the mind of the Committee had switched from one mode, which was promoting economic growth, to another mode, which was fighting inflation. So I think it’s less evident than it might seem on the surface that it’s impossible to accomplish a smooth landing of the kind that’s portrayed at the baseline projection, but there isn’t a long historical record to show that it can be done.

If I may, just ever so briefly, I’d like to come back to President Williams’s original comment about the alternative view. I’m aware that there’s been quite a lot of turnover on the Committee since that franchise was introduced, and I thought I might just place it a little bit into context. It’s the only place in the Tealbook in which I give individual staff members a byline, so they’re individually invested and identified in the production of that. The goal here is to ask staff members to make the case for an off-baseline possibility of consequence to you as policymakers. I’m asking them to act as lawyer advocates of a nonbaseline possibility. And my compact with them is that I will never ask them if they believe that their scenario is superior to the baseline scenario, because if I did that, I would be putting them in the position of saying that they think their judgment is better than mine. Now, I suspect that, frankly, many of them do believe that [laughter], but I never force them to come out and say that to my face. It’s good enough. And the way that I assess the quality of their work is, simply, “How well did you marshal the evidence on behalf of your case? Did you argue it well by appealing to history, foreign central bank experience, U.S. central bank experience, or other issues like that?” All I’m asking them to

do is, articulate a plausible possibility off baseline with the goal, I hope, of advancing the ability of all of you to think through various contingencies that you might confront.

CHAIR YELLEN. President Williams.

MR. WILLIAMS. Yes. I want to clarify something, again, for people who may not be following exactly what David said earlier. You said something about how you may have assumed that it's impossible to get a soft landing when you have the unemployment rate way below its natural rate. You didn't actually say what the fact was, and the fact is, it's never happened. So I just wanted everyone to be clear. That's the thing that you were talking about that you weren't convinced by, but I think that does get to President George's question. We have not seen an example in the postwar history in which the unemployment rate went up more than $\frac{1}{2}$ percentage point that wasn't associated with a recession. Now, the reasons for that, which you brought up in the debate about why that is the case, is definitely a live subject. But it is a striking—not even a “stylized” fact but a fact that this hasn't occurred in the past. So it is an area in which I worry that, when you have an unemployment rate that low, it is very hard, and historically hard—you have to go way back in history, I think—to find an example of that being successful. I don't know if that was a legal two-hander [laughter].

MR. EVANS. This is an important issue. I'm going to guess that in models you've written down, President Williams—I don't tabulate these things myself—if you simulate them, you probably have a lot of examples in which the unemployment rate has gone up in those simulations without it being what somebody might call a recession. And in view of the small number of recessions that we've had and some lack of luck during some of these—as we were talking about in Chicago just last week, one of my colleagues pointed out that, well, 1990 and '91 could have been a soft landing, but then Iraq's invasion of Kuwait came about. And, you

know, things happen during fragile times. So there's a small number of observations. There are some shocks that do that. If it was as much of a slam dunk as your comment kind of suggests offhand, then your models ought to be reflecting this, and I just don't think they are. So it's worth a lot of discussion because, frankly, I think it is a big deal. If, in fact, undershooting the natural rate of unemployment is something that is going to lead to a recession, and if we think that the Phillips curve mechanism is going to be important to get inflation up to our target, well, then, we're probably never going to get it up to target, because we're going to say, "If I do this, I'll have a recession, and that would be worse." And then that's going to ratify that 2 percent as a ceiling. So I think this is a really important issue for more discussion.

CHAIR YELLEN. I absolutely agree with you.

MR. WILCOX. I agree, President Evans—and President Williams, too. I think that one needs to acknowledge that this is an area in which it is going to be difficult to make solid progress in research. I certainly feel that I can't speak with great conviction that our nice, tidy linear models describe well the dynamics that take over in a more fragile economy when demand is growing more slowly. One is struck, for example, by the profile of unemployment over the business cycle. You see steep increases in the unemployment rate, and you don't see equivalently steep declines in the unemployment rate. And in a simple, tidy linear model like the FRB/US model, there probably shouldn't be that discrepancy in behavior.

Now, that said, my impression is that there have been two attempts at a soft landing in the post–World War II era. And, as President Evans just mentioned, I think there is an easily identifiable event with regard to one of them—namely, the 1990 invasion of Kuwait by Iraq—that provided a plausible shock of sharp magnitude that disrupted economic processes. I just don't think you can look to the historical record and get a dispositive answer on that question.

And I don't have a huge amount of confidence in the ability of our models to discriminate, because the kind of model you go to in looking for that answer—that will pretty much give you the answer. If you go to a linear model like the FRB/US model and you rely on that model as the source for your answer, you will decide that it's feasible that there's no particular problem here. If you go to a model that incorporates nonlinear dynamics, that will be the answer that you get.

CHAIR YELLEN. President Rosengren.

MR. ROSENGREN. I'll talk about it in my own session, so I will follow-up then.

CHAIR YELLEN. President Lacker.

MR. LACKER. I just want to confirm my recollection of a number that the previous Chairman told us about in early 2008, and I think it's that the unemployment rate doesn't rise more than 0.3 percentage point without a recession. Is that the right number?

VICE CHAIRMAN DUDLEY. Three-month moving average.

MR. LACKER. Of what?

VICE CHAIRMAN DUDLEY. A three-month moving average of the unemployment rate. If it goes up more than 0.3 percentage point, we've always had a recession.

MR. LACKER. Thanks.

MR. WILLIAMS. Not causation.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. Just on this Greenspan conundrum discussion, we may not have observed a 3½ percent unemployment rate in President Williams's lifetime. But we did observe a conundrum in the early 2000s, and we do have some experience with that. In that episode, we did not see this huge decline in the unemployment rate. That's just another way to look at that issue. So it's not like it's completely out of historical experience.

CHAIR YELLEN. Okay. Why don't we get started then on our economic go-round. We'll have a few comments and then take a coffee break. Let's start with President Rosengren.

MR. ROSENGREN. Oh, am I going now?

CHAIR YELLEN. Yes.

MR. ROSENGREN. I'm sorry. I thought we were going for the break. [Laughter] My apologies.

CHAIR YELLEN. No problem.

MR. TARULLO. He was changing what he was going to say. [Laughter]

MR. ROSENGREN. Thank you, Madam Chair.

CHAIR YELLEN. We can come back to you.

MR. ROSENGREN. My forecast is quite similar to that of the Tealbook. I expect real GDP growth for the second half of this year to be more than 1 percentage point higher than for the first half of this year. This pickup will largely reflect continued strength in consumption and some rebuilding of inventories. Growth in real final sales to private domestic purchasers has been fairly solid over the past year, and I expect a solid increase in 2017 as well. Thus, abstracting from transitory fluctuations induced by inventory changes, domestic economic growth remains quite healthy, with limited spillovers to date from the strong dollar and weak growth of our trading partners.

My expectation regarding core PCE inflation for the second half of this year is slightly higher than the Tealbook's. By the end of 2017, I expect core inflation to be only slightly below our 2 percent inflation target. One concern with such an inflation forecast has been the decline in inflation expectations in the Michigan survey. However, as with other measures of inflation expectations, the lowest quartile has been relatively stable, with most of the decline coming from

the higher quartiles. Such behavior could be consistent with households finally realizing that the inflation environment has changed.

Even with a noticeable rise in the funds rate, I expect the unemployment rate to reach 4.5 percent by the end of 2017. This forecast of an overshoot of full employment is not an outlier, as both the Tealbook and the Blue Chip consensus forecast also expect the unemployment rate to be 4½ percent by the end of 2017. Using the Tealbook's estimate of the natural rate, this implies a ½ percentage point overshoot of full employment. My estimate of the natural rate is a bit lower, so 4½ percent implies only a 0.2 percentage point overshoot of full employment. Thus, within 15 months, all three forecasts expect the unemployment rate to fall below where the consensus of the Committee expects the unemployment rate to be in the long run.

Like the Tealbook, I expect the unemployment rate to continue drifting down through 2018, reaching 4.2 percent at the end of 2019. Hence, my forecast envisions economic growth in excess of potential, even with 100 basis points of tightening in 2017. The Tealbook also expects the unemployment rate to fall to 4.2 percent. While this is my modal forecast, I believe risks are balanced around that outlook. There is a significant risk that we will exceed this already large overshoot of full employment. If foreign trade partners grow more quickly or moderate demand does not draw workers back into the labor force, the unemployment rate could easily decline even further.

One reason why I see balanced risks associated with the Tealbook forecast of the unemployment rate is because I believe an assumption of an additional increase in labor force participation is far from certain. My staff examined state-level participation rates to see if participation has risen significantly in states whose unemployment rate is quite low. They do not

find a strong state-level correlation between recent changes in participation rates and low unemployment rates. Thus, we must consider the possibility of a more significant overshoot of full employment, which would bring with it significant risks to the sustainability of the expansion.

If we find ourselves in the position in which we need to increase the unemployment rate $\frac{1}{2}$ percentage point or more in order to return to full employment, we will be attempting a feat that is yet to be accomplished. Historically, every attempt to raise the unemployment rate $\frac{1}{2}$ percentage point or more from below full employment has resulted in a recession that produces a much larger rise in unemployment than a few tenths. Overshooting tends to happen in both directions. This was part of the discussion that we were just having, as mentioned earlier by President Williams and President Evans. I think this is actually very fundamental to the discussions that we are having today. While it may be possible to have a soft landing, is it probable, particularly if we do a significant overshoot?

While there are advantages to using accommodative monetary policy to probe for additional improvements in labor markets, particularly for low-skilled workers and minorities who may benefit from a stronger market, we must balance these potential benefits against the risk of a significant overshoot of full employment that could ultimately do even more harm to the same populations. Should we once again be unsuccessful in fine-tuning a slowdown, the ensuing recession will likely fall disproportionately on low-skilled workers and minorities. I will discuss the policy implications of that concern tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. Reports received from contacts in the Fifth District have been more positive than negative since the previous meeting and are consistent with

the continuation of recent growth trends. The manufacturing picture remains mixed. Our August survey shows a decline in the overall manufacturing index, as did preliminary figures for September due out next Tuesday. I continue to receive positive reports from some industries, particularly those tied to consumer markets and, particularly, autos. The service sector index also softened in August, but preliminary readings for September show a rebound. In both surveys, wage indexes remain very high. Contacts indicate continued tightness in labor markets across regions and industries. Regulatory issues and uncertainty regarding the upcoming election were cited as potentially weighing on economic activity. The outlook for commercial real estate remains very strong according to recent data and comments from contacts. The residential sector is more uneven, however, with reports of very strong markets in some areas but also a number of weaker markets. Constraints on the supply of lots and skilled workers is said to be restraining activity in some areas.

In assessing the national outlook at this meeting, I think it's useful to look back to last December. At that point, we saw an economy that had expanded steadily, if slowly, in the years since the recession. For 2015, it looked as if payroll employment had increased about 220,000 jobs per month. The unemployment rate had declined 0.6 percentage point to 5 percent, close to most estimates of the natural rate. Real GDP had grown at about 2 percent, supported by strong PCE growth. And 12-month core PCE inflation had stabilized at 1.3 percent despite low headline inflation and a strengthening dollar.

The median outlook for 2016 of the SEP was for a further decline in the unemployment rate, supported by more strong growth in payroll employment, real GDP growth of 2.4 percent, and fourth-quarter core inflation firming to around 1.6 percent. Coming into the final quarter of this year, the data are lining up fairly well with that December outlook. There have been some

misses, but they're relatively minor, I'd argue. Payroll employment has averaged about 180,000 a month, a small slowdown from last year's pace but still much higher than we would need to maintain constant unemployment rates across demographic cohorts. And you'd expect payroll employment growth to slow as the unemployment rate flattens out. The unemployment rate has declined 0.1 percentage point, just 0.1 less of a decline than the Tealbook expected by now, so labor market conditions seem very close to our earlier projections.

GDP growth has been below forecast for the first half of the year, but a significant portion of the slowdown is attributable to the inventory surprise, and that's unlikely to persist. The inventory swing, together with an upturn in nonresidential structures and continued strength in PCE, is likely to give us fourth-quarter GDP growth that's close to but below 2 percent for this year. I wrote down 1.9 percent. The median SEP forecast is 1.8 percent. It is about $\frac{1}{2}$ percentage point lower than the median SEP forecast in December, but it's well within the usual forecast uncertainty. With employment coming in close to expectations, the implication is that productivity growth has been lower than anticipated.

Core PCE inflation has been right in line with our December SEP forecasts. The 12-month figure was 1.6 percent in July, equal to the median December projection for 2016 as a whole and up from 1.3 percent a year earlier. The August CPI report is in line with that firming trend, causing the staff to increase the third-quarter core inflation forecast, and I expect that the 12-month figure is going to continue its gradual climb toward 2 percent. Against the background of expectations of stable or somewhat increasing energy prices, this should bring headline PCE inflation closer to 2 percent as well. So the inflation outlook has not changed and remains in line with our expectations in December that inflation would gradually rise to our target.

Employment and core inflation are tracking quite close to what we expected as of December, but productivity growth is coming in low. In contrast, as illustrated in exhibit 4 of Elizabeth Klee's presentation, the policy outlook is significantly different than it was in December. Then, the median participant expected it to be appropriate to raise rates four times, so we probably would have been making our third increase of the year at this meeting, bringing the funds rate target above 1 percent.

This gives rise to a question: What explains the significant shift in our policy stance over that time frame despite little or no change in the outlook for employment or inflation? Well, I mentioned that productivity growth has been lower than expected. Monetary policy is unlikely to have much effect on productivity, though, and besides, our mandate is employment and inflation, not productivity or output. But, of course, lower steady-state productivity growth does imply a lower steady-state real interest rate and arguably would imply a lower value for the intercept term in a Taylor-type policy reaction rule. So, by how much should we revise our estimate of r^* in response to the latest productivity numbers? This is analogous to how much we should think trend employment has fallen after seeing the May employment report. Obviously, you wouldn't think that the trend employment growth is 30,000 after seeing the May employment report; one uses a moving average of recent data. So the econometric methods of Lubik-Matthes and Laubach-Williams tell us quantitatively how much to take on board for r^* , and the answer is, essentially, some, but not enough to rationalize where the funds rate is today.

Now, we have seen a series of flare-ups since the beginning of the year that seem to suggest heightened downside risks to the outlook: global financial disturbances in January and February, a very weak employment report for May, and concerns about Brexit in June. As it turned out, the financial market tumult of the first quarter was mostly about Chinese economic

growth concerns that have dissipated; the May payroll employment number was, as suspected, a fluke; and the Brexit vote turned out to have much smaller near-term implications for economic growth than feared for the United Kingdom and negligible implications for the United States. While holding off on a second rate increase may have been a prudent and reasonable choice in each case, it seems unlikely to have had much to do with how things turned out. It's hard to argue that holding off raising the funds rate stabilized Chinese growth prospects, boosted the June employment report, or damped the real effects of the Brexit vote.

The data on employment and inflation are in line with what we expected in December, but there are no risk flare-ups in sight that might rationalize another delay. Holding steady at this meeting would thus mark a substantial and persistent departure from the policy settings that would be expected, on the basis of our December projections or policy reaction functions characterizing our past behavior. This would appear to imply a distinct shift in our policy reaction function—that is, in how policy settings depend on the data. I plan to discuss this topic further in the next round.

CHAIR YELLEN. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. The tone and content of reports of my District contacts and directors in the most recent cycle were largely unchanged from the reports given before the July and June meetings. Overall sentiment remains positive, with an outlook of continued, steady, moderate growth. If there was any difference this time around, comments were slightly more cautious in tone. We heard some mention of uncertainty related to the upcoming election.

Reports on consumer spending were positive on balance. Most retailers report solid sales levels and expect modestly higher sales for the remainder of 2016 compared with earlier this

year. A minority of reports pointed to softening sales. Auto sales were worthy of note. Earlier cautionary reports on the sustainability of auto sales of our director who heads the country's largest retailer seem to be accurate. He very clearly attributes some of the slowing to added caution of consumers ahead of the election.

While firms tied to the oil and gas sector continue to report layoffs, many of our contacts remain in net hiring mode and report widespread wage pressure. And according to a number of reports, labor market tightening has deepened at various levels of the firm, with some weighting to low-skill, and broadened across a range of job types. These trends are confirmed by the elevated reading of the Atlanta Fed's Wage Growth Tracker.

In this cycle we repeated our practice of asking about pricing power of firms, and pricing power, to generalize, remains constrained. That said, margins seem to be holding steady for most contacts. At a more strategic level, we picked up a theme in this cycle of firms reevaluating business models to avoid expanding capacity. We heard reports of efforts to leverage underutilized assets at capacity owned by other firms before moving forward with traditional growth-oriented investments. A major national rental car company is exploring the use of idle space in parking lots with valet service in lieu of building new rental facilities.

As regards the third quarter, our tracking estimate as of this morning puts the quarter at just short of 3 percent annualized GDP growth, with real final sales growth around 2.3 percent. So I'm confident we're experiencing meaningful acceleration after the weak first half.

My forecast has not changed materially from June. My forecast anticipates continuation of moderate GDP growth around 2 percent for the forecast period. This marginally exceeds potential but is sufficient to absorb any remaining resource slack. In my forecast, I have an assumption of some acceleration of growth of business fixed investment. So far this year, we've

heard little from District contacts that would support this assumption. The reasons for a cautious approach to capital spending are familiar—most notably, a reference to uncertainty. This cycle we did a survey of more than 200 CEOs, CFOs, and business owners and asked about uncertainty tied to the upcoming election. Roughly one-third reported that uncertainty about election results is influencing their business decisions, and we took that number to be material. A failure of business investment to pick up after the election and through the forecast period is a downside risk to my outlook.

Regarding our inflation objective, my forecast foresees a modest acceleration of inflation achieving the 2 percent target by year-end 2017. We read the August CPI report and its various cuts as consistent with this view. I see the risks to my outlook as being more balanced today than at the time of our June meeting, and I'm comfortable with describing the near-term outlook as “roughly balanced,” as in policy alternative B, or just “balanced,” as in alternative C. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. The economy has seen welcome progress on some fronts in recent months, in part because of the prudent approach taken by the Committee and the corresponding supportive financial conditions. Recent data on the labor market and aggregate spending suggest we are continuing to move toward full employment, but that progress is gradual. The labor market has continued to improve, with few indications of overheating and some signs that continued slack remains. So far this year, monthly job gains have averaged 180,000, below last year's pace but still sufficient to reduce slack. The slowing pace of job gains has been associated with a flattening out in the unemployment rate over the past year, along with a heartening $\frac{1}{2}$ percentage point increase in the prime-age labor force participation rate. These

developments suggest that an improving job market has made joining or remaining in the labor force increasingly attractive and may imply the labor market has some room for further improvement.

Despite this improvement, the prime-age labor force participation rate remains about 1½ percentage points below its pre-crisis level. While it's possible that this simply reflects ongoing pre-crisis trends, we cannot rule out the possibility that it reflects a lagged, and still incomplete, response to a very slow recovery in job opportunities and wages. The latter possibility is reinforced by the continued muted recovery in wage growth. Although wage growth has picked up to about a 2½ percent pace in recent quarters, this is only modestly above that which prevailed over much of the recovery and well below growth rates seen before the crisis. This reinforces the point that uncertainty remains about how much slack is left. In the SEP, the projection regarding the longer-run rate of unemployment has come down significantly from a central tendency of 5.2 to 6.0 percent only four years ago to a median of 4.8 in the most recent SEP, well below the lower end of that previous range. We can't rule out the possibility that estimates of the natural rate may move further lower. In the presence of uncertainty and in the absence of accelerating inflationary pressures, it would be unwise for policy to foreclose the possibility of making further gains in the labor market.

With regard to aggregate spending, economic activity over the past three quarters has been disappointing, with growth in GDP and GDI each averaging less than 1 percent, a significant step-down from the same period in the previous year. However, recent data suggest a pickup in third-quarter output growth. Although retail spending stalled in July and August following several strong months, I would expect continued job growth, buoyant sentiment, and

rising household wealth to lead to consumption growth near 3 percent over the second half, about in line with the average pace of gains since the beginning of 2014.

There are also some positive signs for investment. Inventory investment, which edged lower last quarter, should step up over the second half of the year to a level more in line with continued moderate increases in final sales. The number of oil drilling rigs in operation has edged up in recent months after the previous sharp declines, and nonresidential building investment also appeared strong in the middle of the year, although the data are notoriously volatile and subject to revisions.

However, other parts of the economy remain weak, likely still reflecting the large appreciation of the dollar since June 2014. The recent data on equipment investment continue to be quite tepid, manufacturing output remains flat, and real exports are a little more than 1 percent below their level a year ago. Corporate profits fell close to 5 percent over the four quarters ending in the second quarter, and the housing sector, which provided important support to GDP growth last year, looks to be contracting in the middle of this year. Thus, while I would expect economic growth to move up from its weak pace over the first half of the year, the persistent weakness in several key areas suggests that the pace will be moderate.

Progress on inflation has been mixed. While core inflation has increased from a year ago, we're still some distance from our target, which is symmetric, and some measures of inflation expectations remain quite low. The recent data seem consistent with the staff's projection that core PCE inflation would slow noticeably over the second half of this year. But on a 12-month basis, core PCE inflation is estimated to be 1.6 percent in August, which is an improvement over a year ago.

Nonetheless, core inflation has not yet convincingly broken out of the 1.4 to 1.6 percent range it has occupied for most of the past three years. The underperformance of core inflation relative to our target has been extremely persistent. If the staff projection for September is correct, core PCE inflation on a 12-month change basis will have been below 2 percent for all but four months out of the past eight years. I want to highlight this fact because it does seem important for our discussion of policy. With the stabilization of the dollar and oil prices, there is reason to expect inflation to rise. However, even putting aside the renewed dollar appreciation that would likely accompany further tightening, there are ample reasons to worry that the unwinding of these forces alone will not be sufficient to move core back to our target. First, recent research suggests the Phillips curve is quite flat. Second, as I noted earlier, we may still be some distance from full employment. And, lastly, the persistently low level of survey-based inflation expectations and very weak readings on inflation compensation may indicate that inflation expectations have moved down in recent quarters. Despite the recent increases in oil prices and stabilization of the dollar, 10-year inflation compensation is less than 1.5 percent, close to its historic low. At the same time, as everyone, I think, has noted, median 5-to-10-year inflation expectations in the Michigan survey matched its historical low of 2.5 percent in both August and the preliminary September reading. In view of the apparent weak relationship between levels of resource utilization and inflation and signs of downward pressure on inflation expectations, reaching our inflation target requires ensuring the U.S. economy maintains sufficient positive momentum, especially in the broader international environment.

Let me close by briefly referring to the risks. We have been able to maintain positive momentum in the labor market so far this year despite some notable risk events, most recently Brexit, in part because of our prudent approach to monetary policy. However, important

medium-term risks remain. In Europe, economic growth is slow and inflation is very low. Low growth and a flat yield curve are contributing to reduced profitability and a high cost of equity financing for banks, which in turn could impair a key transmission channel of monetary policy in the euro area. A low-growth/low-inflation environment also makes progress on fiscal sustainability difficult and leaves countries with high debt-to-GDP levels very vulnerable. Against this backdrop, uncertainty about the United Kingdom's future relationship with the European Union could damp business sentiment and investment in the period ahead. Japan, as everyone has noted, remains greatly challenged by weak economic growth and low inflation. And it's striking that despite active and creative monetary policies in both the euro area and Japan, inflation remains far below target. The experiences of these economies highlight the risk of becoming trapped in a low-growth, low-inflation, low-inflation-expectations environment and suggest that policy here should be oriented toward minimizing the risk of the United States slipping into such a situation.

Downside risks are also prominent in emerging markets, most notably China. As China has experienced very high growth in corporate debt, the downshift in economic growth that everyone anticipates could pose risks. And while Chinese authorities have made some progress on clarifying their policy stance and capital outflows have slowed in recent months, considerable uncertainty remains and further volatility cannot be ruled out, particularly if we were to see a notable strengthening of the dollar, which could lead to renewed fears of a larger exchange rate devaluation and capital outflow pressures.

Recent research suggests that changes in expectations regarding developments in other major economies—and I think Steve was referring to this earlier—relative to the United States and the associated policy responses lead to exchange rate movements that appear to be bigger

than they were several years ago. These risks have implications for risk management in a low neutral rate environment, a subject we will return to tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I decided this time to do something slightly different than pore through the Tealbook to see whether I agreed with it or didn't and just give a presentation from a less detailed viewpoint of what appears to be going on in the economy. I'll divide this into four unequal parts: the labor market, inflation, economic growth, and tomorrow's decision.

First, the labor market. Employment has been continuing to grow at a good pace, averaging 180,000 per month so far this year. Calculations suggest that depending on the rate of labor force participation, it will take somewhere between 75,000 and 150,000 net new hires a month to keep the U-3 unemployment rate from rising. Accordingly, the gloomy tone of the headlines about the 151,000 estimate of net new hires in August was not appropriate. One hears the concern that the U-3 unemployment rate has barely fallen over the course of the past 12 months, but over the same period, the participation rate has stopped falling. I believe we should prefer the current labor market situation, in which people are being attracted back into the labor force while the unemployment rate remains constant, to a situation such as the one we faced in May, when the U-3 unemployment rate declined to 4.7 percent while the participation rate declined significantly. The rise in participation may reflect the effects of the modest pickup in wage growth we are now seeing, with the rate of increase of the employment cost index having risen from an annual rate of about 2 percent last year to around 2.5 percent this year. Attention has also been drawn to the fact that the trend rate of new hires is declining, but that should not be a surprise as the labor market tightens.

Over the course of the past year, we have been concerned about the effects of a variety of negative shocks on the U.S. economy, including the Chinese devaluation, market turbulence in the first six months of this year, the May pothole, Brexit, and more. But employment has resumed robust growth after each temporary slowdown. This has been, and continues to be, a powerful recovery, at least in terms of employment.

Let me turn now to the second part, inflation. We have not heard many complaints about the low rate of inflation from the general public. The 2 percent inflation target was set originally as a tradeoff between the many costs of positive inflation and the increased efficiency of reallocation in the labor market that a moderate rate of inflation makes possible. I do not recall that the costs associated with a greater probability of being at the zero lower bound or the effective lower bound with a lower rate of inflation were taken into account at that time, which I think was the early and mid-'90s. The core rate of PCE inflation has been increasing since the middle of last year—slowly, to be sure—and is now close to our 2 percent target. In view of the imprecision of our estimates of the optimal rate of inflation, we should be happy to be as close as we are to the target we have chosen, particularly when the Phillips curve appears to be so flat. The CPI rate of core inflation has been above 2 percent and the rate of wage increase has been increasing, an indication that the Phillips curve lives, if not with the same vigor as in the past. But, on balance, I believe we are close to meeting our inflation target.

Let me discuss a few other aspects of the inflation target. One is the argument that because we set 2 percent as our target, that is the number we have to hit if we are to remain credible. I give this argument some weight, though I do not believe we need to hit precisely 2 percent, but rather that some divergence should be permitted both above and below 2 percent. Taking into account the confidence interval around the economic cost of diverging from the

2 percent target, which is wide, I believe it would have been better to define an optimal range for the inflation rate—for example, 1.5 to 2.5 percent—rather than a precise number.

A final point on inflation. The jury is still out on whether there has been a permanent downward revision in the level of r^* , something that's extremely difficult to predict, both because the future is long and “permanent” is a long way off, and the standard deviation of r^* is large, which is more relevant. However, as everyone knows, if r^* remains low for a long time, monetary policy could be constrained by the ELB more frequently than in the past. Should we, therefore, raise the target inflation rate, as many well-known economists have suggested? Well, of course, the optimal rate of inflation is an area of active research and debate. But, actually, changing the target rate is a serious matter not to be entered into lightly. First, there are welfare costs to higher inflation, which kick in at a relatively low rate of inflation, especially in the form of indexation. Further, there is the credibility cost of changing the target inflation rate, something that done once becomes a permanent credibility-reducing part of history. If such a step were nonetheless taken, it would be essential to include a formal mechanism for dealing with future changes in the target rate—for instance, the mechanism used by Canada in which the inflation target can, in principle, be reset every five years.

So, on inflation, all this is to say that core PCE inflation is indeed approaching its target level, that real wages are rising at a more rapid rate than earlier in the post-Great Recession period, and that we need to think very hard before deciding to change the monetary framework to solve a problem that is likely to be solved within a year or two without changing the inflation target.

I will digress slightly into a discussion of economic growth, which will be short. Each of us probably asks himself or herself, when wondering why people don't like us, why our

outstanding performance in the period since the fall of Lehman Brothers is so underappreciated. I mean that. I think the performance has been outstanding. The slow growth of the economy is due mainly to the extremely low rate of productivity growth, to which the low rate of physical investment contributes despite the near-zero short-term interest rate. But there's not much we at the Federal Reserve can do that directly affects productivity growth except to maintain conditions conducive to investment and productivity growth by giving confidence to investors in the stability of the economy and the financial system and by continuing to support the excellent research on productivity growth of several of our economists.

Finally, the decision. Our Committee has been justifiably cautious about raising the federal funds rate since 2009. Two arguments have carried the day: first, that we should not raise the rate because we could soon be forced to reduce it and return to the ZLB or ELB, thereby suffering a loss of credibility; and, second, that there's very little difference between making the decision at this FOMC meeting rather than at a subsequent meeting.

With regard to the credibility loss of having to return to the effective lower bound, there are also credibility costs to the extremely low frequency with which we have raised the interest rate since 2008. The argument I have just made is liable to be countered by the statement: “But it's only because we kept the interest rate so low for so long that the U.S. economy has performed so well since 2009.” I'm sure that is right for a significant part of the period since 2009, but it remains to be shown that the performance of the economy would have been worse with an interest rate path 25 or 50 basis points above the path that was actually obtained during the past few years. I'm aware that I've entered dangerous territory here, but it has been suggested that our superlow interest rates have encouraged financial transactions, particularly mergers and acquisitions, as much as they have encouraged physical investment. We've been

sending a message to everyone in the economy that says the U.S. economy is still weak and requires the support of superlow interest rates to grow, even at the moderate 2 percent rate to which we have all gradually become accustomed. I do not believe that to be the case, and I do believe that we should very soon take the second step on our gradual path away from the ELB and toward interest rate normalization.

Now, this is the less technical version. For the technical version, I suggest you read again the presentation by President Rosengren in his remarks that opened this discussion. Thank you.

CHAIR YELLEN. Thank you very much. I suggest we take a coffee break—how about 25 minutes. We will return at 5 minutes to 4:00.

[Coffee break]

CHAIR YELLEN. Okay. Why don't we continue our go-round with President Mester.

MS. MESTER. Thank you, Madam Chair. Overall, economic conditions in the Fourth District softened a bit in August. The Bank's diffusion index of business contacts reporting better versus worse conditions declined to minus 4 from plus 18 at the time of our previous meeting. This is the only negative reading in the index this year. It dipped to become negative late last year as well, so it's too soon to read too much into it at this point. By sector, construction, freight, and banking continue to show positive readings. Energy was stable, and manufacturing and retail showed negative readings. Some District manufacturers and commercial construction firms reported that they put some planned investments on temporary hold. In contrast, consumers in the District appear to be more optimistic. Delinquency rates across most consumer borrowing categories are down, and home prices and incomes are rising, all of which are supporting higher levels of consumer lending than we have seen for some time.

Labor market conditions in the District remain healthy. As of July, the Federal Reserve Bank of Cleveland staff estimates that year-over-year growth in District payrolls was 1 percent, and the District's unemployment rate remained low and stable at 5 percent. Anecdotal reports suggest District firms continue to add workers. As was true last time, nearly all District sectors reported some upward pressure on wages, and the diffusion index of those reporting increases versus decreases has risen over the year.

District firms report that pressure on nonlabor input costs are rising this year as well. The Cleveland Fed's diffusion index of nonlabor costs, which was flat to negative last year, has steadily risen this year to more than 20. Prices received have also been generally moving up since the beginning of the year. Some manufacturers have told us that they have raised their finished good prices in recent weeks in response to higher steel prices. Construction companies have been reporting raising prices for some time either to cover rising import costs or in response to strong demand.

As far as the national economy is concerned, second-quarter GDP growth came in weaker than anticipated, with much of the drag reflecting weaker inventory investment. Although GDP growth was subdued in the first half of the year, incoming economic information summarized in the nowcasts suggests that growth will strengthen in the second half of the year, as the drag due to inventories wanes and consumer spending, buoyed by strength in labor markets and personal income growth, remains solid. Housing continues to improve at a gradual pace. The trouble spot continues to be weak business investment spending, but financial conditions, including low corporate bond spreads and stability in oil prices, are supportive of a coming pickup in investment.

The July and August employment reports confirm continued solid performance in the labor market. Monthly payroll job gains have averaged 182,000 this year. Although this is down from last year's average monthly pace of 229,000, it is well above current estimates of the pace of job growth consistent with estimated trends in output growth and the labor force participation rate. The Board staff estimates that range of job growth at 85,000 to 115,000 per month. Other estimates put it at 75,000 to 120,000 or even lower. The unemployment rate has been roughly stable around my estimate of its longer-run rate. It and most of the other labor market indicators suggest to me that we are basically at full employment from the standpoint of what monetary policy can effectively address, and that labor market conditions will remain healthy.

We have seen some acceleration in wages, but productivity growth has been weaker than in earlier expansions. If weak productivity growth persists, then it seems unlikely that wage growth will return to the pre-recession pace.

Overall, my outlook for the U.S. economy over the medium run is little changed since our previous meeting. I made relatively minor changes to my SEP forecasts of GDP growth, unemployment, and inflation since my SEP submission in June. In response to the weak first-half data, I marked down my GDP growth forecast a tad for 2016 and less so for 2017. I continue to see the fundamentals, including accommodative monetary policy and financial conditions, improved household balance sheets, the strong labor market, and low and stable oil prices, as supportive of continued growth at the pace at or slightly above trend, which I put at 2 percent over the forecast horizon. This pace is sufficient to put downward pressure on the unemployment rate, which falls below my longer-run rate over the next two years before

returning to my longer-run rate of 5 percent by the end of 2019. My undershooting of the longer-run unemployment rate is less than in the Tealbook.

I continue to anticipate that inflation will rise gradually toward our goal of 2 percent over the next couple of years. The trajectory of both headline and core inflation over the past year is consistent with this forecast. Headline PCE inflation has risen as the effects of the earlier declines in oil prices and appreciation of the dollar have passed through. Measured year-over-year, core PCE inflation and trimmed mean PCE inflation are 1.6 percent, which is near the goal. Other measures of underlying inflation, like core CPI and median CPI, have picked up to levels of more than 2 percent. The Cleveland Federal Reserve median CPI measure has been above 2½ percent all year and at or above 2½ percent for the past four months.

Long-term inflation expectations from the Survey of Professional Forecasters and the Cleveland Federal Reserve 10-year and 5-year, 5-year-forward measures have been stable. The New York Fed's measure of consumer inflation expectations two years ahead has moved up and down from month to month this year, averaging around 2.6 percent over the year to date. The University of Michigan survey measure of inflation expectations over the next 5 to 10 years has been trending down since 2013. Cleveland Federal Reserve staff's analysis of the microdata underlying the survey indicates that over that time period, the numbers of respondents reporting expected inflation rates at 5 percent and at 10 percent have fallen. It's not clear whether this change in the distribution accounts for the downward trend in the median, which would be less susceptible to outliers than the mean would be. So while the downward movement in the Michigan survey bears watching and further investigation, at this point I view longer-run inflation expectations as reasonably stable. This, along with output growth at or slightly above trend and continued strength in the labor market, suggests that inflation is on a path of gradually

returning to our 2 percent goal over the next couple of years, which is sooner than in the Tealbook forecast.

I see the risks associated with my forecast as broadly balanced. Economic growth abroad and U.S. investment spending could be weaker than I have assumed, but accommodative financial conditions could lead to stronger growth than I am anticipating. Inflation could remain below our target for longer than I have assumed, but accommodative monetary policy could lead to stronger price pressures. Risks to financial stability from very low interest rates appear to be contained, but a failure to implement a gradual rise in interest rates will increase these risks.

I continue to project that a gradual upward path of interest rates over the forecast horizon will be appropriate. On the basis of the evidence of how economic growth, the unemployment rate, and inflation have been evolving and the continued low estimates of the equilibrium real rate, I have revised down my estimate of the longer-run federal funds rate 25 basis points to 3 percent. I want to acknowledge that there is a wide confidence band around this estimate and that my 25 basis point reduction isn't statistically significant. But this revised estimate, coupled with my slightly weaker economic growth forecast, has led me to project a funds rate path that is 25 to 50 basis points more shallow over the forecast horizon than in my June projection. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. Anecdotal and aggregate statistical information received during the intermeeting period remains consistent with the Federal Reserve Bank of St. Louis's new regime-based view of near-term macroeconomic outlook and monetary policy. Our view emphasizes a forecast that places real GDP growth at about 2 percent over the forecast horizon, with inflation also at about 2 percent. Unlike the Tealbook, we do not regard 2

percent real GDP growth as being meaningfully above trend. Consequently, we also expect relatively little change in the unemployment rate over the forecast horizon. We think end-of-year unemployment rates will remain centered on 4.7 percent.

We see optimal monetary policy as being regime dependent. Under the current regime, we see the current setting of the policy rate as being just slightly below neutral. We think there is a case to be made to move the policy rate to the regime-neutral value at some point. However, unless there is a switch in regime, we think it is unwise to give the impression, as the Tealbook does and perhaps the dot plot does, that the Committee is on the precipice of a 275 basis point move in the policy rate over the forecast horizon. Instead, we should acknowledge that, on the basis of the information we have today, we do not expect much different to happen over the next several years, and, therefore, we do not need to forecast a major move in the policy rate.

At the heart of the St. Louis Federal Reserve view is that real GDP growth has been slow and is not expected to meaningfully accelerate. The annualized real GDP growth rates for the past three quarters are 0.9 percent, 0.8 percent, and 1.1 percent, averaging about 1 percent, well below even pessimistic estimates of the potential real GDP growth rate. Although growth looks set to accelerate in the second half of 2016, all this will do if it materializes is bring the real GDP growth rate for all of 2016 somewhat closer to, but less than, 2 percent. Any acceleration from there into 2017 is likely to be modest and is, in my mind, a speculative guess.

I think it strains credulity to suggest that eight years after the Committee moved the policy rate close to zero, there is still any meaningful cyclical dynamic that would push the real output growth rate above potential in a statistically significant way. A better way to think about the current situation is to accept that the current real output growth rate is slow and likely not too different from the potential growth rate. The corollary is that the unemployment rate is likely to

remain in the 4½ to 5 percent range as long as we remain in the current regime. This is what happened during 2006 and 2007, a period that was arguably characterized by stronger GDP growth—due in part to the housing bubble, to be sure—than what we are witnessing today.

Inflation has been running somewhat below 2 percent according to PCE-based measures, with CPI-based measures somewhat higher. We think an inflation forecast centered on 2 percent over the forecast horizon is reasonable. I was encouraged, in reaching this forecast, by page 22 of Tealbook A, which gives the staff forecast of headline PCE inflation, core PCE inflation, and core CPI inflation in graphical format with 70 percent confidence intervals. I think it is reasonable to interpret these figures as illustrating forecasts essentially centered at 2 percent over the forecast horizon. I do remain concerned that market-based measures of inflation expectations remain too low to be consistent with the 2 percent inflation forecast. This is a risk to the outlook that I have described.

Output growing at its potential rate, unemployment essentially unchanging, and inflation expected to hit 2 percent sounds like a steady state. However, the regime-switching conceptualization acknowledges that this situation can and will change at some point in the future. The most likely candidates for a switch in regime are, one, faster productivity growth and, two, an abating of the very large liquidity premium on short-term government debt. Both of these possibilities would suggest upside risk to the St. Louis Federal Reserve's policy rate forecast. However, as of today, I see little evidence that a switch is occurring on either of these dimensions. Accordingly, we continue to assume we are in a low-growth regime, driven in part by low productivity growth, as well as in a regime characterized by very low real rates of return on short-term government debt, the so-called r^{\dagger} . This, in turn, leads us to project a very flat policy rate path over the forecast horizon. Thank you, Madam Chair.

CHAIR YELLEN. Thank you very much. President Harker.

MR. HARKER. Thank you, Madam Chair. Overall economic activity in the Third District has been somewhat sluggish over the intermeeting period. Job growth continues to lag the nation, with employment growing a mere 0.7 percent in July, less than half that of the nation. And the unemployment rate ticked up another 0.1 percentage point to 5.4 percent. In part, the increase in unemployment is due to a stronger rebound in labor force participation than one sees nationally. Additionally, the sharp contraction in mining and drilling in the Marcellus shale region was responsible for much of the weaker job growth in the region. And to give you some sense of the sharpness of that contraction, the number of active wells in Pennsylvania has gone over the past few years from more than 4,600 to around 200 today.

Manufacturing has picked up a bit, with the general activity index in our Business Outlook Survey now in positive territory. At 12.8, the September index is slightly above its nonrecessionary average. The new orders index eked into positive territory as well, but shipments contracted and, although employment improved substantially, that index remained in negative territory. Survey respondents remain upbeat, with all of the forward-looking indexes showing substantial optimism.

In a series of special questions, we attempted to gauge the future capital spending plans of manufacturers in the region. A vast majority indicated that they primarily intended to modernize existing manufacturing processes, while only one-third indicated they intended to expand facilities. Very few, roughly 17 percent, indicated that they were looking to grow through acquisition. Further, modernization has taken on increasing importance in firm planning, with roughly 60 percent of firms indicating that it was now more important to them than it had been over the past five years. Some reasons cited for this shift in priorities were

increases in labor costs due to government mandates such as the ACA and the need or desire to replace labor with robotics and automation. Thus, there was not much in the responses to indicate why we have been seeing such very weak investment numbers at the national level. But this type of investment activity may lead to better productivity numbers down the road.

At my recent board of directors meeting, the board of directors, on the other hand, expressed unanimous sentiment that policy uncertainty is weighing on capital expenditure plans. As one director phrased it, “The data are positive. It’s the psychology that’s driving caution.” The FOMC is also viewed as contributing to that uncertainty. A lack of confidence to raise rates is causing business leaders to wonder what the FOMC is seeing that they are not. That is not to say that policy is not being conducted systematically. I think there is a lot of coherence to our deliberations. But the view around my boardroom seems to indicate the existence of communications challenges that we as a Committee may not be fully addressing. Another director characterized the climate as one of “caution, caution, caution.” Thus, the opinions of my directors appear consistent with what we’re seeing in the investment data.

Regarding the labor market, we are hearing a rising crescendo of complaints regarding the inability to fill high-skilled positions, which is consistent with the growing gap between the job openings rate and the hiring rate in the JOLTS data. We are also hearing instances of fairly aggressive nominal wage growth as well. For example, a local hospital has just raised wages for its nursing staff 9 percent and is considering additional increases.

A few other areas in the District are doing well. One such area is construction, in which we are seeing fairly strong growth. Although the value of permits has recently declined, the value of contracts remains at a high level, and nonresidential construction in the District continues to outpace that of the nation. The trend in the mix of new housing construction in the

District has also gravitated toward a greater share of multifamily units. That may be the cause for an interesting behavioral element that one of my directors, who has an interest in an organic pet food company, pointed out—namely, that there has been a shift in dog ownership preferences to smaller dogs. Perhaps baby boomers and millennials find smaller dogs more conducive to an urban lifestyle. But related to being a dog owner, one of my other directors brought up the following. There has been an interesting innovation in the fintech community. A company called Wags Lending has pioneered a financial contract that provides for leasing with an option of buying a dog. He estimates that we should see a drop in the dog unemployment rate we commonly refer to as the “U-canine.” Sorry, I had to do that. [Laughter]

Regarding Third District consumers, the pace of activity has diminished somewhat, which was reflected in the general activity index in our nonmanufacturing survey. It fell to slightly below its nonrecessionary average. However, in our District, auto sales continue to be brisk and consumers remain optimistic. Overall, the Third District is seeing and should continue to see steady if unspectacular growth, and contacts remain upbeat about the future.

For the nation as a whole, I, like many of you, anticipate a solid bounceback in economic activity this quarter, with a gradual return to trend growth over the forecast horizon. Thus, my economic projections are not much different from those of the staff, although I see inflation returning to trend at a bit brisker pace.

Much of the near-term acceleration activity is driven by strong consumption growth and by a bounceback in inventories. I believe that economic fundamentals are in line with this view, as income growth has been solid and balance sheets remain healthy. Thus, I see 1.8 percent GDP growth for this year, 2.3 percent growth in 2017, and a return to trend-like growth over the rest of the forecast horizon. My main concern is the low productivity growth that we've experienced

of late. The recovery will look increasingly fragile if productivity growth does not strengthen. Regarding unemployment, I envision job growth will gradually taper to a rate consistent with the constant rate of unemployment, but my projections of the unemployment rate do somewhat undershoot that level, falling to 4.4 percent in 2017 before beginning to rise very gradually. And with respect to inflation, I continue to anticipate a gradual return to target, with the return achieved perhaps as early as the beginning of 2018.

With that projection in hand, I see a gradual rise in the funds rate as appropriate with the funds rate slightly exceeding its long-run value of 3 percent in 2019. My somewhat optimistic outlook will inform my views on policy tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. I'll start with a discussion of the District, and I'll begin with energy.

Our view on energy, despite recent price volatility, is basically the same as it was at the previous FOMC meeting. We continue to believe that global supply and demand will move into balance sometime during the first half of 2017, and that global oil inventories will begin to climb in the third quarter of 2017. Some observers, particularly recently, see this process taking six months longer, but we continue to expect that daily demand will increase approximately 1.3 million barrels per day in 2016 and 2017 and that this growth in demand, along with a slowing trajectory of growth in global supply—which includes significant cuts in the United States—should ultimately lead to balance. We expect continued price volatility, though, during the intervening period, but we expect the overall trend in prices to be one of firming as we move toward balance.

Several factors appear to have contributed to the recent price volatility. First, refinery margins are very volatile, and they can influence the level of gasoline inventories. Our view is that market participants may, in some cases, have overread the implications of excess gasoline inventories for oil supply. We prefer to focus on global oil supply and demand as more essential. Second, there's been talk from Russia and OPEC members about a production freeze. We continue to believe, on the basis of conversations we have had with our contacts, that a freeze is unlikely, but the talk about this has probably had some positive effects on prices over the past couple of months. And, third, there have been outages, which we've mentioned before, in Nigeria, Libya, Canada, Iraq, and other nations, which appear to have caused trading participants at times to be unduly optimistic about the timing of supply–demand balance. It's our view that most of these outages are going to be restored, although Nigeria and Libya will persist for some time.

So with all of this, the rig count in Texas is starting to build, albeit very gradually, and we think that expansion will only accelerate if prices rise to between \$50 and \$60 a barrel, and we're not there yet. Even in the Permian, the breakeven is above \$50 a barrel. Certainly on many long-lived projects, the breakeven is much higher, and we are a considerable period of time away from significant investment in those. We continue to believe there will be more bankruptcies, mergers, and restructurings in this sector, in view of the existence of several highly leveraged companies as well as the fact that breakeven levels for shale in the Permian Basin are well in excess of \$50 a barrel. Overall, though, we think the energy sector will only be a modest headwind for our District for the remainder of 2016 as opposed to being the significant headwind that it was in the first half of the year. In connection with that point, employment growth in the state of Texas was flat for the first six months of 2016. We think the second half of 2016 is

looking considerably brighter, and we're expecting approximately 2 percent job growth for the last half of the year. And our forecast now is for 2 percent job growth during 2017. Texas continues to benefit from significant continued migration of people and firms to the state, and we expect this trend to continue in 2017.

For the nation, my projections regarding the U.S. economy in the latest SEP round are strongly influenced by analysis recently conducted at the Dallas Federal Reserve and around the Federal Reserve System, which suggests that the economy's real growth potential is only about 1 $\frac{3}{4}$ percent or lower, in light of demographic and productivity trends, and that the longer-run normal federal funds rate is certainly lower than it has been previously. In response, I've lowered my projected path of both GDP growth and the funds rate. We're participant number 12, by the way, in the dot plot.

I've not materially changed my projections regarding unemployment or inflation. We continue to forecast that, under appropriate policy, the unemployment rate will fall modestly from its current level, and we continue to believe that this drop in unemployment will be accompanied by some level of improved nominal wage growth.

The Dallas trimmed mean PCE inflation rate has been running between 1.6 and 1.7 percent for the past year and a half. Imbedded in this rate is a historically muted level of health-care inflation, and we've been talking more recently at our bank about whether this muted level of health-care inflation is likely to persist. Overall, these numbers give us confidence that we will gradually move toward our 2 percent objective in the medium term.

A word about the recent ISM surveys, which have been weak. We prefer to look at the three-month moving averages of both the nonmanufacturing and the manufacturing surveys. Both have held steady on a three-month moving average basis. In addition, the NFIB small

business survey for August, initial unemployment insurance claims, and various surveys of consumer attitudes tell us that we are not seeing a deterioration in the outlook.

Let me just briefly comment on our discussion with contacts in our District about business investment. We also see, as many of you do, business leaders continuing to be cautious about hiring plans and capacity expansion. Apart from the obvious effect of lower oil prices on energy cap-ex, we also see business cap-ex being held back by sluggish global demand, high rates of industry disruption, challenging levels of regulatory requirements, and one more factor, a rise in shareholder activism, which has shortened time horizons for CEOs and their boards of directors. CEO tenures in this country are shorter. Investment time frames are shorter. Activism is on the rise. Investor patience is as short as at any time in my career, and the threat of fund redemptions is as high as I've ever seen it because investors are searching, and in some cases desperately searching, for adequate return. All of this makes capital spending, which pays off with lags of 5 to 10 years or more, much tougher to justify versus share repurchase and dividend increases. I don't see this changing materially in the months and years ahead unless there are changes to business incentives for capital spending.

One other comment outside the United States. A team from the Dallas Federal Reserve visited Beijing and Shanghai in August. I know a number of others around this table also visited China in the past two months. This trip confirmed our analysis regarding high levels of overcapacity, growing levels of debt to GDP—particularly to support an economic growth rate of 6½ percent, which we think is artificially elevated—the challenges of an aging workforce, and the challenges of a transition to a more consumer-service oriented economy. It is clear, on the basis of our discussions throughout that country, that currency controls have been dramatically tightened to reduce outflows and that nonperforming loans are likely closer to \$2 trillion than \$1

trillion. These issues, though, are mitigated by the fact that most of these loans have been made by government-owned entities to government-controlled entities, and China has shown an ability to keep the need for external capital to a relatively modest level. So the trip reinforced our view that while non-performing loans are building, China can manage them because of the internal nature of its debt problem.

There's a question about how effective the currency controls are going to be and whether they're going to be able to bind things the way they have, even with the recent deterioration in the currency.

As the private sector continues to grow in China, the country hopes to steadily reduce its reliance on state-owned enterprises, but there's no question that the challenges faced by China are unlikely to be resolved in quarters or years—it's more likely to take decades. And in the meantime, we believe that the world is certainly going to have to become accustomed to lower levels of Chinese GDP growth and may suffer periodic bouts of financial instability in the same manner that we saw in January and February. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. Before I dive into my laboriously prepared and scripted report, I need to prepare everyone for a euphemism I will use about halfway through my remarks. The quickest explanation is the following example of a backyard family conversation:

“Mommy, what did Daddy say just now when he hit his thumb with the hammer?”

“ ‘Shirt,’ dear. Daddy said, ‘Shirt.’ ”

Okay. All right. With this modest preamble, I will try to avoid reading from the Governor Rick Mishkin playbook. [Laughter]

Now, the reports from my directors and other business contacts were quite similar to those in the previous round. On balance, the mixed tone of the commentary continues to feel consistent with the 1 to 2 percent GDP growth rates we've seen over the past year. As we've been hearing for some time, consumer-facing businesses are holding up well. In Chicago, we also heard some encouraging news about nonresidential construction and the labor market serving these projects. My labor union director, who heads the Chicago Federation of Labor, reported that several new large building projects are luring workers out of retirement and justifying the expansion of sorely needed apprenticeship programs. However, local stories like these are tempered by other national contacts who are less sanguine about construction for the United States as a whole. Furthermore, many non-consumer-facing businesses, especially in manufacturing, face lingering challenges. Our steel contacts note that mills are reducing capacity in response to falling demand. A director who formerly headed a nationwide trucking company reported that the freight industry no longer needs to expand capacity. The demand for new heavy trucks has fallen sharply, and the industry is no longer facing a significant shortage of drivers.

With regard to the international situation, several contacts reported that their global sales are improving, but in many countries these gains are just coming off the bottom, and they still see the level of demand as relatively weak and the outlook as highly uncertain.

On the financial front, regulatory changes have increased some short-term borrowing costs, but my contacts said that longer-term debt markets continue to be highly receptive to investment-grade issuers. I heard contrasting stories about risk-taking. My director from Discover Financial noted some stretch-for-yield activities. Some of his credit card competitors

are increasing card issuance to households further down the credit spectrum and luring customers with overly generous rewards programs. He thinks they will be unprofitable.

In contrast, several contacts mentioned increased equity in commercial real estate markets. One report characterized a type of deal that last year would have been written at 35 percent equity and 65 percent debt. Now, similar deals are being struck at a 50–50 split, so there's a noticeable shift to more equity and less debt. In addition, this report cited tougher recourse provisions in these transactions. We heard that private equity deals were also being structured with somewhat less leverage. The loans are still often covenant-lite, but the borrowers now have more skin in the game.

Turning to our economic growth outlook—and, by the way, we are number 11 in the SEP—we expect increased inventory accumulation and some pickup in business fixed investment. These factors will lift real GDP growth to around a $2\frac{3}{4}$ percent annual rate during the second half of this year. In 2017 and 2018, we see GDP growth averaging just over 2 percent, roughly similar to the Tealbook. We do differ with the Tealbook, however, on the degree of slack we see in the economy. For 2016, we estimate the natural rate of unemployment to be 4.7 percent. We also think the labor force participation rate is still a little below trend. These observations and others from wages indicate that some slack remains in the labor market. In our forecast, resource gaps are closed by the end of 2017. There is some modest overshooting thereafter, though less than in the Tealbook. I should note that we expect demographic factors to lower the natural rate of unemployment gradually, by 5 basis points annually for some time. By 2020, our estimate is down to $4\frac{1}{2}$ percent.

More generally, uncertainty seems high. Corporate expectations for capacity expansion seem weak, and I continue to see downside risk to our outlook for economic growth. Our main

concern is that if the U.S. consumer begins to falter, there will be no component of domestic or foreign demand to pick up the slack for the foreseeable future. Even though things have been relatively quiet of late, the international situation definitely remains an important risk. On the domestic front, my biggest concern is that business caution will hold back capital spending more than we expect and may even impinge on future hiring.

All right, now for the euphemism. Am I the only one who talks to business CEOs who describe their challenges as selecting from a “shirt” bucket of low-growth opportunities?

[Laughter]

MR. WILLIAMS. Apparently. [Laughter]

MR. EVANS. This remark came from a CEO describing the most recent discussions of the Business Roundtable, and it is discouraging. Separately, but along this same theme, Manpower Employment Services’s CEO said most of his customers expect to be in cost-cutting mode next year. Such plans hardly are consistent with an outbreak of capital spending. Also, the head of John Deere reported that its internal baseline projection for 2017 is for a slight decline in equipment sales, but the company is preparing for the possibility of even worse outcomes. As corporate CEOs prepare to navigate an economy with 1 $\frac{3}{4}$ to perhaps 2 percent trend growth, I realize that I haven’t spoken with anyone who talks about robust expansion plans in the United States.

Turning to inflation, my numbers are again close to the Tealbook. I see both core and total inflation moving up gradually but still falling short of our 2 percent target at the end of 2019. While we see less overshooting of potential output than the Tealbook, our forecast is conditioned on a flat dollar and a somewhat slower pace of policy normalization. Our monetary policy assumption is a key factor in our forecast narrative, as we see it bolstering inflation

expectations and their eventual upward pull on actual pricing. That said, I again see downside risk to this forecast. TIPS-derived inflation compensation in financial markets and many survey measures of inflation expectations remain low, and my business contacts report few inflationary pressures and no appreciable pricing power.

We have heard more accounts of wage increases, but it is striking how modest the gains are. There are very few reports that appear commensurate with the 2 percent PCE inflation environment. If we were likely to see a quick return to 2 percent inflation, I would expect to see more bubbling up with these indicators by now, but there just isn't that much there. Instead, I see a rather firmly entrenched low-inflation psychology. Indeed, why are businesses holding the line on wages even when many tell us there's a shortage of workers? It must be because they don't expect to be able to increase prices enough to justify the expense. This psychology is unlikely to change quickly, not without more dramatic and sustained increases in aggregate demand or something else supporting expectations of upward movement and underlying inflation. Until this happens, even modest inflation increases remain more of a hope than a solid expectation. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. During the past few meetings, the economy has had several flares fly across the bow. We saw jobs data, financial volatility, and Brexit worries, but each of these shots passed without effect, and, all told, the expansion remains solid and on track. As others have said, we're on course to add nearly 2¼ million jobs this year, and that's far more than the million or so that we need to keep pace with labor force growth.

I'd like to comment on something President Evans said, which I agree with. I hear some similar remarks. We have a trucking company and a couple of metals companies on our boards,

and I'm definitely hearing the exact same thing. So there's no question about that. But then, when you switch over to anyone who's affected by the energy industry, the strong dollar, some of these other factors, you definitely hear more negative comments. On the services and consumer sides, I hear much more positive comments. In the end, the comments I hear from our directors and our business contacts are consistent with what we're seeing in the overall economy—that consumer services are really driving economic growth today. It's above trend because it has to make up for weakness in other areas. So I actually agree with that way of describing it, and I think it reflects what we see in the data when you look at how we're getting the real GDP growth that we're getting.

Also, when I look across my District, one of the things that I find encouraging is that job growth has been pretty broad based. A lot of people think, "Well, it's San Francisco, of course it's booming." But, generally, seven of the nine states in the 12th District are among the fastest growing in the United States. It's different stories. I was just in Reno, Nevada, where it's really just a story of recovery from a very deep recession. In other states, like Utah, it's just a very strong economy. But, overall, I'm seeing good growth broadly, not just in the very hot areas like the Bay Area and Seattle.

Looking ahead, I think that real GDP growth will be about 1 $\frac{3}{4}$ percent on a national basis this year, which is faster than my estimate of potential. My outlook hasn't changed much over this year. Economic data, as they relate to our dual mandate, continued to meet or beat expectations, and the domestic headwinds slowing the economy have eased. In particular, government spending on all levels is on the upswing, and households have registered solid gains in disposable income and net wealth and are well positioned for strong consumption.

With output and unemployment gaps now closed and substantial monetary accommodation still in place, I expect that the economy will overshoot potential next year, and that will push the unemployment rate down to nearly 4½ percent. And the resulting upward pressure on inflation should speed the return to our 2 percent price objective, which I expect to reach by the end of next year. I view the risks to the outlook as basically balanced and similar to those of the past 20 years, especially in light of the diminished downside risk emanating from abroad. Importantly, this projection embeds an assumption of an appropriate policy rate path, with two increases in the funds rate this year and four in 2017.

Perhaps the most crucial issue regarding the forecast is not so much what the specific numbers are, but how they relate to the “new normal” for steady-state growth. On this point, I found the box in Tealbook A about the neutral pace of payroll growth a very useful reminder that steady-state monthly employment gains are much lower than what we’ve been used to in the past. As I mentioned in a previous meeting, looking across a lot of estimates, including those obtained by our colleagues at the Chicago Federal Reserve, my own view is that something like 80,000 jobs is the likely benchmark as we go forward. Of course, we’ve been averaging about 180,000 jobs per month this year, and that’s an extraordinary pace that can’t be sustained forever.

The special staff memos on the new lower estimates of g^* and r^* , I thought, were very useful. They were clear, concise, and astutely aware of the relevant literature. As the memos describe—yes, I’m only reading what I was given [laughter]—there is growing consensus that a long period of slow productivity growth is under way. Modest underlying productivity growth, combined with slower growth in labor quality and less favorable demographics, means that 2.5 percent real GDP growth on a sustainable basis just isn’t possible anymore.

Now, people's estimates differ by a tenth or two here and there. My own estimate is that longer-run potential output growth is 1.6 percent. In fact, looking at most forecasters, they have taken on board the idea that something around 1½ percent is more likely than something like 2½ percent. In that context, the real GDP growth of about 1 percent in the first half of this year was really only a bit below trend. As noted in the Board staff memo, the continuation of slow real growth has implications for r^* . Indeed, in the model that Thomas Laubach and I developed a while ago, the effect is roughly one-for-one with the neutral real rate falling with lower potential output growth. I have for this reason—but on the basis of a lot of analysis—lowered my own estimate of r^* to ¾ percent, down from 1 percent in June, much like the Tealbook assumption.

One comment I'd like to make on the r^* issue that does come up in thinking about monetary policy is that from my own perspective, I felt that the short-run r^* , if you will, has been around zero. I think that is consistent with some analysis that Thomas has done, consistent with—I guess I'm peeking ahead at your memo—with a number of our views here. So in the short run, I felt that an r^* of zero was about right. The real question is whether this a transitory phenomenon and we're going to move back to a more normal level, or is this really something that's going to be—I don't know about permanent, but will be with us for 5 or 10 years? And that's really the area in which the evolution in my thinking has happened. The short-run r^* has been at zero for quite some time, and I haven't changed that view. It's really more the accumulation of evidence not only in the United States—from different models, different approaches—but also recent work showing that r^* seems to have fallen more broadly across countries that's pushed me in the direction of lowering my long-run r^* . That's one way you can try to figure out how I can have my own views of the short run. It's not really about changing

my views on the short-run r^* , it's really about how much of that is likely to be with us for 5 to 10 years.

Another steady-state star variable, if you will, that has come up a few times already today is u^* , the natural rate of unemployment, and, of course, that can move around over time. In particular, demographics have an effect on the natural rate, and President Evans talked a bit about that. Younger workers consistently face higher unemployment rates than older workers, so the fall in the share of younger workers in the labor force is pushing down the natural rate, all else being equal. Typically, economists use these fixed-weight unemployment rates or demographically adjusted unemployment rates to try to take that into account. My own staff has developed a more granular demographic adjustment. They went to the underlying microdata of the six fundamental labor force transitions on the movements between “employment,” “unemployment,” and “out of the labor force,” and they used a common factor model to try to strip out the demographic factors that affect these transitions and then compute a new, arguably more sophisticated, demographically adjusted aggregate unemployment rate. The analysis based on this method shows that over the past decade or so, changes in the demographic composition of the labor force have lowered the natural rate, as President Evans and others have said, but by only about $\frac{1}{4}$ percentage point. So taking this onboard, it's consistent with a view that the natural rate is somewhere between 4.75 and 5 percent, but I don't think demographics can push you—at least where we are today—to a much lower view of the natural rate of unemployment.

Of course, there are other factors besides demographics that can affect the natural rate of unemployment. It's useful to look at a lot of other measures: Vacancy rates as well as survey data on the ease of finding jobs and filling jobs have continued to improve and are at levels consistent with our maximum employment goal. Furthermore, several measures of wage growth,

especially for workers who are continuously full-time employed, have picked up notably this year, and that suggests the labor market is at full employment. Taking all of this into account, I've left my estimate of the long-run rate of unemployment unchanged at this time at 5 percent. For the record, since we're on a run right now, I'm SEP respondent lucky number 13. Thank you.

CHAIR YELLEN. President George.

MS. GEORGE. Thank you, Madam Chair. The District economy expanded modestly since the previous meeting, and unemployment rates held steady, although they did tick higher in a few states. The divergence between energy and non-energy-producing states remains notable, with states like Oklahoma and Wyoming in what could be viewed as a regional recession. Our District survey shows the manufacturing sector is also still facing some headwinds, with the majority of the weakness concentrated in the oil-producing states, although within the energy sector, the rig count in the District has stabilized and started to modestly increase.

In the agriculture sector, farm income is expected to fall, and lower crop prices continue to weigh on profit margins. Margins also remain poor in the cattle and dairy sectors, and as a result, agriculture credit conditions bear close watching, as loan repayment rates have fallen. Although agriculture and energy certainly remain soft, the spillovers to broader activity in the District have been limited so far and primarily are centered in those energy- and agriculture-concentrated states. And even in these states, economic activity is more diversified than a few decades ago, which accounts for sentiment that is relatively more upbeat. In the much larger services sector throughout the region, services are growing at a pace similar to that of the nation.

My outlook for the national economy is little changed. I expect GDP growth in the second half of the year to pick up significantly from the disappointing pace in the first half, and

looking at next year, I continue to see moderate growth, with inflation rising to 2 percent. The key question for me in framing this outlook is whether consumers can continue to pull the economy forward over the next few years. Consumption growth was strong in the second quarter, with another robust gain projected in the current quarter.

Looking ahead, I expect consumption growth to be supported by strong labor market conditions. The steady growth in average hourly earnings, amid modest productivity gains, also points to a tightening labor market. Consistently, last week's Census report on income and poverty highlighted a welcome gain in real median household incomes last year. Although the labor market looks likely to continue its improvement, I do think a risk worth monitoring is the decline in the workweek since the beginning of the year. Analysis by my staff offers a couple of observations concerning the declining hours in retail trade, leisure and hospitality, and professional business services. In the categories of leisure and hospitality and professional business services, which comprise a substantial share of employment, the workweek appears to be returning to a level comparable with a few years ago, suggesting there may have been some overshooting in the average workweek in these sectors. On the other hand, the workweek for retail trade has been on a downward trend since late 2011. This may be related to structural changes in this sector, such as the emergence of online retailers.

Regarding the outlook for residential investment, analysis by my staff suggests that the falloff in single-family construction reflects a limited amount of undeveloped land in locations desired by households, a supply-side factor that is likely to persist for a considerable time. Additionally, existing home sales appear to be constrained by a shortage of listings. These supply constraints may lead homeowners to remodel an existing house rather than buying a new one. With improvements accounting for one-third of residential investment, spending associated

with home improvements could resume its upward trend of the past three years and offset much of the drag over the medium term arising from the behavior of new construction.

Like Tealbook, I see few signs of strength in business fixed investment, yet nonfinancial corporate debt as a share of GDP is approaching its highest level on record going back to 1959. Debt-to-earnings in the nonfinancial corporate sector is also at multidecade highs for firms able to issue investment-grade debt. For firms issuing high-yield debt, debt relative to earnings is also at its highest level since 2003. Clearly, the nonfinancial corporate sector has increased leverage, which concerns me in an environment in which S&P 500 firms have collectively spent more on dividends and buybacks than they generated in operating income in the last seven quarters. An unusually low rate environment has facilitated these trends, and the economy could be at risk if earnings disappoint and the markets reevaluate exposures to the sector.

Finally, since our July meeting, inflation expectations in the recent Survey of Consumer Expectations moved up both at the one-year and three-year horizons. Last week's CPI release was also encouraging, as core goods inflation was not a drag on the overall CPI for the first time in three months. This suggests some stabilization in the portion of U.S. inflation that is most affected by dollar strength. With the stable trend in core CPI above 2 percent, stable survey-based inflation expectations, tight labor markets, and rising wages, I see inflation as fully consistent with our mandate for price stability and moving toward our long-run goal of 2 percent. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Madam Chair. The Ninth District economy continues to perform well, though the pace of economic growth slowed. Wage growth appears moderate.

Price inflation remains subdued, partly reflecting depressed oil prices in our large region with the Bakken.

Actually, we welcomed the very good news from the Census last week on the 5.2 percent rise in median household income between 2014 and 2015, with significantly fewer households in poverty. It's great that the recovery is finally extending more broadly across the income distribution, and it reflects steadily strengthening labor market conditions between 2010 and last summer. We hope the growth in median income will continue.

On the inflation front, from our perspective, we've made little progress toward our inflation objective. I find it interesting that the staff forecast of core PCE inflation is to remain at 1.6 percent for both 2016 and all of 2017. Market- and survey-based measures of expected inflation are near record lows. Some attribute this to temporary factors and argue that inflation is coming. The inflation hawks might be right, but I'm looking for it in the data, not just faith and hope.

On the labor market front, growth has slowed over the past 12 months. The unemployment rate and the staff's labor market conditions index are little changed since last summer, and as others have noted, recent manufacturing and retail sales data have been disappointing. Economic growth in Mexico and Canada, our major trading partners, also looks very weak, so my baseline outlook is more of the same: sluggish growth, subdued inflation.

We have talked about this many times since I've been here that there's asymmetry with our tools related to the lower bound, so for me, the risks to the outlook are tilted to the downside. It's much tougher for us to respond to very low inflation than to high inflation. The risk of unsustainable growth stoking inflation seems remote, in view of the less than 2 percent GDP growth and the stable labor market indicators. And I think I've mentioned it before: If it were to

surprise us on the upside, that's a high-class problem compared with surprising us on the downside. Thank you.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. At the December 2015 meeting at which the Committee raised the interest rate, I wrote down three rate increases for 2016, and I guess I see two main unexpected developments since then that have changed my view of the appropriate path so far this year. First, the period of financial market turmoil in January and February linked to the possibility of a large devaluation of the RMB was followed by a series of weak incoming data. Real GDP growth in the first half of the year came in at $1\frac{1}{4}$ percent, well below expectations. Payroll growth also declined sharply in the first half. Although this weakness is now passing, it does leave, for me, a declining residue of uncertainty. Second, and of more significance for the period ahead, interest rates have declined significantly right across the curve, and, like many others, I have come to the view that rates need to be lower than I had thought to support activity. The kinds of rate increases that have been in the SEP for the past few years seem increasingly unrealistic in the global context that we are now in. For me, that argues for a more gradual path of increases but not a change in the direction of travel.

To talk about each of those a little bit, even though GDP in the first half disappointed, about half of that slowdown over the past year, as David Wilcox covered, was about a decline in inventory accumulation—an inventory correction—which really says little about the underlying strength of demand. Private domestic final purchases are a better indicator. They have behaved about as expected, growing at 3 percent last quarter and $2\frac{1}{4}$ percent over the past four quarters.

The Tealbook and seemingly all private forecasters expect stronger GDP growth in the second half. And, for what I regard as good reasons: The inventory correction should end. The

drag on business investment from lower oil prices that should end now that rig counts appear to have stabilized. The contractionary effects of the big increase in the exchange value of the dollar should be waning. Financial conditions have eased materially since December. And, finally, consumer spending should remain strong, with rising real incomes, continued job market strength, and much improved household balance sheets. Overall, I expect strong growth in the second half that will lift 2016 GDP close to 2 percent for the year as a whole.

In labor markets, payroll growth this year has averaged 180,000, down 50,000 from last year's pace, but the underlying pattern is significant. The average for March, April, and May, which is what the Committee saw at the time of the June meeting, was only about 120,000, which was a sharp deceleration since 2015. Fortunately, the average for the past three months through August is back up to 230,000, which is reassuring. I would add that labor markets are also a better real-time indicator of the strength of GDP than is reported GDP. With the increase in labor force participation, both unemployment and participation appear now to be very close to their longer-term trends, suggesting that the economy is pretty close to full employment. Indeed, despite modest rates of increases for wages, the very low levels of productivity growth and inflation over the past few years mean that unit labor costs are now rising faster than prices. In addition, the Conference Board's survey on job availability now shows, for the first time since 2008, that more respondents think jobs are plentiful than find them hard to get, and that has generally only happened when unemployment is at or below the natural rate.

In contrast to recent years, the improvement in labor markets has shown up this year in the form of an apparent upside surprise in our admittedly volatile measure of labor force participation. If participation had declined as predicted in the December Tealbook, and holding all else equal, the unemployment rate would now be 4.3 percent. I suspect that this would have

been a very different meeting if that had been the case. In any case, above-forecast labor force participation suggests that the economy has more room to expand, or at least that supply-side limits are probably more than usually uncertain, and I think we would be wise to take that into account in thinking about policy. If job growth continues at anything like these rates, unemployment may fall well below current estimates of the natural rate, or labor force participation may continue to improve relative to trend, or both. Any of these outcomes would support a return to 2 percent inflation and would be welcome for me. Another possibility is that inflation does not pick up and that we continue to revise down our estimate of the natural rate. Finally, it's also possible, of course, that wage and price pressures will appear to an unexpected degree, and that would require a more aggressive response from policy and potentially put the recovery at risk. There are no risk-free paths, and this latter I find a good argument for which the time has not yet come, in my thinking.

The third factor I mentioned is much lower interest rates. Since the rate increase of December, there has been significant loosening in financial conditions. Between that SEP and the current SEP, we've seen median FOMC participant expectations regarding the total number of rate increases for this year and next year decline from eight to three. By a straight read, markets are pricing in about a 50 percent chance of one increase this year and one more rate increase next year. Accounting for term premiums and other factors, I think, actually, for 2017, market expectations are probably not far from this meeting's SEP. Other financial conditions have loosened as well, with lower long-term rates, higher stock prices, a weaker dollar, and narrower credit spreads. With this loosening of financial conditions, GDP growth and the pace of job creation have stabilized, and I do see a causal relationship between the first and the

second. The implication, though, is that the neutral rate of interest remains very low, even lower than I had thought.

Inflation, on the other hand, has performed very close to expectations. Year-to-date core inflation is 1.6 percent, up 0.3 percentage point over the year. That said, rising unit labor costs may put some downward pressure on profits and upward pressure on prices, helping us get back to 2 percent inflation. I continue to see inflation rising to 2 percent over the medium term, although I do see the risks as slightly more to the downside. In particular, low measures of inflation expectations remain a concern, and to address that concern, I do see it as appropriate to allow unemployment to decline modestly below the natural rate in order to support progress toward our 2 percent inflation target. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. During the day on Saturday and on Sunday morning, I composed a set of remarks for the economic go-round that were, I believe, destined to be remembered as one of the most remarkable interventions in the annals of the FOMC. On Sunday afternoon, my computer crashed, and those remarks, unfortunately, were lost to posterity. [Laughter] Having tried to reconstitute them Sunday evening and yesterday, somehow the brilliance had been fleeting, and for that reason, I'm grateful that Presidents Evans, Rosengren, and Williams what I actually think is the most important thing to talk about in this meeting: the relative risks of overshoot against failing to stimulate more. So, in a somewhat impromptu way, I'm going to try to make some remarks about that.

First, we really are in a fundamentally different position than a year—or certainly two or three—ago. At that time, I honestly couldn't understand arguments that were being made for why we needed to be ready to start tightening, or we should start thinking about tightening, or

the like. Whatever one's view, and I think people know where I stand on this relative to others on the Committee, we are surely in a realm now in which the possibilities and the risks on both sides have to be taken seriously. And even though I come out differently from, say, where President Rosengren is, I think he has raised an important set of issues both here and in his public speeches, which it behooves all of us to engage in and just try to balance to see what the right path is for the period ahead.

The first thing I'd say on that—and this is the risk of overshooting—and as I think the discussion among Presidents Evans, Rosengren, and Williams and David Wilcox showed, it's actually hard to find historical examples of pretty much anything that we want to demonstrate here. One of the problems is that, as President Williams pointed out, it's hard to find an example when there was a soft landing where unemployment went up several tenths of a percentage point without a recession. But, on the other side, it is also hard to find one of those circumstances in which the FOMC did not arguably keep its foot on the brake way too long. One has to recognize that, in these cases, inflation had actually gotten well above target for some period of time. So I think while it's reasonable for all of us to look at history and try to learn from it, I suspect that history isn't going to provide an answer here, even though it will, in a sort of Biblical fashion, provide a little bit of support on both sides.

So, the question of what the risks associated with a modest to moderate overshoot are, I think, are the ones that Eric lays out, and others have echoed, and are the ones that we should be worried about. And the questions are, first: How likely is that to happen? Because, obviously, that's important. And then, second: What are the risks on the other side? That is, if one takes the approach of beginning to raise rates in order to avoid those risks, what kinds of risks are you courting on the other side?

As you can tell from what I already said about history, while I agree that there is the risk of an overshoot that requires us to respond in a very robust way and thereby induces a recession, it seems to me that in an environment in which inflation has been running below target as long as it has, in which there is a global arguably disinflationary—and certainly not inflationary—environment, and in which we are talking not about massive overshoots but a few tenths of a percentage point overshoot, my instinct is that the risks are nontrivial but modest to moderate. And that's reinforced for me by looking at the flip side of this, which is: What are the risks of nonlinearity in the labor market—specifically, with the unemployment rate going down below what is perceived to be a natural rate?

If this is the concern, I think there aren't really a lot of historical examples to support that kind of concern. If you want to see a nonlinear relationship between falling unemployment, arguably below the natural rate, and a nonlinear increase in wages, you can go back to the 1990s, but that did not translate into price inflation, presumably, at least in part because of the fact that the Phillips curve had already flattened by then. So if you want to see price inflation being associated in a nonlinear fashion with a dip below the natural rate, I think you have to go back to the 1960s. And if you're going back to the 1960s—again, I lived through that period, but I do not recall what was happening with inflation directly at that time—my understanding is that the estimates of the natural rate may have been off by a substantial amount, like 1 or maybe 2 percentage points, not several tenths of a percentage point. So, again, it was really quite a different context from the one in which we find ourselves today.

And then, I add to that the uncertainty that Governor Brainard and President Evans have referred to regarding the exact value of the natural rate of unemployment is. If we're worrying about overshooting it by too much and if it's actually lower than the staff estimate of 5 percent,

then the kinds of overshooting that we are talking about are obviously smaller still. And I do continue to think there's a pretty good chance that the rate of unemployment at which even wage pressures will be significantly built up is lower than the 5 percent estimated by the staff. What we have seen over the past year or so has been an encouraging phenomenon that there really is more slack in the labor market than some believed. That is the significance of the fact that the unemployment rate has remained stable during this period. It is that we've been creating jobs at a healthy clip—above the number needed to deal with new entrants into the labor force—and yet unemployment has not been falling during that period.

Now, maybe that could all reverse very quickly, and you would simultaneously have no people coming into the labor market and unemployment beginning to decline very quickly. But it seems to me as though it is more likely that we are testing the bounds of how much slack there is, and this will be something more of a gradual process, because the amounts really have exceeded, I think, what many people expected even a year or two ago.

Just a couple of mildly relevant comments on this from current activities: EPOP has been increasing faster this year than last year, again suggesting that it has been drawing slack back into the labor market. And recently, compensation increases have actually flattened out a bit. With some exceptions, like construction, for which supply constraints do seem to be present, we haven't seen an unusual acceleration of wages at the high end of the distribution of wage growth, and that is the phenomenon that has been observed during past recoveries when unemployment dropped below what later proved to be the natural rate.

All in all, to me, the situation we're in now is a pretty good one of continued job creation that is taking up slack in the economy, a process that has helped bring the share of the long-term unemployed back to its pre-crisis level. It is now helping minority and other groups whose

unemployment rates traditionally run significantly higher than the average for the labor force as a whole.

So that's my own assessment, gloss, and obviously, to some degree, disagreement with the very salient issue that Eric raised as to how much of a risk there is there. And I'd just much more briefly point out that, on the other side, there are risks, too. There is, it seems to me, a growing case for some variant on the secular-stagnation hypothesis. Maybe not secular stagnation itself, but the cognitive transmogrification of headwinds into prevailing winds, which I think a lot of people have gone through, is something that needs to be taken quite seriously. That suggests, again, that if we're in an environment in which there is a risk that inflation is not going to go up and indeed is susceptible to recessions pushing it down further again, one actually wants to err on what I've characterized as the "show me" side of things, of looking for tangible evidence that inflation is rising toward and will remain around its target level.

I don't expect to persuade people who have the other view, but I really do think that that's the discussion. The discussion of the set of issues, which Presidents Evans, Rosengren, and Williams started in their questioning of David Wilcox and which I'm trying to continue now, is I think probably the right one to have maybe in October as people think, looking ahead, about where this balance of risks really does lie and forcing each of us to confront the quite legitimate position that those who have the opposite instincts are taking. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I want to endorse what Governor Tarullo just said. I think this issue about where the risk lies is really the germane subject that we're wrestling with. And I think that one reason why I'm less worried about the overshooting risk, which I think is legitimate, is because we are growing only very modestly

above trend, so we're approaching full employment at a very shallow trajectory. Inflation is below our target rather than above our target, and inflation expectations are probably a little bit depressed.

Obviously, nobody wants to repeat the 1960s. But I would emphasize that, to get the inflation that we got in the 1970s, we had to work really, really hard for a decade of a whole series of policy mistakes over and over again. Not only was the unemployment rate allowed to decline below the natural rate, but I think there also was a fundamental error in policymakers' thinking that if the unemployment rate got too low, the inflation rate would go a little bit higher, but it wouldn't be the case that the change in the inflation rate would continue to go up every year that you kept the unemployment rate below its full-employment rate. So I think there was a model failure in terms of how the inflation process actually worked, so as inflation expectations got unanchored, what happened was, as you stayed below that full employment unemployment rate, inflation got worse year after year. I think coming back in October and maybe actually reviewing some of this historical evidence is certainly an interesting thing to take a look at. I would encourage the staff to bring all this back to us and maybe actually talk about some of these various episodes and whether the current situation is different or similar to those earlier circumstances.

Now, in terms of the outlook, my views, as I've said many times, have not changed much since the previous FOMC meeting. On the growth side, we expect real GDP growth to average about 2 $\frac{3}{4}$ percent during the second half of the year, and for 2017 and 2018 we're penciling in GDP growth around 2 percent but have considerable uncertainty about that. With respect to the very near-term outlook—in other words, the next couple of quarters—I'm of two minds. On the one hand, I do take comfort from the fact that financial conditions are accommodative, the fiscal

impulse is positive, and real GDP is getting a short-term boost as the drag due to the decline in inventory investment reverses itself. But, on the other hand, we do have to recognize that some of the recent data have been quite weak. For example, although the last employment report had 151,000 in payrolls and people took a lot of comfort from that, the rest of the report was very soft—aggregate hours worked declined, and some of the earlier rise that we saw in average hourly earnings on a year-over-year basis reversed.

In addition, retail sales were quite soft in August, suggesting that maybe some of the recent momentum in consumer spending has faded, and the past two ISM reports for manufacturing and services for August registered large drops. As President Kaplan has noted, this may just be noise, and maybe we want to look at a smooth three-month moving average. But the size of the declines in both of those were quite large, so I'm not willing to discount it completely.

With respect to the labor market, my assessment is that there is still some slack. I think we need to be clear when we talk about the monthly payroll gains needed to keep the unemployment rate steady in the long run, which is suggested at 85,000 to 115,000 in the Tealbook. That is a long-run concept and may not be a good metric to use in assessing when is the appropriate time to remove monetary policy accommodation. As we've seen over the past eight months, payrolls can grow considerably more rapidly than that without necessarily pushing down the unemployment rate. If an improving labor market pulls discouraged workers back into the labor force, I think that's a welcome development, and we don't necessarily want to forestall that. I can, in fact, imagine payroll gains persisting at 151,000 a month or more for some time without that generating much downward movement in the unemployment rate. If that occurred and other data suggested no evidence of a rise in inflationary pressures, the right conclusion

might be to conceivably keep monetary policy on hold for some time to come. Obviously, the decision wouldn't just depend on what is happening in the labor market. It would depend on many factors. My point here, though, is that we shouldn't suggest that our actions are going to mainly be dictated by the pace of monthly payroll change relative to the long-term pace consistent with a stable unemployment rate. That is just too simplistic a metric, I think, in terms of our monetary policy decision rule.

Another issue I am concerned about on the economic growth side is whether low interest rates are losing their punch in terms of supporting the economy. There are at least two issues here. First, the attenuation of monetary policy stimulus over time, as the activity that has been pulled forward by lower interest rates—for example, motor vehicle sales—is no longer there when the future inevitably arises. We may be starting to see that in the motor vehicle sector, as sales have flattened out this year and in August actually declined. The second is the prospect that a persistent period of low interest rates may eventually lead to a rise in the saving rate. If real rates stay very low, households, pension funds, and endowments will likely have to save more to achieve their wealth objectives. On the household side, we see some evidence of this in the fact that the household saving rate is a bit elevated today relative to what one would expect, just on the basis of the level of household net worth relative to income. Now, one could take this as a positive sign. If the typical relationship was restored, the household savings rate would drop, and consumption would grow faster than income as the saving rate declined. Or it could be that the current situation is just the beginning of a more persistent updrift in the saving rate as savings behavior responds to the low level of interest rates. As I've said at other meetings, we have never been in this circumstance before, so to think that we understand the dynamics of how the household sector is going to react to this long period of low interest rates is just an open

question at this point. If the saving rate were to rise, consumption would grow more slowly than income, and that, in turn, would exert a restraining effect on economic activity.

With respect to institutions such as pensions and endowments, I'd like to relate a conversation I had with a person responsible for overseeing the management of a major university's endowment fund recently. Currently, this university takes 5 percent of its endowment each year into its general budget. But 5 percent seems too high to be sustainable in the current financial market environment, so the endowment managers are faced with some tough choices: They can take more risks to generate a 5 percent real rate of return, they can reduce the draw on the endowment to a smaller percentage and reduce university spending to compensate, or they can let the endowment diminish in size in real terms by maintaining the 5 percent annual drawdown but not actually getting investment returns sufficient to replenish it. I'm not sure how this is all going to play out in terms of timing, but this does seem to be another avenue that might eventually translate into less spending. The same dynamic is at play in terms of corporate defined-benefit plans and state and local pension plans. For both corporate and state and local plans, the annualized nominal rates of return that they are assuming varies considerably across different plans—there's a pretty broad range. But the median is around 7½ percent nominal rate of return annually; such returns are unlikely to be achieved over the long term. Now, this has been papered over a bit in recent years because declining longer-term rates have boosted bond prices, generating capital gains that have supported the terms. But this can't go on indefinitely. Eventually, the low level over the current yield will dominate in terms of determining future returns. Eventually, the contributions in the pension funds will have to rise, with consequences for corporate profits and for state and local taxes and expenditures

I think we need to do more work to understand the potential consequences of a “low interest rate forever” environment on savings and spending behavior not because I necessarily think that we are going to have a low interest rate environment forever, but because I’d like to understand the consequences if we stay on the current trajectory. I can imagine an environment in which persistently low interest rates led to more saving that in turn depressed economic growth, and the sluggish rate of growth in turn reinforced the downward pressure on interest rates. So there would be a sort of feedback loop that would lead to low interest rates and sluggish economic growth. In fact, you could argue that’s what we’ve been experiencing.

On the inflation side, my outlook also hasn’t changed much. Whereas before we had an expectation that core PCE inflation would moderate during the second half of the year, now it appears that expectation is being realized. Combined with somewhat less wage pressure in the most recent reading, the persistence of low energy prices, and subdued inflation expectations, there doesn’t seem to be much risk that inflation is going to get away from us on the upside any time soon. The fact that inflation is still low and below our target, the likelihood that there is still some slack in the labor market, and some concerns I have about the growth outlook all reinforce my view that there is little urgency to tightening monetary policy right now. I think a patient approach is warranted for the time being, but more on that tomorrow.

Finally, a few thoughts on the updraft in the short-term LIBOR and in the foreign exchange swap basis for both the euro and yen. This was the focus of much of the discussion at the most recent BIS meetings Stan and I were at over the weekend. The general consensus was that the upward movements were due mainly to regulatory changes that increased the cost of dealer balance sheets. Money market fund reforms that require prime institutional money market funds to move to floating net asset value on October 14 was also considered to be a factor. Much

money has already shifted out of such money market mutual funds, and if you look at the money market mutual fund's prime institutional funds, they have already reduced their weighted-average maturity sharply to only 11 days in the most recent reading. This suggests to me that most, if not all, of the adjustment in short-term rates due to money market fund reform may already have taken place. I expect that once we get past the October 14 deadline, these prime funds will presumably lengthen their average maturities. The consequence of that will push up the relative yields on these funds compared with Treasury funds, and that will actually cause some funds to flow back into the prime funds.

The Tealbook looks at the issue of how much the rise in the three-month LIBOR represents a tightening of financial market conditions through the channel of nonfinancial corporate borrowing costs. I agree with the analysis that this has a very small effect. The main channel of monetary policy, in my mind, is how changes in the expected short-term rate path affect longer-term interest rates. If the three-month LIBOR rises because the term structure of interest rates otherwise doesn't change, then I think the effect should be little. So if everything is the same, and the only thing that has moved is three-month LIBOR, I don't really think that has much consequence for financial market conditions, and we should basically not put much weight on it. So to sum up, while I think there are several good reasons not to tighten monetary policy at this meeting, I don't think the rise in the three-month LIBOR or money market fund reform are among them. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. And my thanks to everyone for an interesting discussion of the outlook and particularly the risks that we face at this juncture. I'd just like to wrap up the go-round with brief comments on two issues that I consider relevant to our policy discussion

tomorrow. First, what does the current pace of labor market improvement imply for resource utilization? And, second, are there signs of emerging inflation pressures?

On the first issue, I'm echoing what the Vice Chairman and Governor Tarullo and others have indicated: The data clearly show that labor market conditions have improved appreciably over the past year. Since August of last year, the economy has added about 2½ million jobs, enabling the employment-to-population ratio to rise 0.3 percentage point despite demographic effects that are pulling down the underlying trend. Furthermore, job growth remained solid through the late spring and summer, with payroll gains averaging about 180,000 per month over the past four months. In light of the apparent pickup in real GDP growth in the second half of this year, it seems reasonable to expect, as the Tealbook does, that job gains will remain solid through the rest of the year and into early next year. Even if payroll gains in coming months were to moderate somewhat from their recent average pace—say, to the 150,000 increase recorded in August—employment growth would still be running ahead of what is sustainable in the longer run. A number of you have emphasized this point.

The staff's estimates, reported in the Tealbook, suggest that job gains will eventually have to moderate substantially over time to stabilize the unemployment rate, most likely to somewhere in the 85,000 to 115,000 per month range, in view of the downward trend in labor force participation and likely divergence between payroll and household employment gains, but conceivably as low as 65,000 per month. That long-run growth constraint does not necessarily imply, though, that continued job gains in the 150,000 to 200,000 range would be problematic in the near term, because data we have received over the past year suggest that the economy may have more room to grow than previously thought.

Consider the labor force participation rate, which rose over the past year, rather than declining as the staff projected last September. That allowed the unemployment rate to remain virtually unchanged, despite the strong job gains. One reasonable response to this unexpected development would be to revise up the path of employment estimated to be consistent with a given unemployment rate. For anyone who gauges inflationary pressures using the standard unemployment gap, this sort of revision effectively constitutes a favorable supply shock, and it implies that the economy can sustainably operate with a higher long-run employment-to-population ratio.

Other labor indicators also seem to be consistent with the proposition that labor market slack has been shrinking at only a modest pace recently. Involuntary part-time employment and the broad U-6 measure of labor utilization are both little changed since last fall. And even in the case of those indicators that continue to trend up—such as JOLTS readings on openings and quits and survey assessments of job availability and whether jobs are hard to fill—the pace of improvement appears to have slowed this year.

In light of these developments, I anticipate that utilization will continue to tighten at a gradual pace as we move into next year, especially as I see some potential for a healthy labor market to attract yet more people back into the labor force. Of course, employment growth does have to moderate at some point if we want to ensure longer-run price stability. Nonetheless, we should be wary of slowing employment growth too rapidly, especially as some slack still remains, and a moderately tight labor market would help speed the return to 2 percent inflation. After all, the unemployment rate is still a couple of tenths above my estimate of its longer-run value, and involuntary part-time employment is more than 1 percentage point above its average pre-crisis level.

Let me now turn to my second question: Are there signs of emerging inflation pressures? If there were, I would be more concerned that we could be falling “behind the curve,” but, frankly, I can’t see many signs of that yet. The September Beige Book reported remarkably few signs of rising cost pressures or planned price increases. From what I heard around the table, this was also not a significant theme in your conversations with your various business contacts.

As regards hard data, nominal wage gains remain subdued by most measures. Oil prices and the foreign exchange value of the dollar are little changed from where they stood last fall. Non-energy commodity prices have moved up some this year, but only to a moderate level. Market-based measures of inflation compensation and survey-based measures of longer-run inflation expectations have changed little in recent months and remain at or below their longer-run averages. Most directly, the monthly price data have come in about as I and the staff expected. Accordingly, I continue to expect that core PCE inflation will come in at just over 1½ percent this year. That’s up $\frac{1}{4}$ percentage point from 2015 due to the waning effects of past dollar appreciation. That was my SEP forecast a year ago. And my forecast for 2015 has remained essentially unchanged since then.

Now, it’s true, and several of you mentioned this, that core CPI inflation and other CPI-based measures of trend inflation have risen more notably than core PCE inflation over the past two or three years, primarily because of differences between the CPI and PCE weights on rents and medical prices and differences in the measurement of health-care inflation in the two series. Of course, if one looked at movements in the CPI were more closely related to consumer welfare than movements in the PCE index, then the recent rise in CPI-based measures of underlying inflation would be cause for concern. But the Committee judged that the opposite was true when it decided to define our inflation objective using the PCE measure. Alternatively,

one might be alarmed by the growing wedge between these two inflation measures, if such a gap signals an increased likelihood of a pickup in future PCE price inflation, all else being equal. We conducted some regression analysis to look at that issue, and the results suggest exactly the opposite. When core CPI inflation rises relative to core PCE inflation, it's core CPI inflation that tends to fall in the following year. Finally, it is worth stressing that some other price measures, including GDP prices excluding food and energy and the trimmed mean PCE price index, also suggest little net change in underlying inflation over the past two or three years. Let me stop there. I think we still have time before we head to dinner to let Thomas give us his policy briefing.

MR. LAUBACH.⁷ Thank you, Madam Chair. I will be referring to the handout labeled "Material for Briefing on Monetary Policy Alternatives."

One issue you have been discussing in recent meetings is the amount of monetary policy accommodation provided by current and expected settings for the federal funds rate. Exhibit 1 examines that issue through the lens of your SEP-implied neutral real rates.

As Beth noted in her briefing on the SEP, your forecasts for 2017 and 2018 for your two key goal variables have changed very little over the past year, with the unemployment rate at the end of 2018 at or slightly below its longer-run level and inflation moving toward the Committee's objective. However, as shown in the top-left panel, your assessments of the appropriate path of the federal funds rate associated with those projections has shifted down notably. That shift reflects revisions to both the longer-run equilibrium level of the federal funds rate and the pace at which the federal funds rate is projected to rise to achieve the Committee's economic objectives. Since the September 2015 SEP, the median estimate of the longer-run federal funds rate has been marked down, as Beth noted, from 3.5 percent to 2.9 percent. A year ago, in considering the appropriate path of the funds rate over the medium run, most of you expected that it would be appropriate to move the policy rate up at a pace that would put it close to its longer-run level by the end of 2018. In subsequent SEPs, that path has moved lower. And many of you now anticipate that the appropriate level of the funds rate consistent with your economic projections will, at the end of 2019, still be below its longer-run level.

The remaining panels return to an analysis that I presented a couple of times before. This analysis requires your longer-run projections, so I have results for only

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

16 participants. Because a year has passed since I most recently did this exercise, I summarize the key steps in the box at the top right: First, I estimate an IS equation that relates the unemployment gap (u minus u^*) to its own lag and the lagged real rate gap, defined as the deviation of the real federal funds rate (r) from a time-varying equilibrium level (r^*). This equation has the property that, if the actual real rate were kept at its equilibrium level, the unemployment rate gap would close over time. The coefficients in this equation are estimated over the 1961–2014 period using data for the fourth quarter of each year, the staff’s estimates of u^* , and estimates of r^* taken from the Laubach-Williams model. With the estimated coefficients in hand, I insert each participant’s projected values of the unemployment rate and the real federal funds rate, as well as his or her estimate of the longer-run normal unemployment rate, and solve the equation for the implied values of the time-varying r^* at the end of each year from 2016 to 2019. Note that, to calculate the implied r^* for 2019, the equation requires assumptions regarding your unemployment rate forecasts for 2020. For this exercise, I simply set them at their 2019 levels, but therefore the implied r^* values for 2019 should be treated with caution.

The implied values of each participant’s r^* projections are plotted as the blue dots in the middle-left panel. As always, reflecting the diversity of your views about the outlook and appropriate monetary policy, these estimates of r^* show some dispersion. In line with the views that many of you have expressed during recent meetings, the implied r^* for almost all of you is 0.5 percent or lower at the end of 2016. And, by these calculations, the implied r^* remains low over the next several years. The median implied r^* estimates (shown by the red diamonds) remain close to zero through 2018 before moving up to the longer-run value in 2019.

The analysis I just presented suggests that the relevant measure of policy accommodation implicit in your individual SEPs is the gap at each point in time between your individual projections of the real federal funds rate and your implied time-varying equilibrium real rates. These gaps are plotted in the middle right.

Although I don’t want to oversell the results of this simple analysis, it highlights three points that would likely hold under different approaches to measuring neutral rates and implied real rate gaps: First, all of you view the stance of policy that you see as appropriate at the end of this year to be accommodative; second, the neutral real rate is expected to remain near zero over the next two years, and then move up by only a modest amount; and, finally, as illustrated in the bottom-left panel, the median path of the neutral rate implied by your projections has shifted down substantially over the past year. The footnote to that panel is correct—as the red line in the legend should be labeled “September 2016.” Sorry about that. As summarized in the bullets in the bottom right, the choices offered by the policy alternatives in front of you can be understood as emphasizing these three points to varying degrees.

The policy strategy in alternative C would be warranted if the Committee was confident that the economy is now well positioned to achieve the outcomes for the labor market and inflation summarized in paragraph 2 of the statement, with an increase in the federal funds rate at today’s meeting followed by further gradual

adjustments to the stance of policy. The sizable median real rate gap in 2016 shown in the middle right supports the view expressed by alternative C that policy would remain accommodative in the near term even after an increase in the funds rate tomorrow. You might prefer alternative C if you judge that it is important to start narrowing this gap in order to limit the risk of falling “behind the curve” if the economy picks up more quickly than currently expected.

The policy strategy in alternative A is grounded in a much less sanguine view of the economic outlook—that r^* is low, perhaps well below zero, and likely to remain quite low for some time. If that is the situation as you see it, you might deem it appropriate for the Committee to convey that it is in no rush to remove accommodation, and that the current level of policy accommodation is needed until inflation has moved closer to 2 percent on a sustained basis. The Committee could view the persistence of below-trend inflation even as the labor market has tightened and some signs of lower longer-term inflation expectations as having increased its uncertainty about the cyclical position of the economy—the natural rate of unemployment might be lower and the economy remains short of conditions that would lead to a step-up in inflation in the near term.

With alternative B, the Committee would acknowledge the mostly favorable economic and financial developments in recent months, including developments that might indicate that the labor market has a little more room to tighten than previously expected. Alternative B would suggest that the Committee does not need much additional supporting evidence to conclude that another increase in the target range for the federal funds rate is warranted. However, it would indicate that the Committee is deferring the next step in removing accommodation “for the time being.” You might see waiting for some further evidence as appropriate in light of the successive downward revisions to medium- and longer-run r^* in recent years, as well as the continued proximity to the effective lower bound.

That completes my prepared remarks. The July statement and the draft alternatives are shown on pages 3 to 11 of the handout. I will be happy to take questions. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Are there questions for Thomas? Quiet group today. Very good. Okay. Well, seeing no questions, we've got a reception and dinner across the street that's ready now, and we will resume our policy go-round tomorrow morning at 9:00 a.m.

[Meeting recessed]

September 21 Session

CHAIR YELLEN. Good morning, everybody. Let's get started. I'd like to call on Steve Kamin to discuss the Bank of Japan actions.

MR. KAMIN. Thank you, Madam Chair. Obviously, my colleagues and I were just as shocked as you all were when we woke up to the news this morning. Who would have guessed that, after all of these years, Brad and Angelina would have finally split up? [Laughter]

By comparison, the Bank of Japan's announcement following its monetary policy meeting yesterday was more in line with expectations. Just to back up and reiterate what Paul Wood described yesterday, the Bank of Japan has basically been struggling with two main monetary control problems of late. One of them is how to get inflation and inflation expectations back up to its 2 percent target. And the second problem is how to do that without further flattening the yield curve and putting downward pressure on bank profits and those of pension funds, insurance companies, and other financial intermediaries.

In response to those concerns, the Bank of Japan launched the so-called comprehensive assessment project. The outcome of that, which was announced last night, was basically two main elements of the program. The first of these is a so-called inflation-overshooting commitment, in which the Bank of Japan commits itself to expand the monetary base until the observed rate of increase in the CPI exceeds 2 percent in a stable manner. Now, that has at least two, or maybe two and a half, distinctive elements. The first of those is that the Bank of Japan basically abandoned a particular date at which it was predicting that it would achieve its 2 percent target. The second aspect of that is that it committed not just to hit its target, but also to exceed it. And the third was a slight clarification, being very explicit, that the QE program would continue until it achieved that slight overshoot. It had had a soft commitment before to

continuing the program until it got to its target. But this made it a little bit more concrete. That was the first aspect of its announcement.

The second aspect was a so-called yield curve control aspect. Basically, that involved a commitment to control both the short-term and the long-term aspects of the yield curve in order to prevent a shallowing of the yield curve that would put excessive pressure on financial industry profits. In particular, the Bank of Japan committed to keep the 10-year yield at zero. It had previously been below zero. Then it announced a number of technical measures that might be used to achieve that, including buying JGBs at a fixed interest rate and even making low fixed-rate loans up to 10 years' maturity.

In the event, that was the basic framework that the Bank of Japan announced. It didn't really announce any concrete new actions immediately or for the future, but the framework is broadly consistent with our earlier forecast that the Bank of Japan would continue to make heavy QE purchases over the next several years and might, in certain situations—greater weakness—lower the near-term policy rate further into negative territory. But neither of those actions was taken today.

The announcement was, broadly speaking, in line with market expectations. In response, the JGB yield moved a little bit—for the 10-year, a little further up, although it's still a little bit negative. The basic index of stock prices in Japan rose about 2 percent. Commercial bank stocks rose a lot more, around 7 percent. The yen initially weakened, which was presumably part of the goal of the program, but actually has subsequently strengthened. Right now, it's actually slightly stronger than it was before the announcement for reasons that are a little bit unclear. Global markets have pretty much taken everything in stride. Foreign stock prices are up a bit. I think U.S. futures are little changed, and U.S. yields are little changed, too.

So that's what I have for you. I'd be happy to take any of your questions.

CHAIR YELLEN. President Kaplan.

MR. KAPLAN. In the press release, I saw they talked about keeping their 10-year at zero, associated with bond buying. But it struck me: Won't they need to sell the 10-year to keep the rate at zero?

MR. KAMIN. I think the answer could well be "yes," but they were not explicit on that point.

MR. KAPLAN. Okay. So they could do either, and people are anticipating they could actually sell the 10-year, if necessary.

MR. KAMIN. I don't know that people are expecting that, but it is a natural question to ask.

MR. POTTER. There are no details yet. I think, at the end of the month, they'll release more details.

MR. KAPLAN. Okay, got it.

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

MR. LOCKHART. Steve, are you willing to speculate on any spillover onto our yield curve? A few weeks ago, the *Wall Street Journal*, I believe, carried an article that talked about major Japanese institutions essentially buying the long end of our curve, hedged. At that time, they were concerned that if the hedges expired and they went off hedge, it could have some effect on the yield curve here in the United States. How should we think about this affecting financial conditions and the dollar?

MR. KAMIN. I guess what I'd say is that if their actions had involved a much more substantial change in their target for yields—for example, if their goal was to drive 10-year JGB

yields up to 25 or 50 basis points—you could imagine that actually having a material effect on capital flows and leading to some upward pressure on our longer-term yields and perhaps downward pressure on the dollar. But so far, as they are targeting the 10-year yield at zero, which is only a little bit higher than it had been, it doesn't seem like the changes that are in store are large enough, at least for now, to make a material difference for the dollar or our yields. Again, this announcement is more like a backup or contingency plan just in case the yield curve was to get too shallow again.

CHAIR YELLEN. Are there questions? President Rosengren.

MR. ROSENGREN. But doesn't that constrain their ability to actually go more negative? Presumably, if you're fixing the 10-year rate at zero, people can go in and out of the 10-year at zero risk as long as that peg is on. So, as they lower the short end of the market, you'd assume there'd be no trading at the short end. People would just be buying at the 10-year maturity. Am I missing something?

MR. KAMIN. Well, let's put it this way. I think the goal is to anchor the long end so that the yield does not fall too much, giving them the freedom, in some sense, to lower the short end even further into negative territory. In their announcement, further down in the text, they talk about their view that Japanese economic performance is more influenced by short- and medium-term yields than by longer-term yields, with the longer-term yields being the ones that might, if they fall, negatively affect the financial industry.

MR. ROSENGREN. Who's the marginal investor that would choose to be at the short end rather than at the long end, in which they can go in and out at will as long as there is rate pegging?

VICE CHAIRMAN DUDLEY. The point is, you're reducing the risk of moving to a 10-year instrument.

MR. POTTER. They haven't shown that they can actually do it yet. So that would be part of it.

MR. KAMIN. I think your point is well made. Suddenly, it makes the 10-year look like a great risk-free investment.

VICE CHAIRMAN DUDLEY. Although your prospects for capital gains on the 10-year will go away. It could be argued before that if you thought Japan was going to continue to go into deflation and 10-year yields could keep falling, they had a capital-gains component—which they're taking off the table now. And I think it's pretty complicated to see how people react to this, frankly.

MR. POTTER. If it is credible—you'd be taking the capital gains off it.

CHAIR YELLEN. Are there any further questions? [No response] Okay. If I might, I'd like to start off our policy go-round, and I want to emphasize that today's decision is not an easy one. On the basis of the data in hand, one person may reasonably conclude that the economic outlook and associated risks argue for an increase in the target range today, while another looking at the same information reasonably decides that holding off is the better strategy. In contrast to many of our previous meetings, the appropriate policy decision today is not clear cut. This ambiguity is reflected in alternatives B and C, which present essentially the same characterization of the incoming data and the economic outlook yet arrive at different conclusions about what action we should take.

We may not all agree on today's decision, but I think, in line with the SEP, that most of us will be inclined to support an increase in the federal funds rate before year-end if the economy

continues along its current trajectory, with economic growth picking up as expected, continued solid employment gains, an absence of notable downside inflation surprises, and the emergence of no significant new risks. If this assessment is correct, we should be careful not to exaggerate the consequences of raising the federal funds rate now as opposed to in an upcoming meeting.

My recommendation for today is not to move and to adopt alternative B, teeing up a likely move in December if things move along their current course. But why not move now, as the economic consequences of tightening today instead of waiting until December are probably minimal? At our July meeting, after all, I said that raising the target range in September would likely be appropriate if we saw reasonably strong payroll gains in July and August, which we have, and the overall outlook remained favorable, which it has. And, at the Jackson Hole symposium, I said that the case for tightening had strengthened.

Still, despite the generally satisfactory state of current conditions, I recommend that we hold off raising the funds rate for the moment for two reasons. First, incoming data suggest to me that we have a bit more running room than I'd anticipated, and I see little danger that monetary policy is falling "behind the curve." As I said yesterday, some slack still remains in the labor market. Utilization appears to be increasing at a relatively slow pace. There are few signs of emerging inflationary pressures, and inflation continues to run below our objective. Under these conditions, we can afford to proceed patiently, and doing so will promote additional labor market improvements and so speed the return to 2 percent inflation. I think we'll have ample time to adjust policy in the event the economy shows signs of becoming overheated. After all, as long as we remain in a low- r^* environment, it won't take very many rate increases to get back to a neutral policy stance.

Furthermore, a moderately tight labor market might also pull more people back into the labor force than we anticipate, and that's a potential supply-side benefit that we shouldn't close off prematurely. Indeed, as I noted yesterday, we have seen solid employment growth over the past year without significant declines in either U-3 or U-6. Over the past year, the labor market seems to have had more room to improve without creating inflation pressures than I'd expected. This is an important reason why I'm inclined, in the words of alternative B, "for the time being, to wait for further evidence of continued progress toward [our] objectives."

Second, I consider waiting until we've seen somewhat more progress on our objectives advisable on risk-management grounds. If economic growth in the second half of the year was to turn out to be stronger than I anticipate or if we were to begin seeing signs of accelerating wages and prices, we would have ample opportunity to respond appropriately over the course of 2017 and beyond. But if economic conditions were instead to turn out to be weaker than expected or if downside risks to the outlook were to emerge, then we would probably regret having decided to move today. After all, the surprising events that we've encountered so far this year—turmoil in global financial markets, wild month-to-month swings in the data, and Brexit—demonstrate that bumps in the road are common and the concerns related to the effective lower bound are not to be dismissed. And this is especially true in an environment in which we find ourselves repeatedly lowering our estimates of r^* .

While I strongly believe that economic performance has been well served by our caution in raising interest rates thus far this year, we clearly can't delay too long because policy does need to be forward looking. If labor market conditions improve somewhat further in coming months, as I expect, then a December rate hike will, in all likelihood, be warranted to reduce the risk of the unemployment rate markedly undershooting its longer-run level in 2017 and beyond.

I think an increase will be appropriate even if inflation readings remain near their current levels, as I expect.

The language in alternative B is meant to convey this expectation for policy. I recognize that the phrase “for the time being” is essentially a calendar-based reference, but I think, in the current circumstances, we need to be clear in our intentions. Softening this language by just saying that policy will be data dependent would, in my view, only increase confusion about our reaction function and intentions.

So let me stop there, and our next speaker is President Williams.

MR. WILLIAMS. Thank you, Madam Chair. I favor alternative C. We’re at full employment, the labor market is robust, and inflation is on a path to meet our 2 percent target over the medium term. Interestingly, as you just said, this is the characterization of the economy in both alternatives B and C. In arguing for an increase in interest rates, I want to emphasize that I’m not seeking to derail the economic expansion. It’s exactly the opposite. My aim is to keep it on a sound footing so that it can be sustained for a long time. And I do worry that further delays in raising rates increase the risk of unintended consequences down the road.

Now, we had a good start of a discussion yesterday. Governor Tarullo, President Rosengren, President Evans, President George, and I all commented on this issue, and I always like it when a conversation breaks out at the meeting. [Laughter] So that’s a good thing. And I do look to see more work coming from the staff on these issues about these unintended consequences of waiting too long. I do think we have to be humble about our understanding of that. Yesterday there was a little bit of going through, recession by recession, and finding, well, that was because of this, and that was because of that. I think we don’t truly understand the dynamics surrounding recessions.

I'm taken back to an event that happened to me that has stuck with me ever since. That was when I was on the staff of the Council of Economic Advisers sometime in 1999 or 2000—I can't remember exactly when. But then-Chairman Greenspan came and gave an impromptu talk about recessions in the hallway of the Old Executive Office Building. It was interesting because, of course, at the time we were well along the way of the longest expansion in the history of the U.S. economy. Everything was looking great. And his talk was basically that we don't understand the dynamics of the economy when it's in recession. He emphasized the nonlinear aspects of how things happen when the economy, for whatever reason, goes off the cliff. He also emphasized that our linear models—of course, at the time, that's what my day job was, working on the FRB/US model—are good at capturing the dynamics during expansions and normal times, but, during recessions, they don't capture the dynamics there.

I think David Wilcox mentioned that one of the facts we don't understand is, why does unemployment move very gradually down, but, when it moves up, it moves up very sharply? Even back then, I remember talking in 2000 about this little factoid—that you never see unemployment rates move up by any significant amount without there being a recession. So I think we should be humble in our understanding of the dynamics. It's not the case that I think we should just be looking at, well, monetary policy causes recessions. I think imbalances form when the economy runs too hot for too long. Those can happen in a multitude of different ways, and the dynamics of that are hard to understand. So, in thinking about risk management, we have to take seriously the fact that if we do drive the unemployment rate down to 4.2 percent or 4 percent, or even lower, then those risks would grow significantly.

At this point, our policy stance already incorporates a significant amount of delay, and that's illustrated in the optimal control simulations in Tealbook B. For instance, if you have a

minimal weight on rate adjustments—this artificial cost of moving the funds rate around—the optimal control simulation calls for a 350 basis point increase in the funds rate by the end of next year. That just shows you how big the gap is between where we would be in optimal control, given the objective, and where we are today in that simulation. Now, importantly, that simulation ignores uncertainty. But, again, it just shows you how heavily we already are weighing risk-management arguments in the current stance of policy.

If you look at another optimal control simulation that does penalize rate adjustments—you might think of this as a proxy for a cautious approach—it projects a lower path of the funds rate. But even there, the simulation has two rate increases this year and has us reaching the long-run neutral rate by the end of next year. So, again, I think these optimal control simulations provide some context for thinking about, absent risk management and other asymmetries, where we would be, and then you can adjust from there.

More concretely, the median SEP forecast back in June called for two 25 basis point rate increases. Since then, strong employment gains have resumed, the Brexit vote has passed without any near-term consequences, inflation data have been basically right what we thought, equity markets have risen, and there's really been very little movement in the dollar. There's been a notable decrease in the spread between high- and low-grade corporate debt, and that could reflect some increased search-for-yield activity. Taken together, financial conditions are easier than in June, and the risks of getting “behind the curve” loom larger. Accordingly, at this meeting, I support alternative C as written.

Now, I actually do understand that that's not the decision the Committee will likely make today. In that light, I would comment on the language in alternative B. In view of the decision that's going to be made, I think the language in alternative B is about the best that can be hoped

for in explaining the reasoning for today's decision for further delay. Madam Chair, I think your description of the reasoning makes sense. It takes an appropriately positive stand on the economy and its direction, consistent with our policy goals and longer-run strategy statement and our past FOMC statements. Importantly, it does not introduce new hurdles or conditions for future action. So, again, I think that the statement is about as good as I could hope for at this juncture. Thank you.

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. My views are actually quite consistent with what President Williams just laid out. I would say that I would also endorse his view that it would be quite worthwhile to have a discussion of what the likelihood and costs of possibly overshooting are. I think those comments were made by Governor Tarullo and Vice Chairman Dudley yesterday, and I think that that would be a very good discussion to have.

For this meeting, I support alternative C. Since our last tightening in December, we have made significant progress toward achieving our dual mandate. We have added more than 1 million jobs since the beginning of the year. As evidence that labor markets have tightened relative to earlier in the recovery, wages have risen gradually above the 2 percent level that they seemed stuck at earlier. Core PCE inflation was running between 1.3 and 1.4 percent and is now at 1.6 percent. This progress has occurred despite significant headwinds from abroad, including a slowdown in China, a surprising Brexit vote, and continued European banking problems. Based solely on the economic progress since our last tightening, a further increase in rates could easily be justified.

It is in the forecast, however, that the case for raising rates at this meeting becomes even more compelling. The Tealbook's and my own forecast expect that by 2019, the unemployment

rate will have dropped to 4.2 percent despite an assumption that monetary policy accommodation is more aggressively removed. As I highlighted yesterday, such overshoots in the past have always been followed by recessions, as the unsustainably low unemployment rate begins to generate higher inflation rates, rising asset prices, or both. Driving the unemployment rate to such a low level goes well beyond probing on full employment.

We should aim for a long and durable recovery. A significant overshoot of full employment places the recovery in jeopardy. We now have the ability to raise rates gradually and gently probe to find the level of full employment. But our ability to gently probe shrinks the longer we defer action. Failure to continue the gradual removal of accommodation now could ultimately require us to raise rates faster and more aggressively, which could shorten rather than lengthen the duration of this expansion. Thus, I am arguing for tightening now out of a concern that not doing so today will put the recovery at greater risk. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. At our July meeting, I argued that our policy rate should be moving back toward a more normal level because estimated gaps for both inflation and real activity are currently quite small. Economic conditions have not changed materially since our July meeting, so I believe an increase in our policy rates is appropriate today. Accordingly, I support alternative C.

I'd argue the delay represents an increasingly significant departure from our past behavior. At our July meeting, I made reference to parametric policy rules that support the case for raising rates. Those benchmark reaction functions—Taylor rules, if you will—do a good job of describing our behavior during past periods in which monetary policy seems to have been effective. It's important to emphasize that these are relevant whether or not you believe that we

are following a Taylor rule or we make direct reference to a Taylor rule in the formulation of policy then or now.

We may have thought of ourselves as looking at everything and setting policy optimally in the past, but whatever we were doing gave rise to the fact—the clear fact—that Taylor rules do a good job of characterizing the statistical relationship between those gap variables on the right-hand side and our policy-setting. So, to behave in a way that generates a significant variance between those relationships that are captured in the data suggests that we are departing from past policy-setting principles, whatever those principles were and whatever we founded them on.

Even after adjusting the econometric estimates for the downward trend in the natural real rate of interest, rates ought to be substantially higher than they are now, according to these benchmarks. For example, the two non-inertial Taylor rules shown in the Tealbook both show values above $2\frac{1}{4}$ percent. Those implementations use the staff's assumed r^* value of $\frac{3}{4}$ percent. Using the current estimates of basically zero from Lubik-Matthes or Laubach-Williams, you still get values around $1\frac{1}{2}$ percent.

These benchmark rules take into account the degree to which a shortfall of inflation from our goal would, in the past, stay our hand. So even if we account for our core inflation running around 1.6 percent, past practice indicates that an increase in the funds rate target today is well warranted. Those benchmark rules capture the extent to which we've consistently tightened policy in the past as labor market slack was eliminated in order to preclude having to raise rates precipitously later on and risk inducing a recession, as President Rosengren alluded to. Presidents Rosengren and Williams have spoken convincingly about this risk in public in recent weeks, as did you, Madam Chair, last December.

In the SEP submissions for our December 2015 meeting, the median funds rate for the end of this year was 1.3 percent, which would have represented four further rate increases. That path would have closed a good part of the gap between actual rates and our benchmark. Presumably, those rate increases would have occurred at the press conference meetings in March, June, September, and December. Instead, a series of special factors emerged, which caused us to delay raising rates. In March it was global market turbulence, and in June it was the May employment report and looming Brexit risks. These concerns might have been plausible and reasonable at the time, but the downside risks failed to materialize. Actual economic data since December have been close to what we expected, and the outlook for employment and inflation is relatively unchanged as well.

The usefulness of Taylor rules as policy guides is not inconsistent with temporary departures. After all, the historical fit is seldom perfect, and the residuals presumably reflect outlook-relevant information to which policymakers responded beyond what was captured by the usual right-hand-side gap variable. Nonetheless, a more substantial and sizable—a more persistent—departure from how we behaved in the past would be problematic. Inflation expectations rest squarely on beliefs about how we are likely to respond to future developments. While our communications can play a useful role in fostering public understanding of our likely future responses, actions generally speak louder than words.

Accumulated observations on our past conduct are likely to be the critical determinant of public beliefs about our behavior. New observations that conflict with expectations will ultimately result in shifts in beliefs, and those shifts could be sudden and unpredictable. Such shifts would pose a real risk to the stability of inflation expectations.

Holding steady yet again at this meeting would represent a substantial and persistent movement away from how we've typically behaved in similar circumstances. It would represent not only a deviation from the behavior that served us well in the past, but also a deviation from the behavior that in December we led markets to expect this year. No obvious disturbances at hand that would justify such a departure, and the clear implication is that a discrete shift in our policy reaction function is in train.

In particular, we would appear to be moving away from preemption, the defining element of the strategy that ushered in the current multidecade period of inflation stability that we now take for granted. Preemption meant raising rates before inflation began rising precipitously. It meant raising rates before we run out of running room. In attempting to wring out slack, we seem to be implicitly adopting a reaction function that places heavy reliance on our ability to tighten policy just in time in response to accelerating inflation. The current quiescence of inflation and inflation expectations suggests that markets may be sanguine about our shifting policy strategy, but history suggests that this is cold comfort. Erosion of credibility occurs most often after the application of too much stimulus rather than before or during.

I recognize the legitimate concern that the asymmetric effectiveness of our policy instrument in a low-natural-rate environment makes the risks to our objective skewed to the downside. But I believe that a later-but-faster strategy of moving little unless inflation pressures actually emerge gives rise to risks that are skewed heavily in the other direction, and, for me, the latter outweigh the former.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I think the decision to raise the policy rate at this meeting versus later this year is a close call. In the big scheme of things, an increase

at this meeting, as opposed to the November or December meeting, won't matter much in its effect on the real economy. Therefore, exercising my prerogative as a nonvoter, I'm prepared to support either alternative B or alternative C, and I won't vehemently oppose waiting until December.

On the basis of the data in hand and progress toward objectives in my forecast for the second half of this year and 2017, I believe there's a good data-dependent case for at least one increase this year. My criteria are growth of real GDP and of employment at rates consistent with absorbing remaining resource slack over the forecast horizon. I've also been looking for indications that wage growth is picking up. I see those conditions as being satisfied by the third-quarter data we now have in hand.

Because the probable decision today is alternative B, I'd like to comment on some implications as I see the situation for the next two meetings. The case for waiting, as I see it, is to accumulate more data evidence that the current read on third-quarter activity is not a head fake and progress toward our objectives will be sustained into the fourth quarter. In light of some weaker signals in the very recent incoming data, I see the wisdom of this approach. But the forward lean in paragraph 3 of alternative B naturally raises the question of, at what point over the next two meetings will we likely have accumulated enough evidence that we remain on track to pull the trigger on a rate increase?

Looking to the data calendar, by the November meeting, we will have just one more employment report. By the December meeting, we will have two more employment reports. Otherwise, we will not have a lot of information on the fourth quarter, particularly about economic growth or inflation. If December is the date we have in mind, it strikes me that labor market developments, therefore, will be the determining factor in the decision. In view of the

forward lean in the alternative B draft statement, it's desirable to have a common understanding of what data will be required to make a "go" or "no go" call and when we will have that data in hand. Without that understanding, I'm concerned that the Committee is inviting communications challenges on the question of why we passed on this meeting—and might pass on the November meeting, if that's what we choose to do.

I have some reservations about delaying a rate increase decision to December. My reservations relate to risk events that could be timed to be around the December meeting. Although the date has not yet been set, there's a possibility the Italian constitutional referendum could be scheduled around the time of our meeting. The Italian referendum is considered by some observers to be critical to the future of the EU. Closer to home, there's a chance that the continuing resolution expected to be passed by the Congress before the elections will expire on or about December 9. Depending on election results, there could be another budget showdown just before we meet.

These are events that could create a lot of volatility in financial markets and an awkward environment for a rate hike, even if the data play out in a satisfactory way. Let me emphasize that I'm not projecting that market noise and volatility associated with these transitory events will materially affect inflation and employment outcomes. Brexit passed with little apparent effect on the real economy of the United States. But even if the economic fundamentals are satisfactory for a policy action, the Committee might be hesitant, as we were in June. At some point, repeatedly backing off, even if justified by developments, will hurt the Committee's credibility.

So I am not opposed to waiting until December, but, with these concerns I've expressed, I'm trying to assume an "eyes wide open" mindset. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. Because of my fairly upbeat outlook for the economy and the slow but persistent march of inflation to target, I could easily support a funds rate increase at this meeting. However, due to a variety of risks, including heightened political and subsequent policy uncertainty, I can see this case for being a bit cautious. However, I don't view the language in alternative B as sufficiently indicative of a funds rate increase by December. I actually preferred the original draft language. I felt it more clearly communicated a predilection for a rate hike in the near future.

My reading of that language was that, absent a significant departure from our expectations of how the economy will evolve, we would be raising the funds rate this year. The revised language seems a bit more guarded and hedged, which makes me somewhat uncomfortable. The current statement acknowledges an improved outlook for the economy and a balanced assessment of risks but remains vague about what it would take for the Committee to raise rates. What further evidence do we need for us to move? Do we need to hit our inflation target or continue to see it evolving in line with the Tealbook forecast—or just be more sure that we will not see any disinflation between now and the end of the year?

I think we should be clearly signaling that if economic growth appears to be attaining its projected rate, we would very likely raise rates this year. Now, of course, the signal can be delivered outside of this statement via the press conference and speeches that we all give. And we often put too much emphasis on the words in one single statement. But I do think it's important that we begin to move the market probability of a rate increase this year. Thus, taking that into consideration, I can live with the current alternative B language, although, again, I preferred the original draft language.

It's not overly important whether we act today, as several of my colleagues have said, or in the very near future. What's important is that the signal we deliver today and in the future will, in itself, start the process and will achieve some measure of tightening in financial markets that will start to move those probabilities. So if economic data materialize in line with the staff forecast, it is very important, in my view—I echo President Lockhart—and I think it's important to the credibility of the Committee, that we act this year. I think it's important that we send a strong signal today and in the future that we will. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. In my opinion, normalization is not going well. I think our normalization program is, in fact, on the rocks. We began the year expecting four increases in the policy rate. We're going to end the year with one or possibly no increases in the policy rate. Moving once a year is not a normalization program. We should quit describing it as such. It would take eight years to go 200 basis points. That's way outside of any business cycle time with which we're familiar. This, in my opinion, is very damaging to the credibility of the Committee, and I worry that now we may not have credibility when we actually need it in the future.

The real *ex post* rate on government paper is very low. We should be looking at this rate, which we're calling r^* in St. Louis, as the key rate because there are other assets in the economy. It's not clear that all real rates of return are low. In particular, rates of return on capital right out of the GDP accounts have not fallen nearly as much as real rates of return on government paper. The slow growth in the U.S. economy is largely driven by slow productivity growth. So we should treat this as a regime. It's almost like thinking of it as a steady state, except that you're acknowledging you can pop out of that steady state at some point in the future. The implication

of viewing things this way is that the market-based expectations of what this Committee will do are ratified, and you get a view of future rates that is more realistic versus thinking in terms of the Taylor (1999) policy rule.

The policy rate increase last December packed a punch much larger than anticipated. Global market turmoil increased substantially, and, in my opinion, this was because the one rate hike was accompanied by a projection of four additional increases during 2016. This event made me think that we have the wrong model, and I'm sympathetic with President Williams's comments just now about how out of line with reality some of the things we're looking at in our optimal control exercises are. We should think in terms of this slow-growth, low real interest rate regime that corresponds more closely to reality. We should design policy for the regime we're in. Policy should be regime dependent.

The mean reversion to the so-called normality of the past gets de-emphasized appropriately in this type of formulation. Under this interpretation, the current policy rate is only slightly less than neutral, and cyclical dynamics coming from the 2007–09 period are completely exhausted. There would be no reason to change the policy rate very much in the foreseeable future provided no further major shocks occur. Major shocks would be regime switches in this formulation.

Instead of thinking of the current policy rate as being far out of position, we can think of the current policy rate as being about right under the regime. I think this is much closer to what markets are thinking and is more appropriate for our situation. I also think that we should incorporate some thinking along this line in future Tealbook exercises. At a minimum, I suggest an alternative simulation with the market expectation of the future policy rate instead of the Taylor (1999) rule, which has become increasingly irrelevant as a benchmark. I presume that the

Board staff's model—the FRB/US model—and other models would predict that bad things would happen in that scenario. I think it's important for this Committee to understand what those bad things are so that we can weight them appropriately, and this feeds into some of the discussion around the table yesterday.

One could go a step further and feed into the staff model a different regime just by changing the steady state. That isn't really the appropriate way to do it, but it's a quick and dirty way to do it. And the alternative steady state would simply have a very low real rate of return on government paper persisting into the indefinite future, along with a very low growth rate, which is already part of the model. That would be a simple way to get at the regime idea. We've done that with our own models at the St. Louis bank, and I'm pretty sure what you're going to get is very little cyclical dynamics for the period ahead and something that's much closer to the market expectation for the U.S. economy.

For today, I support alternative B as written. I think that the probability on December will rise substantially in reaction to this statement, possibly close to 1. I think very difficult questions will be asked about the November meeting. If it was a close call here, why wouldn't it also be a close call in November, and possibly the Committee would move in November? I would see the probability on that meeting moving up as well.

I think we need to be very clear about what would have to happen to cause us not to move in December. This is going to be viewed as more or less committing to a December rate increase. If we get to that date and we want to back off that, it's going to be very difficult to do so, and I don't want the Committee to be in a position in which we have to plow ahead even though the data have not come in to be supportive of that. So that's a danger about this type of

decision that we're making today, but I agree with others that this is probably the best we can do for today. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. The theory and practice of central banking provide several lessons for monetary policymakers. First, as the Chair indicated, policymakers should be forward looking because monetary policy affects the economy with long and variable lags. So policy actions need to be taken before the goals are met, on the basis of the economic outlook over the medium run and the risks to that outlook. Second, policymakers should strive to be consistent in how they respond to economic conditions and to effectively communicate the rationale for their decisions. This helps the public form expectations about the future path of policy and raises public confidence in the policy itself. Third, policymakers should remain humble about what they know about the economy and how monetary policy can affect it. There's uncertainty associated with the outlook, with the monetary policy transmission mechanisms, and with the underlying structural aspects of the economy, such as the natural rate of unemployment, potential output growth, structural productivity growth, and the equilibrium real rate of interest. In view of the uncertainties, monetary policy need not respond in the way suggested by benchmarks that have worked well in the past. But when policy does deviate from those benchmarks, policymakers need to think carefully about the factors influencing their decisions to deviate.

In light of these lessons, I support alternative C today. Conditional on the outlook, which has been corroborated by economic developments, and the risks associated with the outlook, I believe that a gradual upward path of interest rates is appropriate and that we should take a further step on that path today. We've made progress on both of our monetary policy goals.

Various forecasts, optimal control exercises, and our own statements indicate that to promote our longer-run policy goals, it's appropriate that we gradually increase the federal funds rate. Even after a 25 basis point move today, policy would remain accommodative, with the real federal funds rate below the range of estimates of the equilibrium interest rate. This accommodative policy will continue to lend support to the economic expansion in the period ahead. In my view, the evidence on labor market conditions in our models indicates that, from the standpoint of what can be achieved using monetary policy, we have met our maximum-employment goal.

I recently visited Hazard, Kentucky, in the heart of Appalachia. On the trip, I spoke with several coal miners who were just about to graduate from an electrical fiber-optic lineman program. Of the 30 coal miners who started the one-year program, 28 were graduating, and all had jobs or were entertaining several job offers. I was impressed by the program and the people I met. These types of programs hold promise in addressing the longer-run workplace development issues our country faces. I don't believe monetary policy will be an effective tool with respect to these longer-run issues. But the Federal Reserve, through its community development function, does have a role to play in helping such regional transitions. Via our own objective analysis, we can help measure the scope of the problems communities in transition face, we can study how to make small programs like the one I saw in Kentucky scalable, and we can evaluate the effectiveness of alternative policies and other programs.

Regarding the other part of our mandate, PCE inflation remains below our 2 percent goal, but it's been rising over the past year as anticipated, and it's projected to return to 2 percent gradually over the forecast horizon. This forecast is supported by other measures of underlying inflation, including the core CPI and the median and trimmed mean CPI measures. Longer-run

inflation expectations have been reasonably stable. And this, coupled with growth that's expected to be slightly above trend, also supports the forecast that inflation will return to goal.

The risks that the Committee has been concerned about have diminished. The data have shown that the weak reading on employment in May was temporary. Concerns about the fallout from the U.K. referendum have subsided. Financial conditions are accommodative.

In my view, against the background of progress in achieving our two statutory goals, the economic outlook, and the risks associated with the outlook, today's decision should not be framed as, "Is it appropriate to take the next step on the gradual policy rate path we communicated?" but rather as, "Is it really appropriate not to take the next step?"

I agree with Governor Tarullo's remarks yesterday that we need to assess the costs and benefits of our policy options. Since last December, when we increased rates, our discussions focused on the risks of moving rates up too quickly, and we have emphasized these risks in our communications. However, there are also risks to delaying. I don't think we're "behind the curve" yet, but if we continue to wait for every piece of data to line up before we act, we will surely be "behind the curve." The lesson that policy should be forward looking is based on the history of poor outcomes when that strategy hasn't been followed. Sometimes being prudent means moving the policy rate up. Some may say that the macro effects of waiting for another meeting or two would be small, but I do see risks in continuing to delay action when incoming information has been corroborating both our outlook and the gradual upward path that we have been communicating is appropriate.

If we fail to set policy on the basis of the realized and projected progress on our goals and our medium-run outlook, we risk further confusing the public about our policy rationale, reinforcing a growing view that the Committee is acting in a discretionary manner, and

undermining the credibility we've gained with the public over time. Our policy lessons tell us that we need to set policy in a manner consistent with the communications we continue to make. This isn't to say that we're locked in by past communications. If it was the case that incoming information had changed our outlook, then we would need to change what we are communicating to the public about our anticipated policy rate path. But that's not the situation we're in. The outlook is little changed, and the consensus anticipation among participants is that a gradual upward path of interest rates is appropriate.

Given economic conditions and the outlook, I believe taking the next action sooner rather than later makes it more likely that the gradual path will indeed turn out to be appropriate. If we continue to delay even as we make further progress on our goals, perhaps in an attempt to drive the unemployment rate well below its natural rate in order to generate a cyclical rebound in labor force participation, stronger nominal wage growth, and a faster increase in inflation, then we risk having to undertake a considerably steeper policy rate path later on in order to foster our goals. Such a strategy is inconsistent with what we have been communicating, and I do not believe it's a strategy we want to follow.

As we discussed yesterday, in the past, strategies like that have led to recession. As David Wilcox's briefing yesterday showed, if we end up in recession, it will disproportionately harm the very demographic groups—minorities, older workers, and lower-income people—the strategy was intended to help, because their unemployment rates are more sensitive to downturns. Moreover, if we end up in a poor outcome, it will also raise questions about our ability to exit from the nontraditional policies we've put into effect in the aftermath of the crisis, jeopardizing their use in the future should the need arise.

I'd rather be in a position of being able to move rates up gradually. I think it gives us a better chance of recalibrating the policy rate path over time as we gain more insights into the underlying structural aspects of the economy I mentioned earlier. In my view, there's a strong case for raising the funds rate target range 25 basis points today, and that's what I feel compelled to support.

I deeply respect my colleagues around this table. Some of you hold views that differ from mine, and my reading of the economy and policy judgment may not be correct. I very much appreciate the Chair's commitment to fostering an atmosphere in these meetings of serious deliberation and the free exchange of ideas. I believe the history of the institution has shown that better policy decisions are made when a diversity of views is considered, and I appreciate the opportunity and responsibility to express my nonconsensus view today. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. I have to say that these are among the most thoughtful comments I remember on any morning of a policy decision, so I really appreciate the conversations.

We are facing hard and consequential choices in the period ahead. It's only 25 basis points at the moment, but there's so much more. And I look forward to more conversation about the important issues—about the risk of overshooting and what the evidence is. At the moment, I'm reluctant to weigh the evidence that we talked about yesterday on overshooting at face value on the basis of the time periods that we've experienced. I do recall, as research director, with my former boss providing commentary and advice very much like I've heard this morning,

about “One way to make sure we can sustain the recovery is by increasing interest rates at this moment, because that’s how we keep the momentum going without overshooting.”

But I believe all of the overshooting evidence to date was in an environment that’s very different from what we’re facing today. In the 1970s, in the ’80s, and in the ’90s, inflation was always well above what the Committee’s objective was—in the 1970s, it was double digits—and the Committee was hoping just to get it down. In the 1980s, when Chairman Volcker left office, it was 4 to 5 percent, substantially higher than where we are and what we’ve committed to. The advice was always “Let’s get it down.” So when we found ourselves overshooting, the risk was so much worse because we were not going to be moving down in a secular fashion, but we were going to lose what progress we’d made.

Now, today, we’re in a very different situation, in which inflation is below our inflation objective. How will policy respond? It is true that, in the past, Taylor rules have captured the Committee’s intention to raise rates to keep the economy sustainable. Maybe that’s the way the Committee behaved. But we’re lower than our inflation objective, so the Lucas critique really bears minding at this point. Do we know that the policy environment that the Taylor rule was premised on is the environment that we face now? I don’t know that the answer is “yes.” I don’t know what the right answer is to any of these questions. I look forward to more discussion.

I have to say, I can’t refrain from making the following comment—and I’ve used this myself. When we use the term “humble” or “humility,” it’s almost always used in the context that, because I get to say it first, I’m going to talk about what I think is the more humble channel or thought—that type of thing. It’s a first-mover advantage, I’ve always felt.

MR. WILLIAMS. That’s why you go first. [Laughter]

MR. EVANS. And I suppose if I had gone first, I could say, “Well, it’s important to be humble,” I think, about the claim that at 4.9 percent unemployment, “We’re at full employment, and we can’t do better.” The Federal Reserve Act says we should seek conditions to support maximum employment. It takes a lot of courage, conviction, and strength of how you analyze things to say, “I think that the unemployment rate naturally might be 5 percent.” Many have that view, and I’m not saying it’s wrong. I don’t know what the right answer is. My own assessment is, it’s lower, and I think that in the current environment, with inflation below our target, we can continue to see how much more room there is to grow. Madam Chair, I agree with your comment very much in that regard. Now, having said that, I’ll turn back to my more prepared remarks, with apologies.

I support alternative B—no change in our policy setting today. Although I worry that the current expansion may be somewhat fragile and there are many risks to the outlook, I believe solid fundamentals for the labor market and the consumer should be adequate to support my baseline projections of moderately above-trend economic growth. If core PCE inflation was clearly on its way to 2 percent, then I would see a readjustment of monetary policy toward its long-run neutral setting as an appropriate and easy decision. I say “toward its long-run neutral setting” because, in view of the headwinds and impediments that remain, the short-run equilibrium federal funds rate likely is still below our longer-run assessment, and that’s like what President Williams indicated yesterday.

The lack of building wage and price pressures is strong evidence for this hypothesis, especially in light of our long period of low interest rates. Furthermore, inflation has been below 2 percent for many years, as Governor Brainard mentioned yesterday. Indeed, the inflation endpoint attractor used in the Board model has been stuck near 1 $\frac{3}{4}$ percent for quite some time.

This is consistent with what we see in financial markets, in which participants are clearly much more concerned about ensuring against low-inflation outcomes than they are about above-target inflation. I'm left thinking that forecasts that have sustainable 2 percent PCE inflation any time soon aren't much more than hopes, and so we need to be very careful about adjusting policy and communication surrounding the appropriate path that normalization should take.

In my public commentary, I routinely state that the FOMC has a symmetric 2 percent objective. Frankly, this comment is often greeted by blank stares. I can't recall anyone saying to me that, yes, the FOMC has clearly demonstrated a commitment to a symmetric objective. Many see 2 percent as a hard ceiling on where we would allow inflation to go. Again,in light of our inflation performance and public rhetoric, I understand why they think like that. This worries me greatly. If we end this economic cycle with inflation still below 2 percent, I can't imagine why anyone will believe us or our future colleagues when we say our symmetric target is 2 percent. This will be a huge problem when policy is next confronted with disinflationary forces, a zero-lower-bound challenge, and the need to establish higher inflation expectations in order to lower real rates enough and help right the economy. Our complacency today and our willingness to try to thread the needle to get to 2 percent without any overshooting will create substantial challenges for Committees in the future. I worry that we and our future colleagues will regret this lack of a strong and full commitment.

At the Jackson Hole symposium, Chris Sims regaled us with an elaborate theory indicating that only fiscally irresponsible policies could increase inflation and inflation expectations. Although I'm unpersuaded by Sims's highly theoretical analysis without adequate empirical investigation that the role of fiscal policy currently trumps monetary policy for generating higher inflation, my assessment shares one similar characteristic. In the current

environment, moving inflation expectations from 1 $\frac{3}{4}$ percent up to 2 percent requires strong, bold, and explicit policy prescriptions. I simply do not have confidence that our current expected course of policy adjustments and our existing communications regarding that path will be sufficient.

Alternative B leans very heavily toward a rate increase later this year. Although the current debate is over when we make the next move, the larger issue is how we're going to decide on a path of rates after that. When we move, we need to think carefully about how we will characterize the conditions for our subsequent rate increases. Again, in the current environment, I believe achieving our target requires moving the inflation attractor up from 1 $\frac{3}{4}$ percent to 2 percent. I keep saying "attractor." The Board, I understand, uses "underlying inflation," but that seems to bury the real concept, it seems to me. To do this, I believe we need more explicit policy prescriptions than what we have in the current statement. When we raise rates to the $\frac{1}{2}$ to $\frac{3}{4}$ percent range, it will be important for the Committee to state explicit conditions governing further increases. The statement needs to assure the public that this Committee is seeking economic and financial conditions to support inflation attaining our 2 percent PCE inflation objective sustainably, symmetrically, and sooner rather than later. I would prefer an explicit marker that core PCE inflation should be very close to 2 percent before we move rates again. Of course, other indicators could signal this, too. Another useful explicit marker would be continued reductions in unemployment, which presumably would help foster tighter labor and resource conditions to boost inflation. And a third condition would be increases in measures of inflation expectations in line with the Board's inflation attractor moving up to 2 percent from below where it's been stuck for quite some time.

At the time of our next policy move, I would strongly support incorporating some configuration of these conditions, along with continued good economic fundamentals, as markers for guiding further continuation of the—I said “normalization process.” I agree with President Bullard that I’m not sure what the right term is.

By the way, I sincerely hope I soon will be embarrassed by my current inflation pessimism. It would be fantastic if I am mistaken about the difficulty we face in getting inflation to target. I hope I’m wrong. I think this language I discussed is robust to this possibility. If I’m wrong about inflation, then these inflation, unemployment, and expectations markers will be met sooner rather than later, and we will appropriately be on a speedier path to increasing rates than I now envision. That would be a very good thing. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. Well, once again, I found Tealbook B’s “The Case for Alternative B” very useful in developing the argument for waiting for more evidence before deciding to raise the federal funds rate 25 basis points. However, I see the case for going now as almost as strong as that for waiting. Or, in the words of Tealbook B, page 35, I “judge that not much additional evidence would be needed to warrant a rate hike,” and I therefore accept the Tealbook’s request that I so indicate in my statement.

Tealbook B’s outline of the current economic conditions and outlook points to the staff’s real GDP forecast for the second half of the year of about 2.6 percent growth and to the fact that they see the near-term risks to the U.S. economic outlook as roughly balanced. They note, however, that headline inflation is likely to run below the 2 percent target. That is to say, the staff and the draft statement of alternative B are in close agreement on the state of the economy, both the present state and expectations of future states.

The staff's presentation is valuable, but I'd like to highlight a few points they make with which I do not fully agree. First, their presentation refers to the solid average gain in payroll employment over recent months as indicating that there have been increases in labor utilization. But they then go on to argue that because the unemployment rate has, on net, remained constant at 4.9 percent since the beginning of the year, there has been little increase in labor utilization. I do not understand this argument, which does not even mention the increase in the labor force participation rate that has taken place over the past year. And, accordingly, I judge that labor utilization should also be regarded as a positive factor in assessing the current state of the labor market.

In the policy strategy discussion of the case for alternative B, the staff starts by considering the possibility that policymakers "may judge it prudent to wait for more evidence that domestic demand will continue to grow at a moderate pace and that the labor market will strengthen somewhat further" before raising the interest rate. They then give three arguments for this possibility. First, while job gains have rebounded since May, the unemployment rate and other indicators have changed little since the beginning of the year. A further wait "could allow the Committee to better assess underlying trends in employment, productivity, and inflation." Second, policymakers may be leaning toward raising the interest rate, but a number of factors—among them, slow output growth, little change in labor utilization, and low wage and price inflation since the start of the year—may have reduced FOMC voters' confidence in the view that current policy provides considerable accommodation. So a wait-and-see posture might seem appropriate.

Well, these two arguments have been deployed in the past to explain why we have elected not to move on occasions in which the economic gestalt was similar to that of today.

They are valid, and they are likely to remain valid. But there are doubts that, before making a decision to take action, any serious decisionmaker has to examine and take into account and decide that they're not sufficiently important to prevent action.

The third argument the staff makes for being hesitant to move is that the nominal interest rate is close to the effective lower bound, which limits the ability of monetary policy to respond to negative shocks. My second doubt about the staff's view is, this seems to me to be a reason, when a decision is close, to move—to build up a policy reserve to deal with future negative shocks. In saying that, I should add that I believe the global level of the nominal interest rate is set primarily by the United States, and that decisions by us would have affected the interest rates of other countries. That is to say, I think that relative interest rates would likely not have been very different had we raised our rate on some previous occasions. This subject, the effect of our policies on those of other countries, is one to which I believe we should give more attention at some point in the near future. We have been taking the rest of the world into account as a Stackelberg follower and not as a leader, and we are the leaders in the global economy.

My third doubt is, the staff then points out that a decision to maintain the current target range would be in line with the expectations of financial market participants. This is not convincing as a reason not to move, for it ignores the fact that the market's expectations of what we are likely to do is heavily influenced by the speeches of the Chair and other members of the FOMC and by the wording of the statement. That is to say that the expectations of market participants are, in most respects, a policy choice of the FOMC—which is to say that our communications could have prepared the markets and the public for either decision that we were going to make.

Let me add a fourth point that is frequently made in favor of waiting—that we know how to deal with high inflation if it comes. We do, but we also know that dealing with high inflation, if it comes, requires a “tough love” approach where, unfortunately, the toughness is typically more needed than the love. And that is what we will face if we don’t move in time.

All in all, I do not think there’s a strong case for waiting, which means that I support alternative B and expect that if the economy continues on its current course, we should raise the federal funds rate at our December meeting. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. In the first half of the year, we’ve seen weakness outside the United States, particularly in China. Our GDP forecast is lower than at the start of the year, and we’ve been making frustratingly slow progress in meeting our inflation target. For all of those reasons and others, I’ve agreed up to now with exercising patience before removing accommodation. I’ve also been influenced by analysis that showed that the neutral rate is lower than it had previously been thought. And, I am a believer that the economy is not yet overheating. I also agree that there are persistent headwinds, particularly demographics and other global risks.

These issues need to be weighed, however, against the costs of accommodation, particularly the cost to savers as well as the market and business imbalances that are being created. I’m particularly and increasingly concerned about a growing trend toward use of what I will loosely call the carry trade—people going out on the risk curve, people leveraging up low-volatility assets to produce acceptable returns, and overallocation to risk assets by institutions and households. As a result, time frames for risk assets are becoming shorter, and I think, as I mentioned yesterday, that is putting increasing pressure on corporate leaders to leverage up to

buy back stock. I think all of these financial trends can be managed, but I think we're at the point—if not now, then very soon—where they need to be tamped down because they will be increasingly painful to unwind.

I've been in favor, as I said, of "slow and gradual," but I don't want "slow and gradual" to become a stall. And I am concerned that if we don't act today, there will be very valid reasons that will emerge for not acting in December. On the basis of all of this—and the fact that, near the effective lower bound, there is unlikely to be a good time to raise rates—I would prefer that we raise the federal funds rate 25 basis points today and emphasize, using the SEP that's coming out, that the path of rates is likely to be historically shallow, and that the terminal rate is likely to be lower than has been widely expected. I would emphasize that we intend to continue to be accommodative, and that future removals of accommodation will be done only in a gradual and patient manner.

I am concerned about FOMC credibility in that—to my eye, at least—three- and six-month rolling job growth numbers are in the strike zone. And the weaker ISM is a concern, but our own model suggests that the consumer is strong and will continue to be strong for the remainder of this year.

Given that it appears we are not going to raise rates today, I would love to see us emphasize, as we've discussed, that the normalization process is very challenging, maybe more challenging than has been widely understood, due to these persistent headwinds, particularly aging demographics and the effects of globalization. I would emphasize that we do not have a predetermined timetable, we do not intend to be bound by calendar considerations, we will move when conditions warrant, and we need to see continual removal of labor slack and some greater evidence that inflation will return to our 2 percent target in the medium term. And I would

continue to emphasize that our tools are asymmetrical at or near the lower bound. That is, it is much easier to tighten than to ease. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. I support alternative C. With unemployment and inflation at or near their longer-run levels, removing some accommodation is warranted. An increase in the funds rate is overdue, as I see it, and waiting for further evidence continues to unwisely discount future costs in order to reap perceived marginal benefits today.

As I reflected on yesterday's discussion, it may indeed be the case that historical experience and relationships will not serve us well today, and that this time may be different. I'm not persuaded that we should ignore the history, but, as others have suggested, I do think it's essential that we talk about the risks associated with various policy options to understand the consequences. Understanding the risk of overshooting full employment seems particularly important over the next year, especially if we continue a wait-and-see approach along the lines of alternative B. Instead, if the majority of the Committee is truly convinced that r^* is likely to stay extremely low for an extended time, alternative A may, in fact, be a more honest representation of the Committee's intentions. We hurt our credibility by repeatedly projecting multiple rate increases in the SEP, only to stand pat in the face of tightening labor markets and inflation moving toward 2 percent.

In addition, alternatives B and C have nearly identical descriptions of current conditions and the outlook, while one calls for acting at this meeting and the other signals a move is on the horizon. This feels to me like a classic central bank trap of needing to move but not just yet in order to see a bit more information.

The divergence between the current setting of the funds rate and prescriptions from simple policy rules also suggests that the Committee's policy choices lean too much in the direction of discretion, even after accounting for the downward revision in the longer-term equilibrium real rate. Since June 2014, the Board staff has marked down its assumptions regarding r^* and longer-run growth. The projections in the SEP have followed, and I, too, have marked down my assessment of r^* . But if there is substantial uncertainty about the trend rate of growth or the value of r^* , surely the Committee would be well served to ground its judgments with some kind of analytical instrumentation. For example, my understanding of first-difference rules suggests that their use might fit well during such a time of uncertainty. Here, too, according to the Tealbook, the Board's version of a first-difference rule has been prescribing a move since March of this year. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I will support alternative B. This year, financial turmoil, weaker incoming data, and a reassessment of the neutral rate of interest have pointed financial markets and the Committee toward a more gradual path of rate increases. That path can and will be adjusted, either up or down, as events evolve. I believe that the Committee's patience through this period has paid dividends and will continue to do so. Nonetheless, the labor market has continued to tighten, and the forecast is for output to strengthen and inflation to continue on its path of gradual increases. If that forecast is broadly realized, then I believe that it will be appropriate to raise the federal funds rate soon. I've written down one rate increase for this year and two for next year.

It is possible, as several here have pointed out, to wait too long to move. This would put the Committee "behind the curve" and require more aggressive action, possibly risking a

recession. That risk increases as the unemployment rate continues to move down and labor markets show increased signs of tightening.

For me, the time for the overshooting argument is coming but is probably not yet here for a couple of reasons. The apparent upside surprise in labor force participation suggests that we have more room to grow. In fact, looking back this morning, labor force participation has now really been flat, in the high 62s, since late 2013, which represents a pretty significant three-year gain against our estimate of the underlying downward trend. It does suggest that we may actually be using up a margin of slack, but it also suggests, yes, grounds for humility that, in fact, there may be more room to go.

The economy is growing just barely above trend. Inflation is below our 2 percent objective and has been every single month since the second quarter of 2012. We're making progress toward 2 percent inflation, and my baseline case that we can continue to do that. But let's face it—it's happening at a snail's pace. So, for me, the balance of risks continues to call for patience and a gradual path of rate increases, assuming the forecast is realized. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Madam Chair. I am comfortable with alternative B, but I lean toward alternative A. I prefer alternative A because I would like to see evidence of rising inflationary pressure before tightening. In particular, I'm looking for either a sustained upward move in core PCE inflation or evidence of rising inflation expectations or a substantial decline in the headline unemployment rate. The discussion we had yesterday about workers coming off the sidelines—it's not moving the headline unemployment rate. The truth is that we don't know how much slack is left. It seems to me that there is still some more slack. I'd like to find out

how much more there is. Actually, I found President Evans's comments very consistent with my own views.

When I saw the Tealbook and its staff forecast of core PCE inflation of 1.6 percent for the rest of this year and for all of next year, I asked myself, "If that's right, what would it take to get me to want to move?" I'd want to see inflation expectations climb, or I'd want to see the headline unemployment rate fall meaningfully, such that I had confidence that slack had actually been taken up. Absent that, I'm starting to get persuaded by my neighbors here, President Bullard and President Evans, that I don't see a strong case for raising rates. Alternative A lays down a marker that we want to see meaningful progress toward our inflation target, and I think that that would be helpful.

Alternative B isn't terrible, but I'm a little nervous about the language, because I do think it signals to the market that a rate hike is coming. It may not come, and I think we all agree that every time we put out a marker that it's about to come and then we don't deliver, there's a cost to us in terms of our credibility. So I'm nervous about alternative B being too strong in signaling a December rate increase.

Now, some say that we need to get going to raise rates so that we don't fall "behind the curve." I think each of us reads these optimal control simulations and takes what we want out of them, because I look at them and, even in the most accommodative scenarios, the overshoot is 2.2 percent inflation. So if these things are valuable at all, I don't see where the concern is. If the worst-case scenario is 2.2 percent inflation, that's less of an overshoot than we're undershooting right now.

Then there's been discussion that, well, it's better that we gradually raise rates because a shallow path and then steep at the end is somehow more recessionary. My staff found a Board

memo of 2014, a background memo on potential implications of alternative approaches to the timing and pace of tightening. This memo by Board staff suggests that it's entirely unclear that a late and steep path of tightening is somehow more recessionary than a gradual path. So I don't find those arguments persuasive. I'm not saying one is right and one is wrong, but it doesn't appear to be clear that one is better than the other. In view of where economic growth is—it's pretty slow—and that inflation is definitely below target, I think we should be patient and allow the data to come to us before we are anticipating inflation that may not come.

The last thing I'll say is, I know this makes me sound like I'm an uber-dove or a perma-dove. I'm not. When the data reveal themselves—when inflation actually materializes or expectations change—I will be advocating raising rates. I just don't see it yet. Thank you.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. I favor alternative B-plus or A-minus. I'm not exactly sure which. And the reason is, I have some measure of uncomfortableness with a couple of the elements of alternative B as written. First, the characterization of the risks as being roughly balanced doesn't accord with my own understanding. I think that shorter-term risks still are modestly to moderately on the downside. While I don't take too much signal on the basis of the retail sales numbers because, basically, that's stuff from stores, a decreasingly important part of total consumption, the bouncing-around of housing permits and starts gives at least a little pause. And, like Vice Chairman Dudley, I do put a little bit more weight on, or at least have a little bit more concern with, the nonmanufacturing purchasing managers' survey, particularly because it's a forward-looking indicator in the much larger part of the economy that's relatively insulated from the effect of the stronger dollar. When coupled with the apparent softness in the total number of hours worked, as reported by the BLS, which was applicable in the service sector

as well as the manufacturing sector, it indicates to me at least something to watch, but it's a risk. It's not a reality—it's just a risk. But I think that the "roughly balanced" is getting a little bit ahead of ourselves.

Second, I am also a little uncomfortable with the language in paragraph 3 of alternative B because, as many have commented, it does lean forward—perhaps not as far as some would like—to a December rate increase. And as Presidents Bullard and Lockhart and others have noted, in and of itself, that may raise some communication problems, but it may also raise some issues for us of, what is it that we're expecting to see? However, it may be the best language that could garner a consensus,in view of the rather divergent views of people here. But I did want to indicate that I am a little bit uncomfortable with it.

I think, by the way, the problems that Presidents Bullard and Lockhart and others have referred to will only be exacerbated if everybody on this Committee runs out trying to influence market expectations about later increases, because then we're going to get into another one of these wars of words, in which everybody goes out and gives their speeches and then sees how much the 10-year has moved to see whether they've given a good speech or not. And I don't think that's been particularly useful for the Committee as a whole. I feel like we're stuck in a bit of a collective action problem here, and I don't know how to get out of it. But maybe the communications subcommittee—no, I'm only kidding, Stan.

MR. FISCHER. Well, if you joined it, then—[Laughter]

MR. TARULLO. No. I was on it briefly.

For reasons I'll explain in a moment, though, I'm not actually totally comfortable with alternative A, either.

I did want to say a couple of things about the discussion that's gone back and forth, both in part of the go-round yesterday and today. This is not exactly on the humility point, but we are in an environment in which there's good reason to believe that the structure and dynamics of the U.S. economy are really quite different from what they have been in the relatively recent past and through much of the postwar period. And what I think that indicates is the possibility that tools and even analytic frameworks, such as various correlations among economic variables, that were quite useful for some period of time in thinking about and setting monetary policy may have more limited utility in the current circumstances. What, of course, goes along with that is the idea that historical precedent becomes rather less useful, because the precedent just abstracts a couple of things and pulls them out of the broader context in which various more important secular forces are affecting the structure and dynamics of the economy. That first observation counsels more openness to the idea that things may be different and thus that you don't take some things—whether it's the Taylor rule or the traditional understanding of the Phillips curve or any number of other analytical frameworks—as your presumptive path. From there—and, as I said, this is where humility comes in—we, as policymakers, don't then want to jump to the conclusion of, "Ah, we now understand the way the dynamics and structure in this different economy are actually functioning, and thus we're pretty confident about the way in which we will set policy."

So that is why—and I think a number of people, even though they haven't used the language, and other people around the table have taken a similar approach—it seemed to me that we have to develop at least operating presumptions that allow us to make policy decisions from meeting to meeting. But we need to be more open than usual to the possibility that something

different is going on than is reflected in that operating presumption. So that's what's led me to what I've described as a pragmatic approach.

Just to be clear—and this is where my difference with alternative A comes in—what I've been saying is, I would like to see more evidence that inflation would be moving toward the 2 percent target on a sustainable basis. For me, that doesn't necessarily translate into the inflation rate itself moving there, because I can imagine that there would be evidence of an underlying dynamic in certain parts of the economy that suggested pretty convincingly that, because of other things going on, inflation was going to rise. So I think, again, one can be a little bit more open minded about what it is that would be evidence that would give reasonable certainty, to invoke a past phrase we used, that inflation will move back to target.

And the second thing, obviously, that's been important to me is what we discussed yesterday, which is the comparative longer-term risk framework. By the way, let me just say it explicitly today—boy, talk about a heterodox idea—it would be great to dispense with the economic go-round, as conventionally done, in November and just come in prepared to have a conversation about the set of issues that at least half a dozen or eight of us were discussing yesterday. But I haven't consulted with anybody beyond Presidents George and Rosengren on this, and they didn't even endorse it. They just said, "That's interesting." [Laughter]

Let's see. Finally—notwithstanding my reservations about some of the language in alternative B—obviously, when it comes to a vote today, I'll vote for alternative B and do so with the understanding that either the evidence on inflation or my understanding of that comparative-risk framework may change between now and the next couple of meetings. So, while I'm concerned about the degree of forward lean, I by no means foreclose the possibility that I will be there as well later in the year. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. I, too, want to express my appreciation for the very thoughtful arguments that are being made on both sides, and I'll try to provide my take on some of these arguments.

First of all, I believe that our prudent risk-management approach has served us well this year, supporting continued gains in employment and progress on inflation while helping to navigate a number of risks. Several have noted that the economy is not far from the forecasts of the Committee a year ago. I would simply point out that this has been achieved only with a very substantial reduction in both the actual and expected policy rate path and the corresponding adjustment in broader financial conditions.

Even so, actual progress on inflation still remains tentative, and there's uncertainty about how close the economy is to full employment. To me, it seems, therefore, appropriate to continue a fairly cautious approach and wait to see confirmation of further progress on inflation and tightening of resource constraints before removing further accommodation. Of course, as many have noted, that policy stance contains risks. In particular, if momentum in the economy is much stronger than the data now suggest and resource constraints start to bind more quickly than I currently anticipate, then inflation could rise more quickly than expected. In such a contingency, we have tried-and-tested tools and ample policy space in which to react.

Moreover, there are several features of today's economy, today's new normal, that might lead us to expect that the effects of such unexpected strength in demand on inflation, and on the economy more generally, will be somewhat more modest and require a somewhat more tempered policy response than in the handful of historical episodes that are frequently referenced. First, due to the experience, in particular, of the past year, it reminds us that it is possible material

resource slack still remains, and that full employment in the wake of the severe recession might look a bit different. Second, the recent elevated sensitivity of the exchange rate to policy surprises suggests that an appreciating currency would play an important role in absorbing any excess demand and restraining inflation. Third, because the neutral rate has been and likely will be persistently low, the distance back to a neutral stance is not as great. And, finally, inflation expectations are well anchored to the upside. Together, these factors suggest that the response of inflation to unexpected strength in demand will likely be modest and gradual, requiring a correspondingly moderate policy response and implying relatively slight costs to the economy.

In the face of an adverse shock, however, our conventional policy toolkit is very limited, and thus the risk of being unable to respond adequately is greater. The experience of the Japanese and euro-area economies should be sobering and suggests that prolonged weakness in demand is very difficult to correct, leading to economic costs that can be considerable. In short, in what I think of as today's new normal, the costs to the economy of greater-than-expected strength in demand are likely to be lower than the costs of significant unexpected weakness.

There's another question that's been raised that is important in this context that I wanted to address briefly address. Some are asking whether there really is a cost to signaling that the Committee is comfortable acquiescing in underlying inflation remaining in the 1.4 to 1.6 percent range, which it hasn't meaningfully exceeded over the past several years. In the "new normal," in which the long-run neutral rate may well be $1\frac{1}{4}$ to $1\frac{1}{2}$ percentage points below the canonical Taylor 2 percent, every $\frac{1}{2}$ point reduction in our perceived inflation target reduces to an uncomfortably tight margin the conventional policy space we have in which to respond to a shock. For that reason, I join others in thinking it's extremely important that we defend the credibility of the target and make clear through our actions that there really is symmetry around

2 percent. I agree that we would regret complacency on this front. In short, the costs of entrenching a low-inflation, low-growth, low-expectations environment are considerable.

The asymmetry in risk management counsels prudence in the removal of policy accommodation. I believe this approach has served us well and will continue to do so. When we look at the language, I must say that I, too, have some concerns about locking ourselves in to moving before the end of the year. That approach hasn't worked so well for us previously. Nonetheless, I also recognize there's a large diversity of views around the table, and I'm very comfortable supporting the Chair's preferred formulation in alternative B. Thank you.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you. I support alternative B as written, although I do have some unease about how forward leaning it is in terms of December, because I think the market is going to take it as making December highly likely. I'll talk about that at the end of my remarks. But I can certainly support it as written.

Although I agree that the case for tightening monetary policy has strengthened in recent months as financial conditions have eased, near-term Brexit risks have receded, and the pace of economic growth has picked up, I don't find the case sufficiently compelling to move today for three reasons. I think this is very similar to what the Chair said in her earlier remarks. First, the economy is just not growing that fast. The pressure on labor utilization is increasing very slowly, and discouraged workers are coming back into the workforce, augmenting the supply of labor. With the unemployment rate broadly stable this year and wage gains still subdued, I don't see a labor market that signals there's urgency to tighten right now. And I would really be hesitant to keep a bunch of people out of work on the presumption that somehow we're already at the full-employment unemployment rate. I think that would be unconscionable.

Second, inflation is still below our target and is projected in the Tealbook to be below our target for some time to come. Earlier in the year, we did see core PCE inflation increase a bit on a sequential basis, but it's subsequently come back down. Now, before, that was just a forecast, but I think the fact that the forecast is now being realized is significant. The core PCE price index is moving sideways rather than upward on a year-over-year basis. I think that and the fact that inflation has been consistently below our 2 percent objective, and the potential consequences of that on inflation expectations, also argue for patience.

Third, monetary policy is not very accommodative. I think this is a pretty widely held view in this room. The gap between where we are and where we judge the neutral short-term rate, the so-called r^* , to be has narrowed. I would judge that a neutral monetary policy regime currently is likely no more than 100 to 150 basis points above where we are now. So that gap could be closed quite quickly if we needed to do so. If the gap was larger, then I think the economy would presumably be growing faster and there would be more work to do to move policy back toward neutral. So if that was the case, that would push you on the side of moving more quickly, but I don't think that's where we are right now.

Finally, if we mostly agree that there's going to be only one move this year and the debate is really between today versus December, I ask the obvious question: Why not wait to see whether a more favorable GDP growth trend actually emerges before moving? At the end of October, we'll get the GDP data for the third quarter, and I think that'll be something that you can hang your hat on in terms of why you're tightening monetary policy subsequently. With inflation below our objective, I will feel less bad if it turns out a hike was justified today on the basis of subsequent data and we move a few months later, compared with a situation in which the economy disappoints, suggesting that we really shouldn't have moved at today's meeting.

For the SEP, I've got one further 25 basis point rate hike for 2016, two for '17, and three for '18, and that takes the federal funds rate up to 1 $\frac{3}{4}$ to 2 percent at the end of 2018. I've also reduced my longer-run federal funds rate projection to 2 $\frac{1}{2}$ percent from 3 percent. I think r^* is depressed relative to its historical norm of 2 percent and will remain so due to slower productivity growth, an aging population, and the persistence of a global savings glut. Also, I've become more skeptical of the story we've been telling for some time, that the headwinds following the financial crisis are likely to dissipate relatively soon. So that also feeds into my reassessment of what the long-term federal funds rate is likely to be.

Now, in terms of language, I think we should have no illusions. The market is going to react to what we put out today as making December highly likely. I think there are several aspects of that that are going to push in that direction. First, I view the statement language as stronger than what the market generally expects. If you look at the surveys of the primary dealers and the buy side, most of them didn't really see a lot of changes as likely occurring in the statement. There are two changes that I think are going to be important. One is the movement of risks to "roughly balanced." I think people who thought that might change were more likely to think "nearly balanced," but "roughly," I guess, is closer to neutral than "nearly"—by a little bit. The second thing is, this language that the case has strengthened—I don't think that will surprise people. But the phrase "for the time being," putting in the time component there, will, I think, push in the same direction. The SEP, I think, is also going to do the work in the same direction. All but three of us have one or two rate hikes in 2016, so it'll be the strong sense of the Committee that the Committee expects a rate hike this year. And the fact that we're going to have three dissents on the side of tightening at this meeting—three dissents is a relatively large number of dissents. That'll also push in the same direction.

So I don't think we should be surprised if the probability for December goes up. I don't think that's a big problem if the data cooperate. But if the data don't cooperate, then that's going to be a problem, because it's going to be another case of raising the probability and subsequently shrinking back from that. So I hope the data will cooperate this time. Thank you, Madam Chair.

CHAIR YELLEN. Thank you very much. I think we've had a really great discussion of the issues and done an excellent job of identifying the key risks that we face on both sides as we try to decide the appropriate path of policy. And I will work with the staff—before our next meeting, I hope—to see if there's some further work we can do to try to analyze the various risks that have been identified here.

For today, while I recognize that there's discomfort of all sorts in both directions with alternative B, my proposal is to vote on alternative B as written. Brian.

MR. MADIGAN. Thank you, Madam Chair. This vote will be on the policy statement for alternative B as included on pages 5 and 6 of Thomas Laubach's briefing materials and on the directive to the Desk as included in the implementation note on page 9 of those materials.

Chair Yellen	Yes
Vice Chairman Dudley	Yes
Governor Brainard	Yes
President Bullard	Yes
Governor Fischer	Yes
President George	No
President Mester	No
Governor Powell	Yes
President Rosengren	No
Governor Tarullo	Yes

MR. MADIGAN. Thank you.

CHAIR YELLEN. Thank you very much. Let's see. To wrap up, let me just say our next meeting is Tuesday and Wednesday, November 1 and 2. There are boxed lunches that

should be available now in the anteroom, and there will, as usual, be a TV set up in the Special Library for anybody who wants to stay—

VICE CHAIRMAN DUDLEY. For the extra entertainment. [Laughter]

CHAIR YELLEN. Yes, the live murder board. I will do my best to present a balanced presentation.

MR. FISCHER. Madam Chair, may I raise an issue?

CHAIR YELLEN. Yes.

MR. FISCHER. For those who are going to be here four years from now, is it essential to set the meeting just before the election?

VICE CHAIRMAN DUDLEY. You mean maybe moving it up a week?

MR. MADIGAN. We look at a lot of events and constraints in constructing the calendar.

VICE CHAIRMAN DUDLEY. The BIS, I think, is a constraint there, because the BIS meeting typically is going to be right in front of the election. So I think the BIS is a constraint there, Stan.

MR. LACKER. It does demonstrate our nonchalance. [Laughter]

VICE CHAIRMAN DUDLEY. I don't think it's a big deal, myself.

CHAIR YELLEN. Okay.

END OF MEETING