Meeting of the Federal Open Market Committee on
June 14–15, 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, June 14, 2016, at 1:00 p.m. and continued on Wednesday, June 15, 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, and Neel Kashkari, 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
Scott G. Alvarez, General Counsel
Steven B. Kamin, Economist
Thomas Laubach, Economist
David W. Wilcox, Economist

Thomas A. Connors, Michael P. Leahy, David E. Lebow, Jonathan P. McCarthy, Stephen A. Meyer, Ellis W. Tallman, Christopher J. Waller, and William Wascher, Associate Economists

Simon Potter, Manager, System Open Market Account

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

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

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

James A. Clouse, Deputy Director, Division of Monetary Affairs, Board of Governors; Andreas Lehnert, Deputy Director, Division of Financial Stability, Board of Governors

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

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

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

Fabio M. Natalucci, Senior Associate Director, Division of Monetary Affairs, Board of Governors; Beth Anne Wilson, Senior Associate Director, Division of International Finance, Board of Governors

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

Antulio N. Bomfim, Ellen E. Meade, and Joyce K. Zickler, Senior Advisers, Division of Monetary Affairs, Board of Governors; Jeremy B. Rudd, Senior Adviser, Division of Research and Statistics, Board of Governors

Shaghil Ahmed, Deputy Associate Director, Division of International Finance, Board of Governors

Christopher J. Gust[1] and Jason Wu, Assistant Directors, Division of Monetary Affairs, Board of Governors; Paul A. Smith, Assistant Director, Division of Research and Statistics, Board of Governors

Eric C. Engstrom and Patrick E. McCabe, Advisers, Division of Research and Statistics, Board of Governors

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

Brett Berger, Senior Economic Project Manager, Division of International Finance, Board of Governors

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

[1] Attended Wednesday session only.
[2] Attended Tuesday session only.

Wendy E. Dunn, Principal Economist, Division of Research and Statistics, Board of Governors; Marcelo Rezende, Principal Economist, Division of Monetary Affairs, Board of Governors

Edward Herbst and Hiroatsu Tanaka, Senior Economists, Division of Monetary Affairs, Board of Governors

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

David Sapenaro, First Vice President, Federal Reserve Bank of St. Louis

David Altig, Kartik B. Athreya, and Jeff Fuhrer, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, and Boston, respectively

Stephanie Heller, Evan F. Koenig, and Spencer Krane, Senior Vice Presidents, Federal Reserve Banks of New York, Dallas, and Chicago, respectively

Roc Armenter, Sarah K. Bell, Òscar Jordà, and George A. Kahn, Vice Presidents, Federal Reserve Banks of Philadelphia, New York, San Francisco, and Kansas City, respectively

Cristina Arellano, Senior Research Economist, Federal Reserve Bank of Minneapolis

Transcript of the Federal Open Market Committee Meeting on June 14–15, 2016

June 14 Session

CHAIR YELLEN. Good afternoon, everybody. As usual, today's meeting will be in its entirety 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. As I think almost everyone here knows, Tom Baxter will retire from the Federal Reserve Bank of New York in September. This was to be the last FOMC meeting that he attended, but he recently decided that his to-do list was sufficiently lengthy that, in order to actually retire as planned, he would need to stay in New York to work rather than attend today's meeting.

I think it is entirely appropriate, though, that we recognize him *in absentia*. Tom's well-deserved retirement will follow 36 years of service to the New York Bank, at which he has served as general counsel since 1995. Tom also has been deputy general counsel of the FOMC the past two decades, attending 106 regularly scheduled Committee meetings. Tom's contributions to the work of the Federal Reserve were especially crucial during the recent financial crisis when the Federal Reserve needed to design and implement a broad range of effective lending programs to help support the financial system and the economy, in many cases in a matter of days, if not hours. Tom was at the center of many of those efforts. We appreciate all that Tom has done for the Federal Reserve, for the New York District, and for the country, and I'm sure that I speak for all of us in wishing him the best in retirement. And I believe Vice Chairman Dudley would also like to make some remarks about Tom.

VICE CHAIRMAN DUDLEY. Well, my views are very much the same as yours, Madam Chair. I think Tom played a key role in the System throughout his long career. He will especially be remembered for his leadership at the time of the 9/11 attack and during the financial crisis, figuring out with Scott Alvarez and many others exactly what we legally could do to save the financial system from collapse, and that was not an easy task.

Also, of course, I appreciate the support he has given me during my tenure. You know, 21 years as general counsel meant that he was serving under three different New York Federal Reserve presidents, and in some ways he's tracked your own career at the Federal Reserve, Madam Chair, basically being the deputy counsel to the FOMC when you were Governor, when you were president of the San Francisco Fed, Vice Chair, and now the Chair. I imagine that he's pretty high up in the hierarchy of attending meetings at the Fed—probably not quite in "Don Kohn" territory [laughter], but maybe in the top 10 or 20.

I wish he could be here today, but I think it's important to acknowledge his contributions and wish him all the success in whatever comes his way after his retirement. And it's not really a retirement. It's a retirement from the Federal Reserve. The idea that Tom would actually retire [laughter], that's just not going to happen. Thank you.

CHAIR YELLEN. Thank you. Next, I wanted to provide you with a brief update on the long-run framework project. As Thomas and Simon noted in their March 7 memo to the Committee, the analysis is being conducted by five main work groups. The first three so-called foundational groups are focusing on lessons from the crisis, the foreign experience, and money markets. These groups have conducted workshops with academics, market experts, and central bankers, and their work has been presented and reviewed in Systemwide plenary sessions that have been well attended and very productive. In addition to these foundational groups, two framework groups are conducting analysis, one focused on interest rate targets and operating regimes and another on a range of issues associated with the size and composition of the Federal Reserve's balance sheet. These framework groups have also held workshops with a range of experts from inside and outside the System.

Now, we anticipate that the work of the three foundational groups will be presented to the FOMC at the July meeting and that of the two framework groups at the November meeting. As background for the July presentation, you will receive summary memos from each of the three foundational work groups early next month, and the research directors will receive several background memos later this month. At the meeting, staff presentations will review the material provided in the memos, and we will reserve ample time for FOMC participants to ask questions and to offer their views on the key issues raised by the memos and staff presentations. Now, at this time, does anyone have questions or comments about these plans? [No response]

Okay. The next item, before we turn to our regular agenda items, is that I wanted to update you on our meeting schedule for next year. As you know, a draft meeting calendar for 2017 was circulated to the Committee earlier this month, and we received no objections from participants. We had planned to publish the calendar this Friday. Unfortunately, we just learned that a newly scheduled international meeting and its potential knock-on effects on the scheduling of other international meetings will raise a question about the workability of part of the proposed FOMC schedule. And we are now looking into those complications.

Depending on the outcome, we may be able to move ahead with the currently proposed FOMC schedule possibly as soon as this Friday, or, conceivably, we may need to change the date of the March meeting, potentially by moving it either a week earlier or a day later. And we will get back to you as soon as we possibly can if that proves necessary. Meanwhile, we want to ask that, for now, you reserve on your calendar the dates that have been proposed. Any questions about that? [No response] Okay. So we can now turn to the first agenda item, the Desk briefing, and let me turn to Simon to do that.

MR. POTTER.[1] Thank you, Madam Chair. The top-left panel of your first exhibit shows changes in domestic asset prices over various periods this year. As you can see, the net changes in risk asset prices over the intermeeting period, shown in the final column, were mild compared with the swings experienced through April. However, the decline in the 10-year Treasury yield was relatively large. In the past few days, "Brexit" concerns have lowered global risk asset prices and created additional safe-haven demand.

Recall that, in the previous Desk briefing, I reported that although the FOMC was not viewed as an important factor in sparking the financial turbulence at the start of the year, more-accommodative-than-expected FOMC communication in March was viewed as an important factor in calming markets. In this intermeeting period, market participants were surprised by the less accommodative tone of the April FOMC minutes and related Federal Reserve communications regarding the release, but the asset price impact outside of the movement in short-term rates was relatively subdued.

The top-right panel shows the evolution of market-implied expectations of a rate hike occurring at or before the July FOMC meeting, in relation to how expectations evolved ahead of liftoff in December. As shown by the light blue line, the impression of a less-accommodative stance generated around the time of the release of the April minutes had a sharp effect on the perceived probability of a move at the June or July meetings, one similar in magnitude to the effect of the September 2015 FOMC statement on liftoff expectations, albeit in the opposite direction. This effect was undone by the much weaker-than-expected May employment report, and the market- and survey-implied probability of a hike happening at this meeting declined to effectively zero.

As shown in the middle-left panel, the average probability distribution for the federal funds rate at year-end from the Desk surveys was little changed over the period, with the average probability attached to a decrease or no change in the target rate more or less constant. However, compared with the January survey, views have consolidated a bit in the 51-to-100 basis point bucket, at least in part because of the lack of additional rate hikes to date. The median respondent now views one rate hike by the end of this year as the most likely outcome, down from two hikes in April and three hikes in January.

The middle-right panel shows how the survey- and market-implied rate paths through 2018 have shifted over this year. During the sharp repricing of near-term rate

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

expectations in mid-May, there was little follow-through into the market-implied rate path past 2016, and after the May employment report the market-implied path continued the striking flattening we have seen since the December rate increase. Meanwhile, the survey-implied mean path has remained little changed compared with our January Desk surveys, the earliest surveys using our current probabilistic question format.

On the surface, this difference between the changes in survey expectations and the market-implied path may suggest a further decline in term premiums. However, the comparison between the *aggregate* survey-implied mean path and the market-implied path neglects much of the richness in expectations that we glean from the Desk surveys. The bottom-left panel shows *individual* survey respondents' 2017 year-end target rate probabilities. Here, red identifies primary dealers and blue signifies market participants. The responses are ordered from lowest to highest mean, and the various shades differentiate respondents from one another. As you can see, most of the respondents have bimodal distributions for the level of the policy rate, which include a "low rate" mode that, across respondents, mostly lies in the range of negative ¼ to positive ¼ percent, and a "higher rate" mode, which varies substantially across respondents and ranges from about 1 to 3 percent.

When we compare individual density forecasts with the 2017 market-implied expectations for the target rate, we find that quite a few respondents have implied mean expectations that are at or below rates implied by market prices. Thus, it is possible to reconcile the flattening of the path over the first half of the year with a switch in the identity of the marginal investor to one who believes more strongly in the lower-rate model. In this case, the market-implied path would be an accurate reflection of physical expectations for the target rate path without the need to appeal to term premiums. On the other hand, the fact that so many investors place nonnegligible probability on a return to the effective lower bound is consistent with large negative term premiums in futures markets. That is, there are few investors who would be prepared to sell a futures contract on the basis of a belief that rates will be considerably higher with substantial probability and many investors who want to hedge against their perceived significant probability of returning to the lower bound. Thus, the futures market will clear at prices that embed negative term premiums.

Forward measures of inflation compensation declined notably over the period, as shown in the bottom-right panel. The declines came in spite of a 10 percent increase in spot oil prices, a notable decoupling of the relationship we have highlighted in our briefings over the past year. Market participants have attributed the increase in oil prices to various global supply disruptions. Meanwhile, the declines in longer-dated measures of inflation compensation were reportedly driven by the below-expectations May employment report and the less-accommodative-than-expected FOMC communications regarding the minutes. In a new Desk survey question, we asked respondents to discuss whether the relationship between spot oil and far-forward measures of inflation compensation had changed recently and, if so, why. The responses highlighted that market understanding of the relationship remains tenuous, but a number of respondents took the opportunity to highlight that their view of the

Fed's reaction function had changed over the intermeeting period, as the less accommodative Federal Reserve communications came despite there being no substantive change, in their view, of the economic outlook.

As far-forward inflation compensation in the United States settled near record lows, comparable measures in other advanced economies remained stuck at very low levels, as shown in the top-left panel of your second exhibit. Many market participants continue to point to these measures as a clear indicator of concerns about global growth and the efficacy of monetary policy, particularly in Japan and the euro area, in which monetary easing programs of unprecedented size and scope appear to be having little effect on investors' confidence in inflation returning to mandate-consistent levels over the longer run.

The recent fall in interest rates globally has generally been even more pronounced in longer-dated nominal yields, as shown by the red dots in the top-right panel, as longer-term real interest rates have also declined. It is important to note that Treasury yields are high relative to G-4 peers, and market participants continue to suggest global portfolio rebalancing out of lower-yielding euro-area and Japanese government bonds into the United States is pressuring domestic rates lower. Thomas will examine the low level of longer-term rates in the United States further in his briefing.

Despite record low forward nominal rates that many interpret as signaling heightened concern about the longer-run global growth picture and the efficacy of monetary policy, the middle-left panel shows that near-term equity and interest rate implied volatility, the dark blue and red lines, remained at or below their historical averages and levels reached earlier this year for most of the period, with a recent uptick from Brexit-related concerns. Developed market currency volatility, the light blue line, has spiked recently and is noticeably above its historical average.

As reflected in the middle-right panel, the recent increase in currency implied volatility appears to reflect mostly the repercussions for sterling of the very immediate risk of Brexit. But even before Brexit came squarely onto investors' radar screens, there was a meaningful increase in implied volatility on the yen. Investors expect that the pound will depreciate broadly should a vote to leave the EU prevail and believe there could be appreciation pressures on safe-haven currencies such as the yen and Swiss franc. To date there is little indication these moves would be disorderly.

In the past few days there appears to be more impact of Brexit concerns on euro-area asset prices as the referendum date gets closer and polls indicate a very close decision. In view of how close the polls are on the support for the "leave" and "remain" camps, we expect to see volatility increase further in the trading days up to the vote. The bottom-left panel shows a kink in equity-implied volatility in the United Kingdom and Europe around the June 23 referendum date, with levels of implied volatility on the FTSE rising above that seen during the February market turbulence. By comparison, the implied volatility curve for U.S. equities shows a small kink. The spillover effects of Brexit in the euro area would be expected to be more acute than in the United States due to the tighter links between the U.K. and euro-area economies and negative implications of the vote for European political cohesion. Shaghil will discuss Brexit further.

In stark contrast to market discussion over Brexit, concerns regarding China and its FX policy were not primary points of focus among market participants over the intermeeting period. The renminbi depreciated a bit against the U.S. dollar, but unlike earlier in the year, this had little effect on global risk sentiment. The dark blue line in the bottom-right panel shows that the renminbi's exchange value against the dollar is now roughly back to where it was in January when the market was highly sensitive to the risk of a sudden devaluation of the renminbi. However, the light blue line shows that the CFETS Index, which represents the renminbi's effective exchange rate against a basket of 13 currencies, has depreciated by roughly 5 percent year-to-date. On the other hand, investors continue to have deep concerns about the risk of a sharp slowing in Chinese growth and the ability of China's highly leveraged financial system to withstand the effects of this slowing.

Turning to the top-left panel of your last exhibit, the effective federal funds rate remained near the middle of the target range over the intermeeting period amid typical volumes. Secured rates trended modestly lower, with average GCF and triparty repo rates a few basis points below their prior-period averages. The decline in GC repo rates has largely been ascribed to larger-than-expected cash inflows into the repo market over recent weeks.

Despite lower GC repo rates in late May, the volume of overnight triparty repo trades conducted below the ON RRP offering rate remained very low, as shown in the top-right panel. Further, the slight increase in activity below the overnight RRP rate—less than 1 percent of total volume over the second half of May—was composed almost entirely of trades by entities that do not have direct access to the overnight RRP, shown as the dark blue area in the panel, and activity below the overnight RRP rate from our counterparties remained negligible.

Looking ahead, there is heightened attention on the potential consequences of SEC money market reform implementation later this year. Market participants continue to highlight the possibility of large and rapid shifts in money fund investor allocations in response to the October 14 deadline, which could result in volatility in short-term interest rate markets and increased usage of the overnight RRP facility. As shown in the middle-left panel, a recent survey of money market fund complexes conducted by the Desk found that respondents expected $410 billion, on average, to flow out of prime funds between now and the October effective date of the SEC reforms, with the bulk of these outflows expected to occur in August and September.

Prime funds are shortening maturities in anticipation of these redemptions, and it is possible that the private sector will be unable to increase its balance sheet offered to prime funds on an overnight basis to meet this increase in demand. This dynamic could display some parallels with financial reporting dates, when less private-sector balance sheet is available for prime fund investment and overnight RRP usage increases. Also, like we see with financial reporting dates, we would anticipate such increased usage from this shortening in maturities of prime funds to be temporary until they have better insight about the size of outflows.

On the other hand, if the outflows are as large as expected, the shift itself may have both temporary and permanent effects on money markets and overnight RRP usage. The survey found that 80 percent of anticipated investor outflows, or around $320 billion, were expected to move into government funds, with the remainder moving to a combination of bank deposits and short-term investment vehicles falling beyond the scope of the SEC money market fund reform initiative.

Respondents were also asked how they expected inflows to government funds to be allocated, given a choice of holding securities outright, engaging in repo, or placing funds in Federal Reserve RRPs. The responses indicate that usage of the ON RRP facility is expected to increase by approximately $90 billion. Market participants note a high level of uncertainty regarding their views on the potential magnitude of reallocation to Federal Reserve RRP in the run-up to the October conversion date and whether such flows would be permanent or temporary. While a number of firms expressed a preference for reallocating funds to the private repo market as opposed to RRPs with the Fed, they see their decisions as highly dependent on the pace of outflows and the availability of close substitutes with higher rates like Treasury bills or private market triparty repo.

In addition to the uncertainty regarding what instruments the outflows from prime funds will end up in, we also do not know how the scale of individual prime and government funds will be affected by these substantial changes in the money fund industry. For example, we could see a number of firms that are currently counterparties fall below the $5 billion requirement to be an RRP counterparty or growth in smaller funds with assets under management below the $5 billion requirement as funds try to specialize to specific investor needs. This additional cash outside the Fed's counterparty system could lead to an increased instance of repo trading below the overnight RRP offering rate.

For now, usage of the overnight RRP facility, shown in the middle-right panel, has remained below levels seen in early 2016, a trend that continues to be associated with increased availability of private-sector balance sheet for repo. Daily average overnight triparty repo volumes between dealers and customers have remained elevated, reaching multiyear highs of nearly $300 billion in mid-May. Around the time of the April FOMC meeting, we understood the principal driver of the elevated volumes to be increased need for financing on the part of dealers due primarily to elevated foreign central bank reserves sales and Treasury bill supply. However, Treasury GC repo volumes have continued to increase through the second quarter of 2016, despite evidence of a decline in dealers' financing needs from slowing reserves sales and substantial declines in Treasury bills outstanding. Recent dealer conversations reveal that some have become more willing to expand their repo books, citing more comfort with balance sheet management amid current regulations, firm-specific factors, and attractive opportunities to intermediate via matched book repo.

Turning to the Federal Reserve's balance sheet, expectations for the timing of a cessation of some or all reinvestments continued to be pushed out, according to the most recent Desk surveys. As market participants have over recent months come to expect a slower pace of policy rate normalization, their views on the timing of a change to the reinvestment policy have also shifted out. As shown in the bottom-left panel, the median expectation has shifted out from approximately one year ahead following the December FOMC to one and a half years ahead in the June surveys. In calendar terms, this corresponds to a one-year delay in the expected timing of a change to reinvestment policy, from December 2016 to December 2017.

Purchases of Treasury securities and agency MBS continued to proceed smoothly, in accordance with the FOMC's reinvestment policy. Similar to the prior intermeeting periods, MBS reinvestment purchases continued to be somewhat elevated at around $30 billion per month, largely the result of elevated mortgage prepayment activity associated with the ongoing level of longer-term interest rates. We continue to execute Treasury rollovers at auction in line with FOMC policy.

While on the topic of reinvestments and rollovers, we would like to update the Committee on staff contingency planning with regard to operations to maintain the size of the Treasury portfolio, summarized in the bottom-right panel. Recall that our current policy is to roll over all maturing proceeds of SOMA Treasury holdings into newly issued securities pro rata at auction. In the event that the Desk is unable to roll over Treasury securities at auction, the size of the SOMA portfolio would decline unless the Desk were to reinvest by purchasing Treasury securities in the secondary market. Under the current directive, my view is that the Desk does not have such authority from the Committee.

Inability to roll over could be caused by technical or operational issues or errors related to the auction or rollover process or by a change to the auction calendar. For example, on February 25 of this year, the seven-year auction was rescheduled for the next day. Although this did not prevent the Desk from rolling over maturing SOMA holdings at auction, a longer delay would have, as the auction would not have settled on the same day that the maturing funds were received. In such a scenario, the Desk, if directed to do so, could make purchases in the secondary market in order to maintain the size of the balance sheet. Much like MBS reinvestments, these purchases would occur over a period of days or weeks so as to ensure smooth market functioning. The Desk will prepare procedures to seek Committee direction through a notation vote and prepare operational procedures for announcing and conducting such secondary market purchases in the unlikely event of a delayed or rescheduled auction in the future.

In a continuing effort to enhance our preparedness to act in pursuit of the Committee's objectives, the staff also conducted a number of small-value operational tests over the intermeeting period. These tests, along with a list of upcoming exercises, are summarized in the appendix of the handout.

Finally, as noted in the staff memo circulated to the Committee on Brexit, barring extreme circumstances, we do not see a U.K. vote to leave the EU causing a breakdown in financial market functioning. Weekly U.S. dollar liquidity auctions are offered by the BOE, BOJ, ECB, and SNB on the understanding that the swaps with the Federal Reserve can be used to fund demand at these auctions. The BOE announced that it stands ready to provide liquidity both in sterling and dollars to a wide range of counterparties through its liquidity framework, and its U.S. dollar auctions are currently scheduled for one day prior and six days following the referendum. While market-implied measures of U.S. dollar funding stress remain well below levels at which the demand by U.K. banks at the BOE's dollar operations would be economical, we are operationally ready for a number of contingencies. We will update the Committee if there is a significant increase in funding stress, and the Chair would consult the Committee, if possible under the circumstances then prevailing, should a draw on the swap line be requested outside of the regular auction schedule. Thank you, Madam Chair. That concludes my prepared remarks.

CHAIR YELLEN. Thank you. Are there questions for Simon or comments? [No response] Okay. Seeing none, we need a vote to ratify domestic open market operations. Can I have a motion?

MR. FISCHER. So moved.

CHAIR YELLEN. Thank you. Without objection. Okay. And I guess we are moving along expeditiously and ready to turn to the economic outlook. Today Jeremy Rudd is going to begin a series of chart-show briefings.

MR. RUDD.[2] Thank you. Our exhibits are in the packet titled "Material for Staff Presentation on the Economic and Financial Situation."

In table 1 of your first exhibit, I've summarized our near-term outlook. Since the April Tealbook the news on economic activity has been mixed, with the recent data on the labor market and business investment coming in worse than expected and the latest readings on consumer spending and net exports surprising us to the upside. As you can see if you look at line 1 of the table, we continue to expect that real GDP growth will pick up from its unimpressive first-quarter pace. However, we've marked down our near-term projection to reflect our view that there's now less momentum in hiring and business spending than we had previously thought, and also we now expect residential investment to recover more gradually than we had in April.

Given the mixed nature of the incoming data—and how little hard evidence on the current quarter we actually have in hand at this point—it's worth asking how much

[2] The materials used by Mr. Rudd and Mr. Ahmed are appended to this transcript (appendix 2).

confidence we should have in our projection of a second-quarter pickup. To help answer this question, panel 2 shows second-quarter nowcasts from various models, including the Board's dynamic factor model—the red line—and some of the nowcasting models that are maintained elsewhere in the System—the blue dashed lines; the staff's judgmental projection, which is what's in the Tealbook, is shown as the black line. As you can see, the 70 percent confidence interval around the Board's factor model, which is that gray shaded region in the panel, is still nearly 3 percentage points wide.

This morning we received the May retail sales report, which came in stronger than expected, with upward revisions to March and April. The retail sales data, along with other pieces of spending data that we received after the Tealbook closed, leave our first-quarter real GDP growth estimate unrevised at 1.2 percent but imply an upward revision to our second-quarter growth projection of 0.2 percentage point, which puts our Q2 forecast at 2.1 percent. The Board's factor model was also surprised by these data; as of this morning, its second-quarter GDP growth nowcast is 3¼ percent, which is up about ¼ percentage point from a week ago.

The next four panels summarize the medium-term outlook. My focus here is on comparisons between the June Tealbook and our forecast from last December, which is when the Committee moved the federal funds rate above the effective lower bound. As you can see from panel 3, relative to December we've lowered projected real GDP growth in 2016 and nudged it up over the subsequent two years. Now, what that leaves us with at the end of 2018 is a level of GDP that's essentially unrevised relative to our December projection. The main sources of the revisions that we put through since December are summarized in panel 4.

Panels 5 and 6 give the outlook for the labor market, again with the comparison being made with our December Tealbook projection. Starting with payroll employment, panel 5, the incoming data imply a sharply lower pace of job gains over the first half of this year than what we expected in December. In our current projection, we have largely looked through this weakness, which seems at odds with what we're seeing in other indicators. In fact, in light of our downgraded outlook for productivity growth, the projected level of payrolls at the end of 2018 is actually slightly higher than in our December forecast. Meanwhile, our unemployment rate forecast, which is shown in panel 6, is little changed from the December Tealbook.

Now, panel 6 also indicates that the current level of the unemployment rate is now just a bit below our estimate of the natural rate. As we've pointed out in the past, there are other margins of labor market slack besides those captured by the unemployment gap; in the next exhibit, I provide our assessment of where several of those additional margins currently stand.

Panel 1 plots the labor force participation rate against the staff's judgmental estimate of its trend. Over the past couple of years, the participation rate has fluctuated widely but currently stands a little below its estimated trend. As you can see from panel 2, if we combine the participation rate gap with the unemployment rate gap, we get the gap between the employment-to-population ratio, and the staff's estimate of its trend is basically close to zero right now.

Another potential margin of labor underutilization is the share of those employed who are working part time for economic reasons. This is shown by the black line in panel 3. If you look at that line, you can see that this series has now retraced most of its increase over the previous recession; however, if you compare it with the blue line, which shows a predicted value of that series on the basis of its historical relationship with the unemployment rate, you can see that there's still some gap or some unusually elevated level of part time for economic reasons. Although this unusually elevated level plausibly represents an additional margin of labor market slack, in aggregate terms it's probably not overly large: If we were to close it, it would probably lead to an increase in aggregate hours—and, hence, aggregate labor input—on the order of maybe 0.4 percent, which would in turn translate to maybe ¼ percent on real GDP.

Panel 4 compares our estimate of the unemployment gap—the black line—with two other variables that have historically tended to move relatively closely with it; namely, households' view of job availability as measured by the Conference Board—that's shown by the blue line—and small businesses' view, as measured by the NFIB, of the difficulty that they're having in filling job openings—that's the red line. On the basis of on a mechanical choice of scaling of those two alternative series, you can see that these series currently bracket the value of our own gap estimate right around now.

Finally, panels 5 and 6 compare the extent to which different racial and ethnic groups have shared in the broader improvement in labor market conditions. Panel 5 shows that the differentials in jobless rates across these groups are now close to where they were prior to the 2007–09 recession, with blacks and Hispanics still suffering notably higher rates of unemployment. And, as shown to the right, for involuntary part-time work, the gap for both blacks and Hispanics relative to whites remains higher than it was in the years just before the recession.

In the next exhibit, I review some of the considerations that help inform the staff's judgmental assessment of labor- and product-market slack.

One traditional approach to gauging the extent of slack has been to look at the behavior of inflation. Unfortunately, as the Phillips curve—the relationship between slack and inflation—has become flatter over time, this approach no longer works as well as it used to. Panels 1 and 2 show why, by means of a couple of stylized examples.

If inflation's long-term trend is stable—say, it's tied down by well-anchored inflation expectations—and if we've already controlled for the other determinants of inflation besides slack, such as, say, imported goods prices, then periods in which the unemployment rate is below its natural rate—and, hence, the unemployment gap is negative—should be associated with above-trend inflation, and vice versa. This relation is captured by the red line in panel 1, which provides an example of a relatively steep Phillips curve. Specifically, what the figure shows is a downward-sloping relationship between the unemployment gap—which is plotted on the horizontal axis—and deviations of inflation from its trend—which is measured by the vertical axis. (Note that the data constructed for this example—like the real-world inflation data—include a certain amount of unexplainable noise, which is why the relationship doesn't fit perfectly and, hence, the black dots don't lie right on the red line.) Importantly, when the Phillips curve is steep, unemployment doesn't have to move too far away from the natural rate for us to reliably see above- or below-trend inflation. Here, for instance, in panel 1, if the unemployment rate is just ½ percentage point or more below its natural rate—which would put us in the red region of the figure—then inflation usually tends to be above its trend: In this example, detrended inflation will be less than zero only about one-fifth of the time. Similarly, when the unemployment rate is ½ percentage point or more above its natural rate—which puts us in the blue region—inflation is usually below its trend, with detrended inflation coming in greater than zero only about one-fifth of the time.

The behavior of inflation, therefore, is going to be reasonably informative in pinning down the level of the natural rate when the Phillips curve is steep. But when the Phillips curve is flat—panel 2—the situation is quite different: Even if the unemployment rate is more than 1½ percentage points above or below its natural rate, we're about equally likely to see above-trend inflation as we are to see below-trend inflation.

Hence, when the Phillips curve is flat—which we think is currently the case—the behavior of inflation will not tell us very much about how much slack is present in the economy. Now, one way you can try to to deal with that problem is to try to bring additional information to bear, in the form of, say, other relationships like Okun's Law or a production function, or other variables that might tell us something useful about slack. This additional information can be exploited in a relatively unrestricted way through the use of a time-series model, or, alternatively, you can impose the stronger restrictions implied by theory in the context of a fully specified structural model.

Panel 3 reports output gap estimates from three time-series models maintained by Board staff. The range of the models' point estimates is given by the gray shaded region, and the staff's judgmental estimate of the output gap is shown as the black line. In broad terms, these various gap estimates move relatively similarly. Right now, these three time-series models generally point to a little more tightness in resource utilization than what's implied by the staff's judgmental estimate. A similar pattern is obtained if we consider the range of estimates of the natural rate of unemployment that are implied by these models (these are given by the gray shaded region in the next panel), and again, these suggest somewhat greater tightness in utilization than what the staff's estimate would imply.

In panel 5, I present output gap estimates from the three DSGE models that are currently maintained as part of the System's DSGE modeling project (once again, the

Board staff's judgmental estimate is shown here in the picture as the black line). Over history, the range of DSGE model estimates is somewhat wider than what you see for the time-series models. More recently, however, these models' gap estimates have converged and point to somewhat less tightness in utilization than what's reflected in the judgmental estimate. Depending on what you look at, what class of models, you can get relatively different current estimates for the output gap. I'd further note that the analysis that I've presented here pertains only to point values and doesn't even attempt to characterize the degree of statistical uncertainty that typically surrounds these sorts of estimates.

Finally, in panel 6 I provide updated estimates of the short-run real natural rate of interest from the three DSGE models, in which this rate is defined as the real risk-free short-term interest rate that would be obtained in the absence of nominal rigidities. Here, the range of model estimates is shown by the gray shaded region, but the solid line gives the model's median estimate. In the wake of the 2007–09 recession, the models saw the real natural rate of interest as having been pushed well below zero; by the end of 2018, however, all of the models expect the natural rate to be positive, with a median estimate of around 1¼ percent.

Your next exhibit relates to the inflation component of your dual mandate. Panels 1 and 2 summarize the revisions that the staff have made to the inflation outlook since the December Tealbook. As you can see from the black line in panel 1, the net revisions that we've made to total PCE price inflation have been relatively small. For core PCE price inflation, revisions to which are shown in panel 2, the largest revision is to the current year, 2016, and reflects an upward surprise to first-quarter core inflation—which is captured by the yellow region of the second stacked bar—that we've mostly interpreted as noise.

In addition, in the March round we edged down our judgmental estimate of underlying inflation 5 basis points, to 1.75 percent; this adjustment is captured by the gray portions of the bars. We had left this assumption unrevised since the June 2014 Tealbook; as we noted in March, we made the revision in response to continued low levels of market-based measures of longer-term inflation compensation and in response to the decline we had seen in the Michigan survey measure of longer-term expected inflation. As you can see from panel 3, the preliminary June value of the Michigan measure, which is the red line in the figure, fell to 2.3 percent, which is the lowest level ever recorded for that series. This measure can be quite noisy from month to month. Even so, a smoothed value of the series—given in the blue line in the panel—shows a relatively steady decline over the past couple of years. We continue to think that a portion of the decline in this measure of expectations is attributable to the low rates of headline inflation that we saw last year. Indeed, when we try to control for the effect of food and energy price changes, the resulting estimate of the trend—which is the green line in the picture—manifests a much less pronounced decline of late, and it does not fall outside of the historical 70 percent range of the series, which is given by the gray shaded area. Of course, this finding doesn't rule out the possibility that a more persistent reduction in inflation expectations actually is under way.

Panel 4 summarizes results from a number of models that we also use to inform our view of underlying inflation. If you compare the first two columns of figures, the point estimates from every model except for the time-varying parameter VAR (which is the model shown in line 4) have declined since late 2007. If we throw out the very low reading coming from the TIPS-based model, which is shown on panel 3, the most recent point estimates run from 1.6 to 2 percent, with an equal-weighted mean of 1.7 percent—which is about the same as our judgmental assumption.

Panel 5 shows three of the measures of labor compensation that we follow. We have not revised our compensation forecast much in response to the incoming data since April; in particular, we think that the recent acceleration in the productivity and costs measure of business-sector hourly compensation—which is shown in the figure by the blue line—leaves it out of line with its fundamental drivers, and so we don't expect this current pace to continue. In addition, the ECI came in about as expected in the first quarter, and I'd point out that we anticipate that the 12-month change in the ECI—which is the black line in the figure—will move up to 2¼ percent in the current quarter as an unusually low reading from last year drops out of the calculation.

Although the staff closely monitor compensation developments, for some time we have tended to put relatively little weight on movements in labor compensation when we prepare the judgmental forecast for price inflation. Simply as an empirical matter, we can no longer find any evidence of pass-through of labor costs to prices if we use compensation measures that are based on the productivity and costs data. Moreover, even ECI-based labor cost measures—for which we still do find evidence of pass-through—appear to have had almost no material effect on price inflation in recent years. To illustrate this latter point, panel 6 uses a vector autoregression, or VAR, to decompose actual price inflation movements—the black line—into a baseline forecast and the cumulative effects of various structural shocks as identified by the VAR model. For example, the solid red line plots the VAR's baseline forecast (which is obtained from a dynamic simulation of the VAR starting in 2001) plus the estimated effects of shocks to the unemployment gap. When these unemployment gap shocks are included, the model can track actual inflation tolerably well (the red line sort of tracks the low-frequency movements in the black line; if I were to add in all of the model's shocks, it would track actual inflation perfectly). The dashed red line then shows what happens if I also add in shocks to ECI-based trend unit labor costs. As you can see, the dashed red line lies very close to the solid red line. What that means is, the VAR attributes very little of the movement in core inflation over this period to labor cost shocks.

I want to be clear here: We don't actually think that labor costs are immaterial for pricing. Rather, we think that in a world in which inflation expectations are well anchored and, therefore, wage–price spirals are a thing of the past, observed year-to-year movements in price inflation are likely to mostly reflect a mix of changes in slack, supply shocks, and idiosyncratic variation, not independent movements in labor cost growth.

Shaghil will now continue our presentation.

MR. AHMED. The contour of our foreign outlook is hardly something to write home to Mom about, even if she had FOMC clearance. [Laughter] As can be seen from line 1 of the table in exhibit 5, we see growth abroad reaching its trend pace of about 2¾ percent in the second half of this year and staying there through the remainder of the forecast period. While this suggests that the eagerly-awaited global recovery is all but done, we would not characterize foreign economic conditions as having returned to "normal" for several reasons.

First, we appear to be having a dip in the current quarter. As shown in panel 2, even though the pickup in foreign real GDP growth in the first quarter to 2½ percent was a little larger than we had estimated, more recent indicators have disappointed, leading us to mark down second-quarter foreign GDP growth to 1¾ percent. The step-down in growth is concentrated in the advanced foreign economies, or AFEs (line 2 of the table), and primarily reflects transitory factors—wildfires in Canada that have disrupted oil production and an earthquake in Japan—the effects of which should reverse. Moreover, in our baseline view, U.K. activity should reaccelerate after U.K. citizens vote to remain in the EU.

Growth in the emerging market economies, or EMEs (line 7), is estimated to have remained at its first-quarter pace. Chinese growth (line 8) looks set for a moderate pickup in the current quarter, but Mexican GDP (line 10) should decelerate from its first-quarter surge.

The second reason the foreign recovery doesn't feel normal is that inflation (shown in panel 3), especially in the AFEs, is continuing to run low—even core inflation. Remaining pockets of slack in some regions, such as in the euro area, help explain some of this weakness, but inflation is running below target even in countries, such as the United Kingdom, whose output gaps are nearly closed.

Third, it is taking an unusual amount of stimulus to achieve what we are now thinking of as trend growth. As noted in panel 4, the ECB's monetary policy remains very accommodative, and its balance sheet is slated to expand further. We think the Bank of Japan will likely ease further, and the government has also announced a postponement to 2019 from 2017 of the planned consumption tax hike. And we don't expect policy rates to start rising in Canada and the United Kingdom until next year.

As I alluded to earlier, we also recognize that the "new normal" likely involves trend growth that is lower than it used to be. Labor productivity growth (panel 5) has been declining in both the AFEs and EMEs. In EMEs, this primarily represents structural factors such as demographics (particularly in China), the process of economic convergence, and supply bottlenecks in some countries. Some of the decline in the AFEs could be structural as well, as discussed in our Tealbook box on the topic, but it may also reflect lingering effects of the global financial crisis. Consistent with these trends, as shown in panel 6, we have revised down our estimate of potential growth for both types of economies over the past several years.

In this challenging global environment with monetary policies near their limits, it is more difficult to counter negative shocks, and risks to the outlook become more worrisome. So where do we now stand on our familiar downside risks to the global outlook? Turning to exhibit 6, the recent increases in oil prices (panel 1) from very low levels have reduced the risk of severe financial instability or extraordinary belt-tightening in some oil-producing economies. We judge this benefit to exceed the cost to those economies that have benefited from the low oil prices. However, at this point, a further rise in oil prices would probably be a minus, on balance, for the global economy.

On Chinese risks, the message is also mixed. Depreciation pressures on the Chinese renminbi (panel 2) have eased this year, and capital flows and foreign exchange intervention have been relatively muted. Earlier in the year, this was because the dollar's generalized depreciation enabled the renminbi to appreciate against the dollar (the black line) even as the exchange value of the basket (the blue line) was falling. More recently, markets have taken in stride the depreciation of the renminbi against the dollar as the dollar has generally strengthened, and of the basket, but this could change and exchange rate concerns could flare up again. Also, the rapid credit growth encouraged by authorities to keep the economy expanding is further boosting corporate debt and, thus, the risk of financial problems down the road. Consequently, we wouldn't push risks associated with China to the back burner.

Continuing our world tour of risks, Brexit looms large, as Simon discussed. A leave vote next week could trigger significant additional spillovers to global markets. To provide a sense of the impact of this on the U.S. economy, as noted in panel 3, we ran two simulations using our SIGMA model: a "moderate" one in which the reaction of global financial markets is relatively muted, and a more "disorderly" one (presented in the Tealbook) in which there are greater spillovers in terms of borrowing spreads and dollar appreciation. As shown in panel 4, our results imply that Brexit would take off about ¼ percentage point from U.S. growth under the moderate scenario (the green line), and a larger negative effect under the disorderly scenario (the red line), resulting in a lower path of the federal funds rate (panel 5). In view of the uncertainties, the range of possible outcomes is, of course, broader.

Brexit is not the only risk emanating from the AFEs. Greece's problems are not yet resolved, and long-run inflation expectations in the AFEs have been falling, which increases the risk that high real interest rates in an environment of a zero-lower-bound constraint could impede progress in some economies.

Another key risk involves spillover effects from U.S. monetary policy normalization. One such spillover, discussed in the next exhibit, is that financial stresses in the EMEs could ratchet up, putting a hurt on their real economies.

Our baseline view is that EMEs will be able to manage U.S. monetary policy normalization without facing consequences that are too adverse. As suggested by our in-house EME vulnerability index (the red line in panel 1), in many dimensions—

including improved policy frameworks, greater exchange rate flexibility, and adequate foreign exchange reserves—EMEs are much less vulnerable than in the crisis-prone 1980s and 1990s.

That said, both our vulnerability index and EMBI global spreads—a measure of investor perceptions of creditworthiness—have been trending up a bit over the past few years. Some of this upturn reflects the run-up in credit to the private sector shown in panel 2, especially to nonfinancial corporations (the blue portions of the bars). This creates the risk that U.S. policy normalization and resultant increases in borrowing costs might lead to financial distress in EMEs.

Panel 3 depicts an event study of the response of EME spreads to surprises in the federal funds rate following FOMC announcements. As indicated by the regression line, unexpected hikes in the policy rate do boost EME spreads, but it is a moderate effect—a 100 basis point increase in the policy rate is associated with a 44 basis point increase in spreads. This means that the cumulative market surprise in U.S. tightening implied by our baseline federal funds rate path through 2018 should result in about a 65 basis point increase in the EMBI global spread. But this is very uncertain, and spreads could certainly rise more.

To examine the consequences of a sharp rise in financial stresses, I estimate a simple equation (presented in panel 4) in which EME growth is a function of its own lag, aggregate growth in the advanced economies (both the United States and AFEs), and current and lagged value of the EMBI global spread. As noted in the inset box, a 100 basis point rise in spreads is associated with a decline in EME growth of ¼ percentage point in the long run, with the short-run drag being substantially larger. The fit of the model is quite good.

To assess spillovers in a stress scenario, I assume that EME global spreads rise 250 basis points in the third quarter—about half that seen during the global financial crisis—and do not return to current levels until end-2018. The hit to EME growth according to this model, shown in panel 5, would be sizable, although well short of crisis proportions.

Adverse effects of FOMC policy normalization on foreign growth would, of course, hurt the U.S. external sector—the subject of your next exhibit—with the effects compounded if there was also a bigger rise in the dollar than we are expecting. As indicated in panel 1, in our baseline, we are expecting some further appreciation of the dollar, especially against the AFE currencies. This appreciation reflects the fact that, as depicted in panel 2, we are projecting a larger increase in the federal funds rate than the market, and we assume that as the market raises its expected path of rate tightening in response to ongoing surprises, the dollar will rise.

We calibrate the responses to these surprises on the basis of the historical reaction of the dollar to U.S. monetary policy announcements (the black line in panel 3), which implies a 1.5 percent appreciation of the dollar against the AFE currencies following a 100 basis point policy surprise. Of late, however, the response of the dollar has been considerably greater—the same relationship following all FOMC meetings since June 2014 is shown by the pink line. While we cannot conclude from such a short period that there has been a structural break in the historical relationship, we have nodded a bit in that direction by increasing our baseline 1.5 percent coefficient to 2.5 percent. This boosts the slope of our dollar path a bit, other things equal, but, as I mentioned earlier, the dollar could rise much more in response to policy surprises. Accordingly, we presented a "Stronger Dollar" alternative scenario in your Tealbook (not shown), in which the dollar rises an additional 10 percent, leading to moderate declines in U.S. GDP growth and core inflation from their baseline paths.

Even without a surge in the dollar, as you can see from line 1 of the table, net exports continue to be a drag on U.S. GDP growth in our forecast, though this drag diminishes by 2018 as the flattening of the dollar kicks in. In the first quarter, extraordinarily surprising weakness in imports (line 2) made the contribution of net exports slightly positive, but we are expecting that to reverse as import growth moves toward the pace we would expect, in view of the behavior of the dollar and faster U.S. GDP growth. With the flattening of the dollar, we are also seeing core import prices (panel 4) rising for the first time in nearly two years. In fact, this morning, May import prices printed a little higher than we were expecting, and we have boosted somewhat our forecast for second-quarter core import price inflation.

To sum up, with growth abroad settling at a moderate pace, we see a gradual ebbing of the headwinds from the foreign sector on the U.S. economy. But the global recovery has yet to become self-sustaining, and plenty of downside risks remain, which perhaps are worth writing home to Mom about. Jason will now continue our presentation.

MR. WU.[3] Thank you, Shaghil. I will be referring to the packet labeled "Material for Briefing on the Summary of Economic Projections." To summarize briefly: Compared with the SEP in March, your economic projections have not changed much, but many of you revised down your assessments of the levels of the federal funds rate that will be consistent with those projections in 2017, 2018, and over the longer run. In addition, more of you now see the risks to inflation as balanced than as weighted to the downside.

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 for real GDP growth is 2 percent for each year from 2016 through 2018, equal to the median of your projections of its longer-run pace. Looking at your individual projections, a majority of you project that real GDP growth this year will be at or slightly above your individual assessments of its longer-run pace. Most of you forecast that economic growth will pick up a bit next year and will remain at or above your estimate of its longer-run pace in 2018. I should note in passing that one participant did not submit longer-run projections. That fact will be

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

noted in the SEP materials that will be released to public. As shown in the second panel, the median of your projections for the unemployment rate is 4.7 percent this year, 4.6 percent for the next two years, and 4.8 percent in the longer run. A large majority of you project that the unemployment rate will be at or a bit below its longer-run normal level through 2018. As can be seen in the third panel, the median of your projections for headline PCE inflation moves up from 1.4 percent this year to 1.9 percent in 2017 and 2 percent in 2018, when almost all of you project that inflation will be equal to or within 0.1 percentage point of the Committee's objective. Turning to the bottom panel, the median projections for core inflation also increase gradually over the next three years.

Exhibit 2 compares your current projections with those in the March SEP and with the forecasts from the March and June Tealbooks. As shown in the top panel, the median path of your projections for real GDP growth edged down this year and next as compared with March and is below the Tealbook forecast over the medium term. Many of you attributed your downward revisions to growth to recent soft readings on economic activity, such as those on business spending, as well as the weaker-than-expected employment report for May. Notably, the range of your projections for GDP growth has become wider for the next two years and for the longer run, mainly as a result of changes to the bottom end of the range. The median of your forecasts for unemployment, shown in the second panel, is essentially unrevised at all horizons.

As can be seen in the third panel, the median of your projections for total PCE inflation for this year was revised up 0.2 percentage point, but the medians are unrevised for 2017 and 2018. Many of you attributed a higher inflation projection for this year to stronger-than-expected readings on inflation in recent months as well as the stabilization of oil prices. The median inflation projections through 2018 continue to lie a bit above the Tealbook baseline projection, although the difference has narrowed since March, particularly in the near term. The median path of your forecasts for core PCE inflation, shown in the fourth panel, ticked up for this year and the next.

Exhibit 3 provides an overview of your assessments of the appropriate path of the federal funds rate. The median projection, indicated by the red horizontal lines in the top panel, stands at 0.9 percent at the end of 2016, suggesting two rate hikes by the end of this year, 1.6 percent at the end of 2017, and 2.4 percent at the end of 2018. The median projection for the federal funds rate at the end of this year is unchanged from the March projections (which are shown in the bottom panel). Still, it is worth noting that a majority of you revised down your individual forecasts, that the mean declined 19 basis points, and that now only two of you have year-end projections above 1 percent, compared with seven in March. All but a few of you revised down your funds rate forecast over the next two years, and the median funds rate projections for 2017 and 2018 are now lower than in March by 38 and 62 basis points, respectively. 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 equilibrium real interest rate that is currently low and will only rise slowly—a phenomenon several of you attributed to persistently low productivity growth and other headwinds. Some of you cited risk-management considerations arising from the proximity of the effective lower bound as a reason for a cautious approach to normalization.

With respect to the longer-run federal funds rate, about half of you lowered your projections 25 basis points, and the median now stands at 3 percent compared with 3¼ percent in March. Participants attributed the downward revisions to a number of factors, including global demographic dynamics, weak productivity growth, and a slower pace of potential growth. As in March, 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, but the median shortfall—at 62 basis points—is now wider than it was in March.

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 for core inflation, the unemployment gap, and the longer-run federal funds rate, shifted up slightly since March, boosted mainly by higher projections of core inflation. In contrast, the prescriptions for 2017 and 2018 shifted down a bit as a result of downward revisions to the longer-run federal funds rate. Still, all of you continue to project levels of the federal funds rate for this year and next that are well below the prescriptions of the rule, and only one of you projects the federal funds rate in 2018 to be higher than suggested by the rule. In fact, for most of you, the gaps between your projections of the federal funds rate and the rule's prescriptions have widened since March at all forecast horizons.

Exhibit 4 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 about your projections as broadly similar to its historical average. As in March, most of you also see the risks to your projections of GDP growth and the unemployment rate as broadly balanced, as illustrated in the top two figures to the right, but quite a few of you see the risks to growth as weighted to the downside and risks to unemployment as weighted to the upside. Moving to the two bottom-right figures, in contrast to March, a majority of you now see the risks to your inflation projections as broadly balanced rather than as tilted to the downside. A couple of you pointed to the firming of some measures of inflation in recent months as contributing to the change in your risk assessment. Among those who continue to judge that the risks to inflation are weighted to the downside, almost all cited recent declines in certain measures of longer-run inflation expectations as a reason for your assessment.

The final exhibit explores the extent to which the gap between your projections for the appropriate path of the federal funds rate and the prescriptions of a non-inertial Taylor (1999) rule are correlated with your assessments of the risks to your economic projections.

The top two panels focus on your assessments of the risks to your projections for PCE inflation. The blue line in the first panel displays, across SEP dates, the median value of the Taylor rule residuals for 2016. The blue line in the second panel displays the same variable on the basis of your projections for 2017. As you can see, the median Taylor rule residuals for both 2016 and 2017 have generally become larger since September 2014, indicating that your funds rate projections have moved further below the prescriptions of the Taylor rule. The red lines in the first two panels show, over the SEP dates, the net fraction of participants who assessed that the risks to PCE inflation are weighted to the downside. Over time, more of you judged the risks to your inflation projections to be weighted to the downside. The co-movement between the median residuals and the net fraction is notable.

The bottom two panels plot the same blue lines—the median Taylor rule residuals—against the net fraction of participants who assessed that the risks to the unemployment rate are weighted to the upside. Over the past year and a half, more of you judged the risks to the unemployment rate to be weighted to the upside. The co-movement here between the net fraction and the Taylor rule residuals is more modest.

One potential rationale for co-movement between your risk assessments and the Taylor rule residuals could be the proximity of the ELB: When the risks to the real economy and especially inflation are significantly skewed to the downside, you adopt a risk-management approach to policy normalization. As a result, you deem it appropriate to provide a greater amount of accommodation relative to a Taylor rule benchmark that uses your modal forecasts for inflation and the unemployment rate. Another rationale, which could be complementary to the first one, is that the widening Taylor rule residuals reflect your assessments that the short-term equilibrium real interest rate has moved down, reducing the scope for providing policy accommodation through the federal funds rate. This in turn increases the vulnerability of the economy to adverse shocks. Thank you. The three of us would be happy to take your questions.

CHAIR YELLEN. Any questions? The floor is open for questions for any of our presenters. President Kashkari.

MR. KASHKARI. Thank you. Jeremy, on exhibit 4, looking at inflation in panel 2, you have the yellow bars labeled “other.” I think you said that that was noise.

MR. RUDD. For 2016.

MR. KASHKARI. For 2016. Could you talk a little bit more about how much confidence you have in that noise? It just looks large.

MR. RUDD. Yes, so one thing to point out is that it actually isn’t that large—given the volatility that we tend to see quarter to quarter in inflation, it’s not absolutely huge. In fact, when we brought this exhibit into the Tealbook a few rounds ago, we pointed out that what we were showing as the range of the *y*-axis was calibrated on the basis of the confidence interval from a year, year-and-a-half-ahead forecast—I believe it was the 2017 confidence interval, as we were jumping off in, say, December 2015. So that gives you a way to calibrate how large that yellow residual is.

The reason why we are more convinced that it's noise now than we were is because we've basically seen recent inflation readings come in closer in line with our forecast, except for the portion of that miss that we label the nonmarket component of PCE prices. We don't think there's much signal in nonmarket prices. They're very erratic from quarter to quarter, and we don't think there's a lot of persistence or information about inflation trends in that portion. In addition, we just saw a number of anomalous movements in January 2016 that pushed up inflation for the year as a whole. They were in some strange categories—like in the goods category, I believe jewelry had a very large spike that, at the time, seemed inexplicable and later didn't—

MR. KASHKARI. I think President Williams said he was purchasing in January. [Laughter]

MR. WILLIAMS. That's true.

MR. KASHKARI. Exactly.

MR. RUDD. We didn't expect that to be repeated, and recently things have come in more or less in line with our forecast. We're reasonably confident that that was basically transitory volatility in this series.

MR. KASHKARI. Okay. Thank you.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I'm looking at exhibit 8, panel 1, which is real dollar indexes. I guess I wasn't quite sure what the experiment was here. The dashed lines are the April Tealbook, and then the other lines are the 100 basis point surprise?

MR. AHMED. No, panel 1 is just our baseline forecast.

MR. BULLARD. What are the dashed lines? What are the solid lines?

MR. AHMED. The solid line is our current forecast, and the dashed lines are our April Tealbook forecast.

MR. BULLARD. I see.

MR. AHMED. So the dollar jumped against the emerging market currencies, and we have a higher starting point. And then we have the slope obtained on the basis of market reactions to surprises to the path of policy rates in the U.S. and foreign economies.

MR. BULLARD. Okay. So during your presentation, you were talking about 100 basis point surprises. So what were you talking about?

MR. AHMED. What I was talking about was, basically, I think you're referring to the EME exhibit, maybe.

MR. BULLARD. Yes, well, I'm not sure.

MR. KAMIN. Why don't we abstract from which panel exactly the surprise was and just talk about the rationale behind our dollar forecast?

MR. BULLARD. I guess my question is, why would you want to talk about a 100 basis point surprise in the funds rate?

MR. AHMED. Oh, sorry. That was just to talk about the slope of this black line in panel 3, which is based on the historical relationship between the response of federal funds futures to FOMC announcements and the 1-day change in the dollar. Then if you want to talk about 25 basis points, divide the slope of 1.5 by 4.

MR. BULLARD. Okay.

MR. KAMIN. The reason that's relevant is because of the way we forecast the evolution of the dollar. We start with the basic presumption that the current level of the exchange rate should incorporate the markets' expectations about anything that happens in the future. So if the markets expected the federal funds rate to rise by a certain amount and they expected the euro-area interest rate to fall by a certain amount, that would already be incorporated into the current level of the dollar. We would not expect the dollar to move in the future as the market saw the changes in the interest rates that it expected.

However, the staff forecast is for a steeper rise in the federal funds rate than the markets expect. So we assume that as the markets perceive this higher-than-expected interest rate, they will respond by bidding the dollar up. Now the question becomes: Well, how do we tell, when the market experiences a surprise interest rate, how do we tell how much that should affect the dollar? And in order to come up with an estimate of that sensitivity, we look at the past history of the responses of the dollar to surprises in the interest rate, using the FOMC announcements as a way to take a clear reading on that expectational change.

MR. BULLARD. Okay. I think that's fair. So these estimates in panel 3 are on a one-day window, it looks like.

MR. KAMIN. Yes.

MR. BULLARD. Whereas what's going to happen if you think that the market expects a lower funds rate and the Committee expects a higher funds rate, that information is going to be revealed over a very long time period. So what do you do with that when you look at the dollar?

MR. KAMIN. We're making the assumption that the effect of changes in market expectations of the interest rate in short periods can basically be linearly transferred to what should happen over a long period of time. And we have some support for that, because if you did a very similar experiment in which you looked at changes in 10-year yields from before to after FOMC announcements, they also map in a systematic way into changes in the dollar. And if you then take into account the fact that changes in 10-year yields are kind of related in a systematic way to changes in short yields, you get a similar relationship. We think that, by and large, this approach toward calibrating the sensitivity of the dollar to interest rate changes works, although considering how incredibly uncertain the dollar forecast is anyway, we could be splitting some hairs here.

MR. BULLARD. Okay. So let's suppose the Committee did what's in panel 2 here, which is the solid black line, and the market expected the dashed line below, so we're surprised over the next couple of years with higher rates. The dollar's going to be stronger than the baseline. This is going to have an effect on net exports, and that's the top line in the bottom table. Is this correct?

MR. KAMIN. Exactly.

MR. BULLARD. Okay.

MR. WILCOX. Well, just with the caveat that this is what is built in.

MR. KAMIN. I assume you are talking about how things work in our baseline. In other words, as the actual interest rate exceeds market expectations, that boosts the dollar in the way shown in the baseline, panel 1.

MR. BULLARD. And then we get this net exports contribution to GDP.

MR. KAMIN. And then we get the net exports contribution, exactly, shown in table 1.

MR. BULLARD. I actually calculated the net exports contribution to GDP during the previous expansion, 2001 to 2007, and I got numbers that look about like this, slightly negative numbers. I am interpreting this as almost nothing happens.

MR. KAMIN. Well, a couple of things. Number one, that previous expansion, the first part of it was, indeed, a period of dollar strength. So you typically—let's put it this way—

MR. BULLARD. Surprise dollar strength?

MR. KAMIN. Well, not necessarily. But it was a period of dollar strength. And so, right now, as we move into looking at the effect of the dollar on the trade forecast, we now can leave behind the expectations element. We take it as given that the dollar had a certain trajectory. The dollar peaked in 2002, so the dollar was actually very strong for much of our previous expansion. And, more generally, dollar strength does tend to be correlated with our expansions. So it should not be a surprise that during our previous cyclical expansion, we did have a negative contribution of net exports to GDP growth.

All that said, it should be noted that looking forward, and as you alluded to, these contributions of minus 0.3 percentage point, minus 0.4 percentage point, they are not very large. They are getting into a very manageable size.

MR. BULLARD. Thank you.

CHAIR YELLEN. Vice Chairman.

VICE CHAIRMAN DUDLEY. I was looking at the international forecasts. You have another disappointment in terms of global growth, yet an environment in which monetary policies around the world are supposedly very accommodative. How do you square the circle? What do you think is fundamentally going on? And there are a couple of completely alternative sort of scenarios.

One scenario would be that monetary policy stimulus isn't as great as we think it is, and so then we have to come up with an explanation for that. One possible explanation is maybe monetary policy stimulus becomes attenuated over time, because over time people buy things, it pulls things forward, and that means they don't buy those things in the future, or maybe household savings reacts to the low level of interest rates by deciding that they have to save more. That's one possible explanation. Another possible explanation is there is a global saving glut. And it just seems like it would be useful to dive in a little bit more into this issue of why we consistently see global economic weakness in an environment in which monetary policy is super stimulative, supposedly. I don't feel like we have a coherent story reconciling those two things.

MR. AHMED. I think I would interpret it as implying that there are still fragilities. Even though this is a trendlike pace in global growth, there are still fragilities in the economies. And, therefore, the policy support is required.

VICE CHAIRMAN DUDLEY. So is this a headwinds type of story, and the headwinds will dissipate over time, and eventually we will do better?

MR. AHMED. Yes. It's not that we will do better. As you can see in the forecast, we have a lower trend—period. And it stays at 2.8 percent.

VICE CHAIRMAN DUDLEY. When you look at Japan and Europe, you have to sort of say that it's not really working, right? They are supposedly having these very stimulative monetary policies, and it's not really working. I just don't feel like we have a coherent story about why that is.

MR. KAMIN. Well, it is worthwhile to distinguish between the average and the marginal effects of these monetary policies. You could argue persuasively, I think, that doing additional

QE or moving further into negative interest rates at this point might not be effective. It would be hard to argue with that. On the other hand, it's unambiguously clear that actual interest rates, both short term and long term, are incredibly low. Certainly by that metric, monetary policies are extraordinarily easy. And then if you said, "Well, why is—"

VICE CHAIRMAN DUDLEY. "Easy" or "stimulative"? Those are different things.

MR. KAMIN. All right. Let me just start by saying "easy" in the sense of any firm that wants to invest and actually hire people and build a factory can do so for virtually no cost of funds. So, to me, that suggests clearly that there are huge headwinds on spending itself. We know that's true in the corporate investment side, in which corporations are earning far more profits around the world than they are investing, and they are returning that cash to their shareholders via dividends and buybacks. And then we know that consumption has not been particularly strong.

I would say, for starters, it is obvious there are very strong headwinds against spending. And then, on top of that, whether monetary policy has lost its oomph, I think we could make an argument that certainly marginal policy stimulus has. But, as I say, I think the fault must lie on the part of the spenders and why they don't spend. Clearly, interest rates are now so low that money for investment can be had for nothing.

VICE CHAIRMAN DUDLEY. See, my suspicion is that we are sort of mistaking level for change in monetary policy. In other words, when you ease monetary policy, when you change the level of rates, you have an effect on spending. But if you stay at that level, it sort of loses its effect. And we can look at the level and judge from the level obtained from Taylor-rule formulations and others that policy is really accommodative. But, in fact, the degree of accommodation is actually lessening over time. I feel like we haven't really entertained this possibility seriously, and the reason why we haven't is we've never really been in this situation before in which you've stayed at a level of interest rates that are very low for a very long period of time. Typically, what happens is you go to this low level of interest rates, which generates a cyclical recovery. I wonder, is it worth—

MR. KAMIN. It is certainly worth arguing—

MR. WILCOX. I can only address the domestic component of that, and there I'd say the picture is a bit mixed. With respect to portfolio policy, we've considerably downgraded our estimates of the effect of increases in the size of the portfolio since the time of QE1, which we thought was redressing serious bond market dysfunction, and we thought that had a very big effect on economic activity. And, progressively over time, the estimates that are implicit in the projection show smaller effects from increments to the size of the portfolio.

On the traditional component, the funds rate component, I invert your hypothesis and say that, at the margin, we are assuming that what's implicit in the forecast, I think, roughly speaking, is that the margin changes in the path of interest rates—not just the funds rate today, but the path of interest rates—have, roughly speaking, the same effect as before. But it's the intercept, I would say, that has shifted down. And so, you know, this is reflected in our own 25 basis point adjustment in long-run r^*.

I think your comments are very well taken, but they incorporate, as you know, an ongoing pitched battle between people like Larry Summers and Paul Krugman and Ken Rogoff and Ben Bernanke, all of whom have different answers to the very question that you are asking. And I think what you are exposing is that, for lack of a better way to put it, the staff are not smarter than the combination of Larry Summers, Ken Rogoff—

VICE CHAIRMAN DUDLEY. Don't give up. [Laughter]

MR. WILCOX. So we have to take a pragmatic stand with, on the one hand, balancing—we don't know the answer to that question, but we need to try to recalibrate the projection realistically so that we think it's giving you a sensible picture of how aggregate demand will evolve. And I think that our assessment is that it takes a lower level of interest rates at this point now than we thought it did.

VICE CHAIRMAN DUDLEY. That would be consistent with monetary policy attenuation, that you gradually keep lowering your intercept term over time to—

MR. WILCOX. Well, I am not sure what you mean by "attenuation." I think when I hear "attenuation," what—

VICE CHAIRMAN DUDLEY. I mean that a given level of interest rates has a diminished effect on economic activity over time—the same level.

MR. WILCOX. Okay. That's the part I think I am agreeing with. The piece that I was taking issue with was, at the margin today, if you considered a decision tree with branches on it, roughly speaking I think we'd say you'd get the same amount of oomph today at the margin if you did the optometrist's comparison of "better A" or "better B." Does 25 basis points get you the same amount?

VICE CHAIRMAN DUDLEY. I wouldn't necessarily disagree with that. But I would say that the 25 basis points would give you "X" amount in period 1, but "X minus something" in period 2, and "X minus something greater" in period 3. In other words, the effect of that cut would peter out over time. That's really what I'm suggesting.

CHAIR YELLEN. Governor Fischer would like to join this debate.

MR. TARULLO. Discussion.

MR. FISCHER. Discussion. Thanks, Madam Chair. I think you're talking about levels and rates of change.

VICE CHAIRMAN DUDLEY. Yes.

CHAIR YELLEN. Exactly.

MR. FISCHER. When the FOMC introduced the large-scale purchases of domestic assets, it was a change in policy. Furthermore, it hadn't been anticipated. When it happened, we got a fairly big reduction in long-term interest rates at the time. Now, if that expansionary policy stayed in place forever, we would have expected long-term interest rates to rise gradually back up partway as the economy strengthened, until they reached a new level. However, we had expected, all of us, that that strengthening process would be led by the interest-sensitive sectors, namely residential investment, and to a lesser extent, business investment. Well, it didn't happen. What we were expecting to come in didn't come in.

At the same time, productivity growth seems to be very low. With productivity and investment both low—what have we got to spur the economy other than continued accommodative monetary policy? As of now, we haven't gotten either the productivity growth or investment we might have expected.

MR. AHMED. I think it's the headwinds story. And I think the crucial question is whether those headwinds are temporary or permanent, right? And so—

VICE CHAIRMAN DUDLEY. Or are the headwinds just time? I mean—

MR. POTTER. If you look out to 2021 through 2025, the forward interest rate in Japan is minus 4 basis points. That's pretty low.

VICE CHAIRMAN DUDLEY. Which implies that it's not a headwind. It implies it's more a permanent feature of the environment.

MR. KAMIN. Well, it's why people think that it's more a permanent feature—

MR. POTTER. Yes, think it is, but it's a pretty low border.

VICE CHAIRMAN DUDLEY. Well, anyway, thank you.

MR. KAMIN. We will all think about these things.

CHAIR YELLEN. Are there further—yes, President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. Back to Steve, if I could, and I'm asking you because you've talked on this subject before. Exhibit 7, panels 1 and 2—if I interpret this correctly, with the exception of China debt, the picture doesn't look elevated relative to conditions in '94 and '97. And you could conclude, looking at the vulnerability index, that it's reasonably flat and that there's no strong signal there.

But then I look at the China debt and the EME composite with the dark blue for corporations and the red for households, and it pushes quite a bit above '97 and '94. Could you update your thinking for us on China debt-related risk? And I would note that there's been a fair amount of publicity recently of major investors who are focused on this and shorting. So if you overlay short interest on this picture, how much risk do you get?

MR. KAMIN. Sure. I'll say a few things because you've addressed the question to me, but Shaghil's actually pretty expert on this, so he can add on. Just a couple points.

Number one, indeed, for the other countries, it falls below that Mexico '94 and Asia financial crisis line. But those were pretty bad crises, and a lot of the countries here almost make it up to the Mexico '94 line. And so, for that reason, we are looking at all the EMEs very closely—and a lot of other analysts are, too—because, as you can see, just looking at the numbers, all of these countries have experienced very substantial increases in debt to GDP. So just the fact that they haven't made it up to those lines doesn't mean there's no cause for worry.

The second point is, China, of course, is way above those lines, so it is more of a tangible risk. If China were, in fact, to have a hard landing, that could easily spill over to all these EMEs that are below the line. China therefore poses a substantial risk. How big a risk? The fact of the matter is, it's very hard to gauge. What we know is that if we just look at China alone, it's got corporate debt to GDP that's over 200 percent of GDP. And it's grown very rapidly. Both the size and the fact that it's grown rapidly are considered the best possible signals of an impending crisis.

If China were any other EME, it likely would have had its crisis already. But China has very rapid growth, and that growth can paper over a lot of ills. Also, the government has a very solid fiscal situation relative to most EME governments, with a huge stockpile of foreign exchange reserves, and most of that debt that Chinese corporations owe is in local currency, not in foreign currency. All those things help it. The long and the short of it is, it's very hard to gauge how great the risk is in China, but it's certainly very, very substantial. Shaghil, is there anything you'd like to add to that?

MR. AHMED. Well, just to emphasize that point about mitigants, that a lot of this lending is just state-owned banks to state-owned enterprises. And China has plenty of resources to capitalize those banks—at a cost, of course, so it has these mitigants that other countries don't have and can sustain a high level without crisis.

I think the hard-landing scenario may be in the tail risk, but I think there's a more significant risk that China could significantly slow without a hard landing. And I do think it's underappreciated, what effect a less-than-hard landing slowing would have on the rest of the world.

MR. POTTER. But, in terms of people shorting, I think that's not as big a factor as it was earlier this year, except for one prominent investor.

CHAIR YELLEN. President Harker.

MR. HARKER. Thank you, Madam Chair. I want to go back to a few comments that were made about corporate investment and ask for your thinking on why this has been so low. One of the things that my staff pointed out to me is that, if you look at a graph of net private nonresidential fixed assets versus nonfarm private employees, we're well above trend because of the Great Recession—which makes sense, right? Do you lay a lot of people off? But you're starting to see that return to trendline. So one story is that we will start to see that pick up as firms get back to trend in terms of capital stock relative to employees.

Have you looked at that in terms of your forecast? It's the one area that I worry about with respect to spending, because consumer spending is robust, it's strong, but we're not seeing business investment picking up. But there may be a reason for that, in that we had a lot of capital, we're now reaching a trend ratio, and that should start to pick up. Have you thought about that? Has that been built into your forecast?

MR. RUDD. One thing that we have looked at is the capital-to-effective-worker ratio, which is a measure of capital relative to workers adjusted for productivity. Another way to put that is, it's the capital-to-potential-output ratio that you want to look at. And potential output is slowing, and therefore we would expect the growth rate of the capital stock to slow.

There was a FEDS Notes article that was written a year or two ago by some of my colleagues that tried to adduce that as one of the explanations for why the rate of growth of the capital stock might not be as rapid in a period in which potential growth is slower. Now, one thing we have trouble doing is trying to gauge exactly where the target capital stock should be, and if we're behind or ahead of that. We tried to do it a lot in the late '90s. We never had a lot of luck in measuring capital overhang or something like that, so we don't usually try to look at a particular target level for the capital stock and then key the forecast off that. What we do is, our full fundamentals model backs out our investment forecast by looking at the growth rate of business output. To the extent that business output has been doing what it's doing, we can explain, over most of recent history, what's been going on with business investment, except very recently. Very recently, it's very difficult for us to explain why it's been so weak.

One of the things that one of my colleagues presented on Monday in her pre-FOMC briefing was the possible explanations as to what could be driving that weakness and how much we think those explanations carry water. And the answer is, I think it's pretty hard for us to explain what's going on with recent softness in business investment. Even if you combine all of those explanations, and we have something quantitatively, we can't really get most of the way there, which suggests it could just be bad luck, noise, or something like that. But we don't really have a satisfactory reason for why it's been so weak recently.

MR. WILCOX. Our thinking is very similar to yours. I'm going to try to boost the citation count for my colleagues. The FEDS Notes article that Jeremy referenced was written by Eugenio Pinto and Stacey Tevlin, and that's available on our website. The model that they present there does a good job of accounting for business fixed investment, I think, through about the third quarter of last year, something like that. In our assessment, it's the last couple of quarters that have been a bit of a puzzle.

MR. HARKER. And there's no real reason that you can give why that's the case?

MR. WILCOX. As Jeremy mentioned, Ekaterina Peneva summarized a variety of hypotheses. Corporations have expressed some concern about weakness in their profits. We've wondered about spillover from the drilling and mining collapse into other elements of investment. A number of outside analysts have pointed to the possibility that uncertainty is unusually high, perhaps related to geopolitical concerns or domestic political concerns.

These things have an air of plausibility to them. They're very hard to test, empirically, how significant they are. It's not more than a sense, but I think I'd agree exactly with the summary that Jeremy gave, which is, our sense is that they probably account for some of the weakness in the past few quarters. But it's an inherently volatile series. We think it's been puzzlingly weak the last couple of quarters. It's an element of concern for us.

MR. HARKER. Thank you.

CHAIR YELLEN. Any further questions? [No response] Seeing none, I suggest we take a break, maybe for about 20 minutes, and return around 3 p.m.

[Coffee break]

CHAIR YELLEN. Okay, folks. Let us resume. I think we can begin our economic go-round. I'd like to call on President Bullard first.

MR. BULLARD. Thank you, Madam Chair. I'm going to devote my comments today to the St. Louis Federal Reserve's new characterization of the outlook for the U.S. economy. The St. Louis Federal Reserve is changing its characterization of the U.S. macroeconomic and monetary policy outlook. An older narrative that the Bank has been using since the financial crisis ended has now likely outlived its usefulness, so it is being replaced by a new narrative. The hallmark of the new narrative is to think of medium- and longer-term macroeconomic outcomes in terms of regimes. The concept of a single long-run steady state to which the economy is converging is abandoned and replaced by a set of possible regimes that the economy may visit. Regimes are generally viewed as persistent, and optimal monetary policy is viewed as regime dependent. Switches between regimes are viewed as not forecastable.

The upshot is that the new approach delivers a very simple forecast of U.S. macroeconomic outcomes over the next two and a half years. Over this horizon, the forecast is for output growth of 2 percent, unemployment of 4.7 percent, and inflation of 2 percent. In light of this new approach and the associated forecast, the appropriate regime-dependent policy rate path is 63 basis points over the forecast horizon. My remarks today will describe how this regime could be upset by switches in fundamental factors that may cause changes in the recommended setting of the policy rate path.

It is a good time to consider a regime-based conception of medium- and longer-term macroeconomic outcomes. Key macroeconomic variables, including output growth, unemployment, and inflation, appear to be at or near values that are likely to persist over the forecast horizon. We think of this as the mean outcome of the "current regime." Of course, the situation can and will change in the future, but exactly how is difficult to predict. Therefore, the best we can do today is to forecast that the current regime will persist and set policy appropriately for this regime. If there's a switch to a new regime in the future, then that will likely affect all variables, including the policy rate. But such a switch is not forecastable.

Consistent with the regime-based concept, the new approach does not contain projected long-run values for either macroeconomic variables or the policy rate; that is, the forecast simply stops at two and a half years. Again, the new narrative views medium- and longer-term macroeconomic outcomes in terms of a set of possible regimes that the economy may visit instead of a single, unique steady state. By doing this, we are backing off the idea that we have dogmatic certainty about where the U.S. economy is headed in the medium and longer run. We are trying to replace that dogmatic certainty with a manageable expression of the uncertainty surrounding medium- and longer-run outcomes. By doing so, we hope to provide a better description of the nature of the data dependence of monetary policy in the period ahead.

Fundamental factors determine the nature of the regimes in play. One important fundamental is productivity growth. The average productivity growth rate in the United States has been low since at least 2011. We think of this as a "low productivity growth" regime. We know from past observation of the U.S. economy that productivity could switch to a "high growth" regime. If such a switch occurred, it might have important effects on many variables but especially on output growth, which would be higher.

Because we view the low-productivity-growth regime as very persistent, for purposes of forecasting, we simply assume that we will remain in the low-productivity-growth regime—and hence the "low output growth" regime—throughout the forecast horizon. The idea that productivity may switch to a high-growth regime is not incorporated in the forecast directly but is an upside risk to the forecast. The switch to the high-growth regime is viewed as possible but not forecastable.

But simply having a high- and low-productivity-growth regime is insufficient to describe the current macroeconomic situation. There are at least two other fundamental factors that have to remain in their current state to maintain the status quo. One of these fundamentals is the real rate of return on short-term government debt. This return is very low today by recent historical standards, perhaps less than negative 1 percent. In our framework, we view this as a "low real rate" regime. The alternative regime, which has been observed historically, is for a considerably higher value of this rate. Again, we view the current low-real-rate regime as very persistent. So, for purposes of forecasting, we simply assume that we will remain in the low-real-rate regime through the forecast horizon. A switch to the "high real rate" regime is possible and, if it occurred, would likely affect many variables in the system, including the appropriate policy rate. But the possibility of such a switch does not enter directly into the forecast. Instead, it is a risk to the forecast.

Let me note that although the real return to short-term government debt is low today, the real return to capital does not appear to have declined meaningfully. For this reason, we prefer to interpret the low real rate of return on short-term government debt not as reflecting low real returns throughout the economy, as in the simple New Keynesian model, but instead as an abnormally large liquidity premium on government debt. We sometimes refer to this value as r† to distinguish it from the more commonly discussed r^*.

A third fundamental is the possibility of recession, perhaps driven in part by a collapse in asset prices—as occurred for the housing crisis during the 2006–09 period—or other factors. We are currently in a "no recession" state, but it is possible that we could switch to a "recession" state. If a switch occurred, all variables would be affected, but, most notably, unemployment would rise substantially. Again, the possibility of such a switch does not enter directly into the forecast because we have no reason to forecast a recession, in light of the data available today. The possibility of a recession is, instead, a risk to the forecast.

We have described a very basic set of fundamental factors as following regime-switching stochastic processes. The current configuration is, one, low growth; two, low real rate on short-term government debt; and, three, no recession. Conditional on this configuration, our forecast is the one I described at the beginning of my remarks. The recommended policy rate is then regime dependent.

The value of 63 basis points for the policy rate over the forecast horizon could be viewed in terms of a one-year Fisher equation with expected inflation at 2 percent. The value of the real rate in the low-real-rate regime of short-term government debt—the so-called r†— would then have to be the value that would solve this equation. That would be minus 137 basis points. If you look at the ex post real rate, as measured by the one-year nominal Treasury yield less the 12-month Dallas Federal Reserve trimmed mean inflation rate over the past three years, it has been very close to this value.

There are risks to this forecast in the sense that any of these fundamental factors could switch to alternative values, thus knocking the system out of the current regime. What are the risks to this forecast aside from those associated with switching in one of the fundamentals? We think a key risk not expressed in the regime-switching part of the description may be on inflation. We have described a situation in which Phillips-curve influences on inflation are negligible. Low unemployment and generally strong labor markets, despite being in place throughout the forecast horizon, do not put upward pressure on inflation in the forecast we have described. It could be that meaningful Phillips-curve mechanisms return and drive inflation higher even though nothing else about the situation as we have described it has changed. This is one risk. In addition, this forecast says little about incoming data on inflation expectations, which, according to market-based measures, seem to be too low to be consistent with the forecast we are describing. The approach presented here also says little about the risk of asset price bubbles, a factor that often enters the actual policy discussion.

The forecast values for output growth, inflation, and unemployment in the new St. Louis Federal Reserve forecast are only somewhat different from those given under the previous narrative. The main difference in the new approach is in the characterization of the recommended future FOMC policy via the projected policy rate. In the previous narrative, we had a dogmatic medium- and long-run outcome for the economy expressed in terms of a single long-run steady state. In that formulation, all variables tend to trend toward values that are consistent with the assumed long-run outcome. This includes the policy rate, which trended toward a value of 350 basis points, higher than it is today. If the Committee moved at a pace of 25 basis points per year, it would take 14 years to reach such a value.

In the new narrative, uncertainty about possible medium- and longer-run outcomes is more explicitly taken into account. The economy does not necessarily converge to a single steady state but, instead, may visit many possible regimes. Regimes can be persistent, as we think the current one may be. The timing of a switch to an alternative regime is viewed as not forecastable, so we simply forecast that the current regime will persist. Policy is regime-dependent, leading to a recommended policy rate path that is essentially flat over the forecast horizon. Of course, the flat policy rate characterization is conditional on no switches occurring. If a switch does occur, then the policy rate would have to change appropriately. This is a form of data dependence.

We have described some of the risks to this forecast. And taking these risks into account, we think that, on balance, the policy rate path may be somewhat higher than the one we are forecasting over the next two and a half years. In this sense, we think there's some upside risk to our forecast. Nevertheless, by describing the expected policy rate path as essentially flat with some upside risk, and with no presumption about a long-run outcome, we hope we can provide a better description of our view of the current policy situation in this narrative as opposed to the previous formulation. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. The data we've received since April have been mixed, which leaves considerable uncertainty about what to infer about the pace of progress toward our goals. I've found it helpful to think about the range of scenarios that might be plausibly consistent with the mix of data we've received so far. At one end of the range is the scenario in which activity continues to increase at the 2 to 2½ percent pace of the past three years, the economy has effectively reached full employment, and resource constraints should soon start to bind, putting stronger upward pressure on inflation and nominal wage growth.

Recent data offer some support for this scenario: Consumer spending rebounded strongly in April and retail sales were strong in May, net exports appear to be exerting less of a drag on activity, and some labor market indicators suggest little slowing. In particular, initial claims for unemployment insurance remain near cyclical lows, and JOLTS job openings are at a cyclical high. Moreover, with the unemployment rate having reached the median participant's estimate of the longer-run rate and the staff estimating that the output gap is closed, it could be argued the economy has reached full employment. And some indications of a step-up in nominal wage growth and higher production costs for businesses could portend that resource constraints should soon start to bind. For example, compensation per hour in the business sector increased 3.7 percent over the past four quarters. When combined with anemic productivity growth, this has implied an increase in unit labor costs of nearly 3 percent over the same period.

In this "binding resource constraint" scenario, price pressures should soon become noticeable, with full employment reached and demand growth continuing to exceed supply by a healthy margin. If the outlook evolves in accordance with this scenario over the second half of this year, we should expect to see the unemployment rate continue to climb. The 12-month change in core PCE inflation should move up steadily, nominal wage growth should accelerate, and inflation expectations should begin to move up.

At the other end of the plausibly consistent range is a scenario in which the recent employment report heralds a downshift in activity and labor market momentum. In this "downshift" scenario, growth would move noticeably lower, and resource utilization would flatten out and possibly edge down even though the labor market hasn't yet fully recovered. Some of the recent data could be consistent with this scenario. Over the past 12 months, manufacturing output has barely increased, while overall industrial production has fallen about 1 percent. Assuming the staff projection for second-quarter GDP growth is correct, even with this morning's positive read on retail sales, real GDP growth since the end of last summer looks to average only around 1.5 percent. The staff's estimate of 2016 potential output growth is 1.6 percent. If activity continued at this subdued pace, this would suggest no further progress on employment and could jeopardize progress toward our inflation goal.

The recent slowing has been concentrated in the business sector, which may reflect the continued strength in the dollar, weak foreign demand, and recent bouts of financial turbulence. Business fixed investment has declined in the past two quarters and appears to be flat in the current quarter, a highly unusual outcome outside periods around recessions. Recently, this weakness appears to have spread to business hiring. Job growth in the past two months averaged only 100,000 after adjusting for the effects of the Verizon strike, not meaningfully above current estimates of the breakeven payroll job growth consistent with the unemployment rate remaining constant as the labor force returns to trend. The three-month moving average of the flow of workers from unemployment to employment—a proxy for hiring—has fallen since February. Here, too, such a decline is unusual outside of periods around recessions. By these measures, both the labor market and the recent GDP data could be construed as signaling that growth is little different from potential. In this downshift scenario, activity could turn out to have slowed to a pace that is barely sufficient to keep resource utilization at current levels.

Finally, between these two possibilities, we could expect to see a scenario of continued slow progress. In such a scenario, growth would turn out to be somewhat below the 2.3 percent average pace over the past three years but rapid enough to put very gradual upward pressure on resource utilization. At the same time, while the economy is near full employment, some slack still exists, as evidenced by the still-depressed employment share of prime-age men that's still more than 2 percentage points below pre-crisis norms. And supply curves are flat enough to require substantial further increases in resource utilization to push inflation to our 2 percent goal. In this scenario, employment would continue to move higher through some combination of lower unemployment and higher participation; job growth would remain above breakeven levels; but progress on inflation would continue to be slow, with inflation reaching our 2 percent target only at the end of the medium term. At the same time, because the forces that have pushed down the neutral rate in recent years appear to be highly persistent, including forces emanating from abroad and very depressed productivity growth, the appropriate path of policy would likely be very shallow, and today's policy settings would likely be closer to neutral than previously expected.

On balance, my baseline forecast is for this continued slow progress scenario, but the data picture so far is sufficiently clouded that it could potentially be consistent with any of these scenarios. As a consequence, additional data over the next several months will be particularly valuable to narrowing the bands of uncertainty and allowing us to be more confident about the outlook and the appropriate path for policy. In view of this uncertainty, it's also important to consider possible risks to inflation and activity. Here we've seen recent improvement in conditions supportive of progress on inflation over the medium term. The price of oil, in particular, has rebounded significantly from the lows reached earlier in the year. And the dollar has receded a bit, on net, from its peak in January. As a result, non-oil import prices look likely to firm this quarter after a year and a half of declines.

Nonetheless, the persistently low level of inflation, together with signs of a deterioration in inflation expectations, suggests that downside risks remain. With some survey-based measures of inflation expectations having moved lower in recent years, the preliminary June Michigan measure of inflation expectations touched an all-time low earlier this month. Moreover, both swaps and TIPS market-based measures of inflation compensation have recently moved lower again even as the price of oil has moved higher, reversing the correlation that was apparent earlier. And the TIPS measure is now close to the low it touched earlier this year.

In addition, the foreign outlook continues to present downside risks to activity and inflation, as we heard earlier today. Most immediately, there is the possibility of a vote for Britain to leave the EU, which could unsettle financial markets and create a period of uncertainty while the relationship between the United Kingdom and the EU is renegotiated. We can't rule out a significant adverse reaction to such an outcome in the near term, such as a substantial jump in financial risk premiums.

In addition, we cannot dismiss the possible reemergence of risks surrounding China and other emerging market economies. Although capital outflows from China have moderated as pressures on the exchange rate have eased, should those exchange rate pressures *vis-à-vis* the dollar reemerge, financial stress could return—a development that would affect not only China but also emerging markets linked to China via supply chains and commodity exports and, of course, conditions here. While authorities in China have taken steps to limit the extent of any slowdown, there is an evident tension in policy between reform and stimulus. And the effect of the stimulus may already be waning. High and growing levels of corporate debt, excess capacity, and risks in the shadow banking sector could create continued vulnerabilities over the medium term.

More broadly, global markets are likely to remain fragile for some time. Growth in advanced economies remains highly dependent on extraordinary unconventional monetary policy measures. With conventional policy in many countries continuing to be constrained near the effective lower bound, this skews risks to the downside and may amplify the sensitivity of exchange rates.

Indeed, recent work by the staff that was also referred to earlier provides support for the observation that, over the past year, dollar exchange rate movements have become considerably greater in response to monetary policy surprises than previously. Thus, while the easing in financial conditions is very welcome, it's important to recognize that fragility remains and an important reason for the fading of the recent turbulence was the expectation of more-gradual U.S. monetary policy tightening. Should an event trigger renewed fears about global growth or a reassessment of the policy reaction function, turbulence could well return. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. Even without the disappointing payroll numbers we received on June 3, we would very likely have waited to decide whether to change the interest rate until our July meeting because of the economic uncertainties for the United Kingdom and the European Union that a decision by the United Kingdom to leave the EU would create and because of the wider economic and financial consequences, including for the United States, that such a decision could cause. Delaying raising the interest rate would have been the right decision. We would, in any case, have been focusing today and tomorrow on what decision we should make in July and in the FOMC meetings that follow.

If the decision next Thursday is for Brexit, we will likely need at least another month, and probably more than that, after July to begin to understand the consequences of that decision for the British, European, and other economies. Whatever the referendum decision on British membership in the EU, we will also have to appraise the recent weakening in payroll data. In light of the May payroll data and the downward revision to payrolls in April, the main question we will need to answer in July is whether recent data may be a result of the start of a significant slowdown in employment growth or, rather, reflect the month-to-month noise that is likely to appear in any macroeconomic time series. We'll have only one more set of payroll data to help us choose between these hypotheses.

If we conclude that employment growth is slowing significantly, then, in order to judge whether we are at least maintaining the important progress we have made toward our full employment mandate, we will have to pay more attention to the number of additions to payrolls that are needed to maintain full employment. The answer depends on the trend in the labor force participation rate. In their forecast, the staff projects average monthly increases in employment as 160,000 this year, increasing to 190,000 next year, and slowing to 150,000 in 2018. This path is sufficient to reduce the unemployment rate to 4.3 percent at the end of 2018, with the unemployment rate estimated to decline late in 2018 from 4.5 to 4.3 percent.

From these data, I conclude that, following the publication of the first estimate of 160,000 for the net payroll increase in April, we should have been more vigorous in explaining to the public that although that number was below our forecast and that of others, it was still adequate to prevent increases in unemployment, conditional on plausible behavior in the participation rate—though, of course, that is not the case for the May payroll data. Just to explain, I was amazed that there were so many headlines about adverse data following the 160,000 number. Actually, the data were adverse from the viewpoint of expectations but were not adverse from the viewpoint of employment.

One small point before continuing our discussion of our June, July, and later decisions—I wondered, at one stage, whether the adjustment the staff has made to the monetary policy rule used to construct the forecast could be a case of a self-fulfilling forecast, leading the median SEP monetary policy forecast path to come closer to the path implied by the new rule introduced by the staff. I concluded that it probably is not such a case and that, by basing the staff forecast on what appears to be a more plausible path for the funds rate, the staff has made the forecast more helpful for us.

Now, back to my current thinking about July. I don't believe we should send any strong signal to the markets this month about our July decision, even—or especially—in the form of a Brexit outcome conditional statement. But we should certainly continue to deepen our internal discussion.

First, there are at least four reasons why we might want to make no change in the interest rate at our next meeting. One, the economy might, by then, look significantly weaker than we had hoped and than it does now. Two, we might have concluded, on the basis of recent declines and indicators of the expected inflation rate, particularly in the Michigan series, that the trend of inflation is declining. I'd like to add a word about that. I've never been quite clear in the Michigan series as to what entitled us to deduct 100 basis points from the average of the

Michigan series before we started and then to conclude that what we had was an estimate of expected inflation. I think what we may equally likely have had is a bunch of people who took a very long time to absorb what was actually happening, saw that for the past decade or so they'd been overestimating the rate of inflation and are gradually beginning to reduce the rate of inflation that they expect. They have now hit 2.3 percent. They've got another at least 0.3 percentage point, maybe 0.5, to go until they get to what is actually happening. So I'm not entirely clear about how to relate to the Michigan numbers, although I know how we have treated them for some time. Three, the global economic situation may be problematic, though the staff forecasts offer a stronger global economy than we had feared earlier this year. And, four—this is why we might want to make no change at the next meeting—risk-management factors, arising from our proximity to the effective lower bound, would come into play.

Second, why might we want to increase the interest rate at our July meeting, thus moving farther along the road to normalization of asset prices and of the economy as a whole? Well, one reason is, we might conclude—based in part on the higher rates of wage increase that we've seen recently and a core PCE price inflation rate that is at about 1.5 percent—that we are close to our targets, that the inflation rate is within close reach of 2 percent, and that we are already at very near full employment. Two, we might want to put the interest rate back into action as a price that affects the timing of investment by increasing the cost of waiting to invest—a point that was made in the literature of the 1980s, notably in Ben Bernanke's Ph.D. thesis. And, three, we might want to increase the distance of the interest rate from the effective lower bound, in particular because it's far from clear what, on balance, the very low interest rates are buying us.

Third, what should we be doing on the research front? Well, one, we need to continue to work on improving our estimates of r^*. And, two, we need to continue to analyze the factors that affect *r**, such as the rate of technical progress on the capital stock and by asking what factors, including infrastructure, determine the effective capital stock. Here I'm concerned about the fact that we keep asking "What is *r**?" without asking "What is it that the rest of the economy could do by changing their policy such that *r** would become higher?" That leads to, three, the suggestion for research of quantifying the "only game in town" argument by refining the estimates of the effects on growth of the three arrows—monetary policy, fiscal policy, and structural reforms. And, four, analyzing how much we should take expected foreign economic developments into account.

Finally, I want to discuss briefly an issue that is close to a set of issues that I expected at least one participant in the meeting might mention. That participant has already spoken, and he didn't quite mention the issues I thought he would, but I will continue. I was originally surprised to read and to hear criticisms of data dependency—which one sees in the commentary on what the FOMC is doing all the time—which strikes me as the only way to deal with the uncertainties that the future presents to us. The main disadvantage of data dependency emphasized by critics appears to be that the markets may not know until quite near the meeting, or even until the FOMC's decision is announced, what the interest rate decision will be. Most market participants appear not to like that, and they express their dislike in the press and in the surveys that the New York Federal Reserve undertakes.

Well, what's the alternative? Presumably, it's forward guidance, which carries with it the difficulty of changing the guidance—something we saw in the taper tantrum. However, the reason for data dependency is fundamental: The future is uncertain. There's not a whole lot we can do about that. So, one way or the other, modern monetary policy will continue to have to be data dependent. The effect of data dependency on the economy and on market participants depends on the structure of the financial system, the transmission mechanism of monetary policy to the economy, and the quality of monetary policy decisions.

We have to keep working to make monetary policy more effective. Obviously, we're all doing that, but we should not blame data dependency for the difficulties that uncertainty about the future creates for market participants. However, I do believe that criticisms of the data dependency of our decisions relate, in large part, to our failure to emphasize to the public and to market participants how uncertain the future is.

One of my reactions to my first SEP was to say that I could not fill in certain entries because I had no idea what the growth rate would be three years from now. Nonetheless, I ended up filling in the form, although I must admit that I didn't feel any the wiser as to what the future growth rate would be. I believe we need to emphasize our uncertainty about the future, for that way we will be informing the public about the uncertainties that beset our SEP forecast and preferences as well as about our policy decisions. And it will come as no surprise to any of you that I believe we can best do that by including fan charts in the presentations of the SEP results. [Laughter] You weren't ready for that?

MR. TARULLO. I was waiting for it.

MR. FISCHER. Oh, good. Well, you can shut me up very easily.

MR. TARULLO. No, no, no.

MR. FISCHER. More on that in July. [Laughter] For now, the bottom line is that we should leave July open and await information that will, I hope, reduce the uncertainties that we face. That decision—the July decision—is truly data dependent, as it should be. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Williams.

MR. WILLIAMS. Thank you, Madam Chair. Setting aside the employment report for the moment, the data since our April meeting have been consistent with continued moderate expansion. Indeed, consumer spending has been surprisingly positive, boosted by rising incomes and favorable financial conditions. Recent readings on inflation have also been encouraging. Core inflation is running at 1.6 percent over the past year, and transitory factors that had been pushing inflation down are receding. For example, oil is now trading consistently around $50 a barrel.

Ignoring the employment report is akin to asking, "Other than that, Mrs. Lincoln, how did you like the play?" Job gains in May were modest, and previous months were revised down. Of course, some of the drop-off in May was due to the Verizon strike. But even adjusting for that, the published establishment data suggest a noticeable downward trend in job growth in recent months. And the slowdown in job gains seems out of tune with other recent indicators, like initial claims for unemployment insurance and household surveys on labor market conditions.

So what signal should we take from this? Our first step in extracting the signal from the noise is to do a bit of averaging. Payroll gains over the past three months, adjusted for the effects of the Verizon strike, averaged a little more than 125,000 jobs per month. That's still a step-down from last year but well ahead of the 80,000 to 100,000 jobs we need to keep up with labor force growth. Work by my staff suggests that even this number likely understates the underlying trend. Exploiting county-level data on weather patterns, they assessed the contribution of monthly variation in local weather conditions to the job numbers. They found that, once one accounts for the effects of unusual weather patterns as well as the Verizon strike, job gains have averaged closer to 150,000 jobs for the past three months. And the adjusted number for May is only modestly below this pace, as opposed to the downward trend that we see in the unadjusted data.

On the basis of this analysis and my own forecast for spending growth, I expect to see job gains averaging around 150,000 per month for the remainder of the year—again, after adjusting for the effects of the Verizon workers coming back. Now, that's definitely lower than the 230,000 jobs per month we saw last year, but it still means that we'll be adding something like 1.8 million jobs this year, which, again, is well above the increase in the labor force. I therefore expect the unemployment rate to drift further below the natural rate over the course of the year, reaching about 4.5 percent by year-end.

With the economy having reached full employment with only 2 percent GDP growth, my staff and I have revisited the issue of the long-run growth rate of potential output. In the long run, two factors determine the speed at which the economy can grow in a balanced manner: labor productivity and the size of the labor force. So we looked over the past 40 years: Total economy productivity—that is, GDP per hour for the total economy—has typically run between about 1 and 1¼ percent. Since the '70s, we've only deviated from this pace during the information technology boom of the late '90s and early 2000s.

Now, the crystal ball is hazy about when the next technological revolution will arrive, although I assure you that everyone who works within an hour of me believes it's already happening. But, in the meantime, a reasonable benchmark is that total economy productivity growth in the range of 1 to 1¼ percent is the normal incremental growth that we should expect in the future. This benchmark is consistent with the views expressed by Bob Gordon in his recent book, in my colleague John Fernald's extensive work along with colleagues here at the Board, in research by the New York Fed, and in the literature on general purpose technologies. Moreover, since educational attainment is unlikely to rise the way it did during much of the 20th century, the future pace of productivity growth will likely be at the lower end of this historical range. By that I mean not much above 1 percent, and that is my modal forecast for longer-run productivity growth for the total economy.

Turning to the next ingredient of potential output growth—the labor force: The notable development here is that the world is turning gray. The CBO projects that the labor force in the United States will grow about 0.5 percent per year over the next decade, and that's a considerable drop from what we've experienced in the past 40 years. The transition of women to the labor force is long complete, and baby boomers are already retiring. That means that, unlike the 1970s and '80s, demographics will hinder rather than boost potential output growth. Putting these two ingredients—about 1 percent total productivity growth and the demographics—together, my new long-run forecast for potential GDP growth is 1.6 percent. This is, admittedly, a far cry from the 3 percent rates engrained back from our college days, but demographic trends are difficult to bend, and in many ways the die has already been cast.

The slowdown in long-run growth isn't unique to the United States. We heard about that in the briefing earlier today. In recent research by Kathryn Holston and Thomas Laubach here at the Board and myself, using the Laubach-Williams model, we also find secular declines in potential GDP growth in Canada, the euro area, and the United Kingdom. I should note that we find large declines in the estimates of the natural rate of interest in these regions as well. And that brings me to my favorite topic: *r**. Economic forces link the potential for growth and the natural rate of interest. Along with this more subdued view of the U.S. economy's longer-run potential growth rate, I've lowered my long-run estimate of the natural rate of interest to

1 percent. As a result, my projection for the long-run value of the federal funds rate is 3 percent. Of course, my views in this regard match those that we saw in the Tealbook.

All in all, I expect the economic expansion to proceed at a moderate pace, with GDP growth a touch under 2 percent this year. Output and unemployment gaps have essentially closed already. And with substantial monetary stimulus still in play, I expect these aggregate indicators to overshoot their marks this year. This necessitates a continued gradual removal of policy accommodation over the next few years to bring output growth back below the rate of potential growth. As a result, my own projection has GDP growth slowing to around 1½ percent next year and in 2018.

With labor markets forecast to be tight for three straight years, I expect inflation pressures to continue to build up and for there to be a modest overshoot by inflation of our 2 percent inflation target in 2018. As a result, I foresee the need to raise the funds rate above the long-run natural rate at the end of 2018 in order to bring the economy back to full employment and push inflation back to our 2 percent objective. From my estimate of the long-run growth rate, you can already figure out that I'm respondent number 16.

I have one last comment in terms of President Bullard's detailed discussion concerning these various regimes. I obviously don't come to that same conclusion. One of the things that I find in thinking about these issues is: Is the macroeconomy fundamentally not behaving the way we would expect it to? I'm drawn to Jeremy Rudd's exhibit 4, panel 6—the VAR decomposition of core market-based inflation—or other analysis that Board and other economists have done, which basically shows that core inflation is behaving more or less as you would expect to see in a period of reasonably well-anchored inflation expectations. We've seen dramatic increases in employment, declines in unemployment, over the past several years, reflecting, I think, very strong effects of monetary policy in boosting economic growth above potential, working in the way that we would expect to see. I see the gaps closing. I see, personally, inflation not far from a basic Phillips-curve model.

I'm not drawn at this time to see what is broken in our fundamental view of how monetary policy works in terms of affecting aggregate demand, how the Phillips-curve relationship works. Obviously, as we know—as you can see in this picture—the data move around. There's "noise," I think, as Jeremy referred to it. But these are residuals to any of our equations. And when I look at the estimates of *r**, the biggest driver of those, both for the United States and for the other countries in the recent work that we've been doing, is declines in long-run growth. I consider that a standard result in pretty much any macroeconomic model that you write down, that if you have slower long-run trend growth, you're going to have lower real interest rates.

I think there are a lot of other factors at play, too, and we've talked about some of those in terms of a global saving glut, other risks, changes in risk premiums. But I guess I'm not feeling, right now, why I would want to abandon this basic framework of how I think about it. But I'm not trying to have a debate. I just thought I'd respond because I thought those were very interesting remarks. Thank you.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Could you just clarify the numbers you used? You used this estimate for natural long-run growth. Assuming that we all live 70 years, which is no longer true, does that mean that income will double in each lifetime?

MR. WILLIAMS. Okay, so you're asking me a question I can answer and a question that I will get wrong. I'll do the one I can answer, which is that our estimate of long-run trend growth for GDP is 1.6 percent.

MR. FISCHER . Per capita?

MR. WILLIAMS. No. Oh, 1 percent productivity growth. I'm sorry, thank you, 1.6 percent for potential GDP. Basically, 1 percent on productivity and 0.6 percentage point on labor force growth, is how it works out. Roughly 1.05 and 0.55, I think, is what we have.

The way I think about this is, go back to the '70s and '80s. How did we get potential growth at 3 percent? Well, we basically had this 1.25 percent productivity growth. We had a lot of labor force growth. The reason we think of 3 percent as normal is because the labor force during that period was growing fast. Productivity was bad. That's why it was called the productivity slowdown. But the other thing is, even within the productivity of that 1¼ percent that we had, some of that was basically increases in human capital per person. Educational attainment was moving up year by year about two- or three-tenths.

Today the best estimates from the various economists are that educational attainment per person for the next 5 to 10 years will probably be only adding maybe 0 to 0.1 percentage point to productivity. That's how I get to something like 1 to 1.1 percent for productivity growth and something like 0.5 for labor force. So that's potential GDP of 1.6 percent. I don't know how to answer your other question—I'm not going to try to do the math.

VICE CHAIRMAN DUDLEY. Seventy years—you'll double your income level.

MR. WILLIAMS. Yes, right. That's all downside risk.

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. Just to respond a little bit to President Williams, I think that you asked, "Well, what's broken?" Our gaps are close to zero, but the policy rate is way below what we would associate with the normal steady state. And I think what we've done is struggle with that by saying, "Okay. The productivity growth rate is moving around," as you just described. Or, "Maybe the value of *r** is different from what we're used to." And all we're doing is saying that maybe those are following switching processes instead of mean-reverting processes. If you thought *r** was low today but is going to revert to the steady-state value, or productivity growth is low today but it's going to revert, then everything would go back to the old steady state. And then you'd have this upward-sloping path for the policy rate.

What we did is replace those with switching processes. So you just stay at the low *r** or the low productivity for the next two-and-a-half years, and you don't make a prediction about the long run. And then you say, "Well, the policy is regime dependent. So as long as we're in this regime, this is the best we can do while we're in the regime. It may switch in the future, and we'll certainly look out for that, but we're not going to be drawing pictures in which it's going back to some presumed mean in the long run."

CHAIR YELLEN. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. Like the Tealbook, my modal forecast has not changed much. I expect growth to be somewhat faster than potential, the unemployment rate to decline below the natural rate, and both core and total PCE inflation rates to be only slightly below 2 percent by the end of next year. The monetary policy assumption that goes with this forecast is for two increases in the federal funds rate this year and then more frequent increases in subsequent years, as the forecast expects us to hit the inflation target and to exceed full employment. The same is roughly true of most private forecasters—relatively little change in the outlook since our April meeting.

A key question is why so little change in the forecast has produced such wide fluctuations in the market perceptions of the appropriate path of monetary policy. With the model forecasts produced by our bank and the Tealbook both changing little, it might plausibly turn to the risks and uncertainties surrounding the forecast as an explanation for market movements. The Tealbook did a nice job of considering scenarios that I felt were most relevant to assessing risks. I found it interesting that the staff viewed the uncertainty surrounding their projection as being quite similar to the average over the past 20 years.

Looking at the first scenario, the "Recession" scenario, seemed to be the right place to start. I personally think the risk of a recession remains quite low. I think the most recent labor market report was quite disappointing. The negative surprise on both payroll employment and on labor force participation probably do warrant waiting for more data to assess whether the most recent report is an anomaly. My current assessment is that it is. First-quarter GDP estimates have been moving up, and my forecast for the second quarter is for growth exceeding 2 percent. One interpretation of that pattern is that seasonal growth patterns have not been well captured by the BEA, and that averaging over the first half may be more appropriate than focusing on quarterly patterns. My estimate of average growth for the first half of 2016 is about equal to my estimate of potential, consistent with my view that spending data do not seem to be a harbinger of a broader slowdown. Spending data also are likely to be buoyed by the easing of financial conditions that we have seen. With longer-term rates lower, markets are provided a more accommodative financial environment. Furthermore, initial claims data do not seem to portend widespread concern by employers. My working assumption is that the most recent employment report reflects the temporary effects of the Verizon strike plus the kind of monthly fluctuation that can occur in view of the error inherent in estimating monthly payroll employment. Still, additional data will be helpful in determining whether that assessment is correct.

The second scenario that I found relevant was the "Disorderly Brexit" scenario. Even with a more adverse scenario than expected by the staff and conditioned on a leave vote, the Tealbook scenario does not expect the unemployment rate to rise back to 5 percent. Interestingly, on a recent trip to Europe, the central bankers I spoke with were unanimous about the greatest risk to financial stability, and it was not Brexit—it was the electoral process and possible outcome in the United States. The fact that, a few weeks before the Brexit vote, the big concern of Europeans was not the United Kingdom possibly leaving the European Union but the U.S. elections highlights why using elections to defer monetary policy actions can be tricky and why many in the market think it is unlikely we'll tighten later in the year, a topic I will return to tomorrow.

The scenario I am most worried about is the "Weaker Productivity" scenario. For reasons I will explain, this is the scenario most likely to result in a recession. With growth a little over 2 percent during the recovery, the unemployment rate has been declining much more than we have expected. It is quite possible that growth averaging a bit above 2 percent, as in both my forecast and that of the staff, could result in an unemployment rate even lower than the significant decline below full employment already in the staff forecast, and that's where the risk of recession enters. Historically, it is almost unprecedented in such circumstances that the unemployment rate returns just to the natural rate without undershooting it and culminating in a recession. My biggest concern is that we could be repeating that pattern. Thank you, Madam Chair.

CHAIR YELLEN. Governor Powell.

MR. POWELL. Thank you, Madam Chair. My SEP forecast remains close to my December and March submissions. I see real GDP increasing about 2 percent this year, somewhat faster than its potential rate. I expect the labor market to continue to tighten, with unemployment declining to 4½ percent by the end of this year and remaining near there in 2017 and '18. I see core inflation coming in this year at 1.6 percent and moving up to 2 percent by 2018 as the economy tightens further and as the effects of past dollar appreciation and the plunge in oil prices fade.

I wrote down two rate increases for this year and three for each of the next two years, admittedly with low levels of confidence. Over the past three years, a strong labor market has allowed the Committee to look through sometimes volatile readings on GDP. Payroll growth averaged well over 200,000 per month from the beginning of 2013 even through the latest readings in May. The unemployment rate declined over that period by more than 3 percent, including three-tenths this year and eight-tenths over the past 12 months through May. And, like others, I have taken the view that the stronger labor market data, not the GDP data, are the better measure of the underlying strength and cyclical position of the economy. The strength of the labor market and the quickly tightening unemployment gap provided perhaps the best argument for raising the federal funds rate last December for me.

And now payroll growth has hit a soft patch, with April and May jobs reports averaging about 100,000 jobs per month on a strike-adjusted basis, and, at this point, the range of plausible explanations for the apparent sudden weakening in payrolls is quite wide. First, it could be just noise, resembling the temporary slumps we have seen in previous years. Six-month average payroll job growth plunged well below 200,000 in 2012 and then recovered, and there were other weak periods in 2013 and 2014 as well, but those too were followed by payroll growth well above 200,000. Second, alternatively, the April and May readings could be a sign that growth from now on will be accompanied by smaller, but still significant, job gains, which would point to stronger productivity growth. And a third and more negative possibility is that it could turn out to be a sign of weakening demand.

Of course, it is very hard to have much conviction about which of those explanations is the right one at this point. My baseline, though, is a combination of the first two explanations rather than the last. In this view, job growth has probably slowed but not nearly as much as suggested by the April and May job reports. Survey measures of both employers and individuals concerning the ease of filling or finding jobs indicate a healthy labor market. Wages are increasing faster than the combination of productivity and inflation, leading to rising real unit labor costs, which is consistent with the uptick in the labor share of income over the past year. With unemployment roughly at the natural rate, wages now clearly if gradually rising, and indicators suggesting at most a modest margin of slack, perhaps we may see the arrival of slower payroll job growth as firms begin to respond to higher labor costs.

It is comforting to see a rebound in activity for Q2 and upward revisions for Q1 as well. Consumption increased robustly in April, led by strong retail and auto sales, and auto sales remained strong in May. Today’s strong retail sales report represents another welcome positive note, and conditions are quite supportive of strong consumption, including solid real income gains, a high ratio of household wealth to income, and a healthy level of consumer confidence.

Investment has been weak, however, with business fixed investment falling in Q4 and Q1 and expected to edge down further in the current quarter. A portion of the weakness stems from the lower oil prices, but the softness outside of the oil sector is troubling, as it suggests continued business expectations of weak demand and also a weaker path for capital deepening and, hence, the path of productivity.

Inflation seems to be firming a bit, with core at 1.6 percent over the past 12 months through April, up a little bit from the prior year. And, of course, core is still being held down by the indirect effects of lower oil prices and, more importantly, the declines due to the strength of the dollar. Looking through those factors, I see underlying inflation as being fairly close to 2 percent, and the fading of those influences should move core and total inflation to 2 percent over the medium term, particularly as resource utilization tightens further. Inflation expectations, however, continue to raise concerns, and this underscores the need to actually achieve 2 percent inflation. Productivity growth has been anemic, to be generous about it. I expect productivity to rise only gradually, which is one reason why I expect the unemployment rate to decline over the remainder of the year to 4½ percent.

I see the domestic risks as nearly balanced despite the weaker labor data. The risks posed from abroad remain to the downside, and although they have diminished and markets have calmed substantially since the turmoil of the first two months of the year, if the Brexit vote is to leave, there may be ramifications for our economy and for the path of policy. Inflation and growth remain low in many European economies and in Japan. While China's stimulus measures should support growth in the near term, the ongoing buildup of debt there is worrisome, and there's also remaining uncertainty about China's exchange rate policy.

Despite our increase in the federal funds rate in December, financial conditions have actually eased somewhat on net since then, with interest rates down, the dollar down, and equity prices up. In part, these developments reflect the market's expectation that the Committee's withdrawal of monetary accommodation will be even slower than had been expected. The changing expectations reflect the ongoing learning of how low rates need to be to achieve our mandate, and I suspect that the learning process on that score is not yet complete. In the meantime, I have lowered my estimate of the long-run federal funds rate to 2.75 percent.

To wrap up, while I do expect both spending and labor market data to remain solid for the next few quarters, the weaker recent labor market data suggest reason for caution in the near term. More on that tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. Outside of the services sector, economic growth remains subdued in the Tenth District. Job growth is weak in areas dependent on energy production and manufacturing, while job growth continues to be relatively strong in areas concentrated in service sectors. Although job growth in the District continues to lag the nation, gains in service-sector employment have led to a modest improvement in overall District growth in recent months.

The housing market in the region continues to strengthen. Housing starts have improved notably this year, and home prices continue to rise as inventories have tightened. Mortgage delinquency rates also have trended lower except for energy-concentrated counties.

Despite recent increases in energy prices, financial stress for District energy companies continues. Recently, four large energy firms headquartered in the region filed for bankruptcy, and credit ratings for several others have been marked lower. In addition, past-due loans at our banks with energy exposures have been increasing and rose sharply in the first quarter of this year.

Finally, the District's agricultural economy remains relatively weak, although futures prices for some key agricultural commodities have increased in the past few weeks, primarily because of supply disruptions in South America. Even so, farm income for 2016 is expected to be subdued.

Turning to the national outlook, the May employment report was a surprise and has given me pause for how to interpret its signal. Clearly, manufacturing and the energy sector are still shedding jobs, and the question remains whether these adjustments are going to spill over more aggressively into the service sectors.

I take some reassurance from broader labor market measures. For example, the Kansas City Federal Reserve Labor Market Conditions Indicators report two conditions being better than average in terms of the overall level of activity. The other component, though, which captures momentum or the pace of improvement and is highly correlated with the Board staff's LMCI, has declined since January, although it's still a bit above its historical average. Whether the recent slowing reflects demographics or a slowing in activity will take time to determine. On the other hand, the picture for aggregate demand, at least for the consumer, is quite positive. The University of Michigan consumers' assessment of current economic conditions is at its highest levels since July 2005.

We've seen improvements in recent consumption data, such as retail sales and autos. Household balance sheets also continue to strengthen, and wage growth has been steadily increasing. The median measure of wage growth in the Federal Reserve Bank of Atlanta's wage tracker, which tracks wage gains for individuals from one year to the next, is rising at its fastest rate since the crisis. The overall distribution has also shifted higher as the 25th and 75th percentiles hit post-recession highs.

In terms of my real GDP forecast, I have marked it down modestly in 2016 and 2017 but otherwise expect growth to be slightly above trend. In terms of risks, the decline in corporate profits, elevated inventory levels, and weak business fixed investment all suggest the corporate sector is facing some headwinds.

Finally, core inflation looks to have firmed, increasing 2.1 percent in the first quarter relative to the prior quarter at an annualized rate. And I expect it to remain near 2 percent for the remainder of the year.

An interesting anecdote from one of our directors who noted that, as a result of lower margins in his retail business, his firm has hired a consultant to assist with implementing targeted price increases. This is the first such report I've heard related to raising prices. With the economy above full employment, output growth expected to increase faster than trend, rising wages, and the increase in commodity prices, I see support for inflation in the period ahead. I continue to watch the lower longer-term inflation expectations, both market- and consumer-based measures, for signals. But more broadly, in my view, current inflation rates seem consistent with price stability. Thank you.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. Economic activity in the Third District continues to improve, but there has been some deceleration in overall growth. The unemployment rate rose 0.3 percentage point to 5 percent in April, with the bulk of the increase arising from higher labor force participation as employment growth remained solid.

Our manufacturing index nudged back into positive territory, but most of the subindexes, such as those for new orders and shipments, remained slightly negative. Manufacturers, however, continue to retain an optimistic view, with the future general activity index at 29.8, which is exactly its nonrecessionary average, and all future subindexes remain solidly in positive territory. Like the nation, my region's manufacturing activity may have bottomed out.

Nonmanufacturing activity in the District continues to grow modestly at a somewhat slower-than-historical rate as reflected by our Nonmanufacturing Business Outlook Survey headline activity index, which ticked up to 18.2 in May. Like our manufacturers, area service providers remain relatively optimistic with respect to future activity.

Our Beige Book contacts reported a slight-to-modest improvement in economic conditions. Homebuilders have reported that economic activity increased only slightly during a somewhat soggy—some would say quite soggy—May. Permits have leveled off in the multifamily sector of the market, but single-family housing is showing signs of accelerated activity. House prices are appreciating at a moderate pace, growing at less than half of the U.S. average. Only in the Philadelphia metro area could one classify the housing market as vibrant. Consumers continue to spend at a modest clip, and the growth rate of bank lending has accelerated.

In our recent survey of labor market conditions, one-third of responding firms in the region indicated that it was harder to retain workers, as opposed to only 5 percent who found it easier. Additionally, 44 percent indicated they were increasing wages for select job categories, while 15 percent indicated they were increasing wages across the board. One-half indicated they would be increasing employment, and a majority intended to increase wages for new hires. Thus, our contacts' responses are consistent with the modest acceleration in wage growth occurring nationally and much of what we are seeing in the JOLTS data. Overall, the Philadelphia region should see steady, if unspectacular, growth, and contacts are generally upbeat about the future.

Turning to the nation as a whole, the latest employment report is a cause for concern. It is also a bit puzzling, as economic activity appeared to have strengthened of late. The two series seem a bit disconnected, with robust employment and weak demand in Q1 and a pickup in activity and a weakening in employment in the current quarter. Job openings in April were at historic highs, and unemployed workers continue to find jobs at a healthy pace. In any event, labor market behavior will weigh heavily on my views of appropriate monetary policy.

My forecast of real economic activity is fairly consistent with that of the staff and is little changed from the one I made in March. An important assumption underlying my view is that the labor force participation rate will continue to be largely governed by secular forces and will continue to decline over my forecast horizon. I don’t believe that the recent decline in the labor force participation rate is an indicator of a significant weakening in the labor market. I therefore project that the unemployment rate will hold steady over the remainder of the year before declining and remaining at 4.4 percent over the last two years of the forecast horizon. I expect that output growth will accelerate over the remainder of the year, averaging around 2 percent before rising slightly to 2.3 percent in 2017 and returning to approximately trend after that. My view on inflation is that we will see a path that returns to target a bit faster than the path presented in the Tealbook, perhaps by the end of the year. With unemployment falling below its natural rate, oil prices rising, and a fairly stable dollar, I don’t believe price increases will be delayed for much longer. That viewpoint drives me to anticipate two additional rate hikes this year and then increases of 1 percent in both 2017 and 2018, leaving the funds rate slightly below my 3.25 percent longer-run neutral level. Thus, I believe that accommodation should not be fully withdrawn by the end of the forecast horizon, and that normalization should proceed gradually. Thank you, Madam Chair.

CHAIR YELLEN. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. Starting with energy: As you all know, the price of oil has firmed at $50 a barrel. This reflects an expectation that global supply and demand will get into rough balance by the early part of 2017. There are those who predict it will happen sooner, in the latter half of ’16, and those who expect it will be later. The point is, the trend is clear—we’re heading toward balance. This balance has been artificially accelerated, though, in the past few months by recent outages, particularly in Nigeria and Canada, but this balancing trend continues and is particularly underpinned by expected demand growth of approximately 1.2 million barrels a day in 2016. On the basis of this trend, our contacts suggest the price of oil should continue to firm in 2016 and ’17. Looking beyond that to 2018 through 2020, our base case is that the price of oil is likely to gravitate up to between $70 and $80 a barrel, with a spike risk as high as $100 a barrel—again, 2018 to 2020.

As we’ve discussed before, long-lived projects over the past few years have been shelved or put on hold by most major oil companies. These projects take as long as 5 to 10 years to complete but have production lives in excess of 20 years. These projects fundamentally increase global oil supply as opposed to shale projects, which tend to rapidly decline over the first three years of production.

Looking at shale, $50 oil is helpful, but many shale properties still will not be viable at this price and will remain dormant. On the basis of our discussions with contacts in the industry, we think that prices are going to need to move up toward $60 and higher in order to spur a meaningful increase in deployment of rigs. This is why, for the time being, we're likely to see more bankruptcies and restructurings in the energy sector for the remainder of 2016.

Turning to the District, then, this is the first time since I've been coming here that the headwinds from energy for this District are now beginning to dissipate. In fact, we have now increased our jobs growth forecast for Texas, which was ½ to 1 percent—we've now increased it to 1½ percent in 2016. This compares with 1.3 percent job growth in 2015. Dallas, San Antonio, and Austin are continuing to grow and benefit from continued migration of people and firms to the state of Texas. Houston also has positive migration trends, but those trends have not been sufficient to offset headwinds from energy. Housing in Dallas, San Antonio, and Austin remains strong. Housing prices in Houston we believe declined in the first quarter of 2016. As with the nation, manufacturing in the Eleventh District continues to be weak, but the service sector is showing steady, moderate growth.

Looking at a cross section of Texas-based companies that operate throughout the United States, they are reporting, despite the retail sales report today, a modest slowing in consumer spending in the month of May. Exceptions to this slowing include beauty, health care, and some consumer staples, but as these companies reported last month, they are seeing a consumer with improving capacity to spend but becoming more cautious, possibly due to political uncertainty, but they haven't been quite able to figure it out.

Many companies are also quick to cite increases in regulation and rules—at the national, state, and local levels—which are impediments to their efforts to build their businesses. They particularly cite the effect of new overtime rules, which, combined with disruption, are causing them to explore much more fully the use of technology, which allows them to better control and even reduce their head count. I think this is a growing trend we are seeing.

Others cite the challenge of disruptive competitors. Most of them that don't make profits have unlimited sources of capital—Amazon is a good example—and basically make no incremental margin but offer convenience and dynamic daily pricing that could be changed at any point during the day, and many companies are struggling with how to deal with this threat, which also is giving them pause.

In response to sluggish demand and this high threat of disruption, many companies we speak with are now much more cautious about new capital spending and expanding capacity. Except for skilled trades, such as nursing, technology, and building trades, most companies we talk to report very little in the way of wage pressure or trouble finding an ample supply of new employees for hire.

Looking to the outlook and the SEP, I have not made major changes to my economic projections since those I submitted in March. Our GDP forecast for 2016 is the same as the Tealbook, and it is based on the expectation of a strong consumer. We have a little bit higher path of unemployment in the out-years, probably due to our expectation of weaker growth.

Our breakeven job estimate for job growth necessary to keep the unemployment rate constant over the next 12 months is now at approximately 120,000 jobs per month, on the basis of the view that much of the decline in the participation rate from 2007 to today reflectedthe aging of the workforce. Further, by 2024, we expect this participation rate to decline to below 61 percent on the basis of continued aging in the workforce, which, as we've discussed earlier, is going to lower, in our view, potential GDP growth in the future.

Finally, the Dallas trimmed mean inflation rate continues to run between 1.8 and 1.9 percent. It's been very consistent and gives us continued confidence that we will reach our 2 percent inflation objective in the medium term.

We continue to expect growth outside the United States to, on balance, create risk to our U.S. GDP forecast. In particular, I am concerned about overcapacity outside the United States, particularly in China; aging demographics in all advanced economies; and high levels of debt to GDP, particularly again in China. Weak growth prospects, both here and overseas, and strong demand for safe assets, as we've all discussed, have put greater downward pressure on the neutral rate. I believe we will continue to be vulnerable to periodic bouts of tighter financial conditions—in the short run, potentially from Brexit; and in the longer run because of turmoil in China and beyond this year into 2017. We think the pressures for a devaluation there are building. Again, it won't happen this year, but pressures are building into next year, and we're seeing that as highly likely, on the basis of contacts that we're speaking to. That will have some jarring effect, depending on the size of the devaluation when it happens. Accordingly, my SEP funds rate path is slightly shallower than my submission in March. Thank you.

CHAIR YELLEN. Thank you. President Mester.

MS. MESTER. Thank you, Madam Chair. Economic activity and sentiment in the Fourth District remain consistent with continued moderate growth. The Bank's diffusion index of business contacts reporting better versus worse conditions moved down slightly from plus 16 at the time of our April meeting to plus 9, a reading indicating moderate growth.

After exhibiting some deterioration in the first quarter, District manufacturing has stabilized, and our manufacturing contacts expect further improvement in the months ahead. Steel producers were encouraged by recent increases in product prices but remain uncertain about the sustainability of those increases. Due to recent increases in oil prices, some projects in the energy sector that had been placed on hold are now moving forward. Manufacturers are investing, but mainly in maintenance and process improvement equipment. Some contacts said that reluctance on the part of businesses to invest in large-scale capacity-expanding projects reflects concern about the overall longer-run direction in the economy and not concerns about the economy in the near term or their own firm's performance, which has been strong. In their view, a rise in interest rates would not deter spending plans. One contact in the commercial real estate sector said that while low interest rates were helpful to his clients in terms of their capital investment, low rates were not a primary motivator. Rather, the regulatory and political environments were seen as stronger headwinds to capital spending than potentially rising interest rates.

Labor markets in the District remain healthy. The Cleveland Federal Reserve staff estimates that District employment grew 1.2 percent over the year ending in April. The District's unemployment rate has remained low and stable, with the April estimate at 5.1 percent.

The Fourth District results of the special System inquiry on employment, wages, and labor shortage are comparable to the averages across all Districts. More than twice as many firms expect to increase rather than decrease employment over the next 12 months. Nearly 40 percent of Fourth District firms report that it's getting harder to retain workers, somewhat higher than the national average. Nearly two-thirds of firms hiring expect to increase starting wages for some or selected job categories, and nearly three-fourths said they couldn't find qualified job candidates to fill at least some of their open positions. A shortage of applicants plus a lack of skills of those who do apply appear to be the main factors driving the shortage. Wage levels don't appear to be the key factor. The survey results are in line with the anecdotal reports we've been receiving from business contacts for quite some time and with the recent National Federation of Independent Business survey. The NFIB survey indicates that worker availability has become increasingly constrained over the expansion and is now at the level consistent with past expansion peaks. I interpret these results as suggesting that labor supply issues are having a significant effect on labor markets, both at the District and national levels.

Turning to the national economy, the disappointing May jobs report got my attention. Some of the weakness in May reflects the Verizon strike. Some of the downward revisions to May and April reflect revised seasonal adjustment factors. Even so, the report indicates weaker employment growth than we've been seeing. Averaging through the past three months and adjusting for the strike, the average increase for payrolls is 120,000 jobs per month. This is a step-down from the more than 200,000 per month gains we saw over last year and earlier this year. But let's keep this in perspective. One thing we have learned over this expansion is that we shouldn't take too much signal from one month's report. Payroll growth slowed in March 2015, early in 2014, and late in 2013, but these episodes did not ultimately signal a reversal in the labor market. More recently, you might recall that last summer we were concerned about a couple of weaker payroll reports as well, but then payroll growth strengthened.

Cleveland staff analysis documents that in the midst of an ongoing expansion, it's not unusual to see employment growth slow down for a brief period and then kick back up on a sustained basis. In addition, we should be expecting some slowdown in the pace of job growth as the economy nears full employment.

The bigger surprise may have been the very strong reports that came earlier this year, which seemed out of sync with the weaker output growth. Now output growth is picking up while payroll growth is slowing. Job growth over the past three months exceeds the 75,000 to 120,000 per month range of trend growth estimates from various models. So even if the reduced current pace is sustained, it will be sufficient to put further downward pressure on the unemployment rate.

Finally, other labor market data do not suggest a marked deterioration of the labor market. Significant slowdowns in employment growth are usually accompanied by a marked rise in unemployment claims. Instead, initial jobless claims are close to cyclical lows, and continuing claims are the lowest they've been in over a decade. The April Job Openings and Labor Turnover Survey was positive, with the job openings rate at a record high and the quits rate near pre-recession levels.

On the other hand, just as I discount taking a strong signal from May payrolls, I don't read the sharp drop in the unemployment rate last month as indicating a significant tightening in the labor market. The drop reflects not only a decline in unemployment, but also an outsized decline in the participation rate. In light of the month-to-month volatility, I wouldn't be surprised to see a reversal in participation in the near term.

In constructing my SEP for this round, I decided to avoid erring on the side of reading too much into a single jobs report. In my view, the fundamentals supporting the expansion remain favorable, including accommodative monetary policy and financial conditions, household balance sheets that have improved greatly since the recession, continued improvement in labor markets, and low oil prices. First-quarter output growth was weak, but incoming data indicate it was not as weak as originally estimated. Many of the nowcasts of second-quarter growth suggest it will rebound to between 2 and 2½ percent, led by a strong pickup in consumer spending. I expect housing to continue to improve and to support growth. Business investment has been quite weak, but I believe it will pick up modestly over the forecast horizon, in line with overall growth.

On balance, I slightly marked down my growth forecast for 2016 to recognize the relatively weak first quarter, but otherwise I made little change to my growth, unemployment, and inflation projections since the March SEP. Overall, I expect growth to be slightly above trend over the next couple of years, which will support further improvement in labor markets and a gradual return of inflation to our targeted 2 percent over the forecast horizon. In my view, the economy is at maximum employment from the standpoint of what monetary policy can do, and I expect a slowing in the pace of labor market gains compared with last year and earlier this year. By the end of 2018, I project that the economy will be near its steady state. We're already seeing acceleration in some of the wage measures like average hourly earnings, in line with anecdotal reports of increasing wage pressures across a range of industries.

Inflation measures have gradually risen as the effects of previous declines in oil prices and the strengthening of the dollar have faded, consistent with the dynamics anticipated by the FOMC. Headline PCE and CPI inflation moved up from the very low levels reported last year, and they've been stable at a little more than 1 percent in recent months. Measures of core inflation have also remained at levels above last year's lows, and the Federal Reserve Bank of Cleveland's median CPI measure has continued to edge up, reaching nearly 2½ percent in April, its highest level since April 2009.

Stable inflation expectations are an important component of inflation dynamics. At this point, I view inflation expectations as reasonably well anchored and expect them to remain so, but I am monitoring readings carefully. Longer-run inflation expectations in the preliminary June Michigan survey notably fell to 2.3 percent. Analysis by the Cleveland Federal Reserve staff indicates that the Michigan expectation series is fairly noisy from month to month, so it's too soon to say whether the recent softness is signaling the beginning of a more pronounced and sustained decline in expectations, but this certainly does bear watching.

Better news comes from the Survey of Professional Forecasters. In May, the survey's median 10-year PCE inflation measure moved back up to 2 percent, and the 10-year CPI inflation measure increased to 2.2 percent. Our bank's five-year, five-year-forward measure of inflation expectations, which is based on a model that incorporates survey measures of expectations as well as market data on nominal Treasury yields and inflation swaps, has been stable at about 1.9 percent in recent months.

As usual, there are risks associated with my forecast, but I see the risks as roughly balanced at this point. Should inflation expectations show a more significant downward move, this would pose a downside risk to my inflation projection. On the other hand, too slow a withdrawal of monetary policy accommodation while unemployment continues to decline has the potential to create upside risks to inflation over the medium run. Risks to financial stability associated with very low interest rates appear so far to be contained. I expect them to remain so, provided we gradually normalize interest rates. However, failure to do so increases these risks.

I expect financial market volatility to continue to increase as the United Kingdom's June 23 vote about whether to leave the European Union approaches. If the United Kingdom votes to stay, I expect this volatility to be short lived, with no implications for the medium-run outlook. If the United Kingdom votes to exit, this volatility could be longer lasting. If it were to develop into a more general tightening of credit conditions, it would have implications for the outlook.

Given my outlook and the risks, I believe a gradual upward path of interest rates over the forecast horizon remains appropriate, as the economy continues to make progress on our dual-mandate goals. The timing of the rate increase and the overall slope of that gradual path will depend on how the economy and forecasts evolve. Reflecting the slightly weaker growth forecast for 2016, my federal funds rate path is slightly shallower than in my March projection. I do not think the Committee is "behind the curve" yet, but I am seriously concerned that we will forestall rate increases for too long because of the uncertainties clouding the outlook from meeting to meeting even as we continue to make cumulative progress on our goals.

An abundance of caution might suggest waiting for more clarity before acting. However, that depends on which risk you're taking into account. Waiting too long to act in the hope that things will get clarified risks waiting too long, and so increasing the risk to financial stability and raising the potential of overshooting, requiring sharper rate increases in the future—an eventuality that poses its own set of risks to the outlook. It also puts at risk our future ability to use the nontraditional monetary policy tools that the Federal Reserve developed to deal with the recent financial crisis and recession. If we fail to glacially navigate back toward a more normal policy stance, I believe there's considerable chance that these tools will effectively be off the table because they will have been deemed by the public as ultimately ineffective. I know this is not the usual sort of risk we consider, but it does weigh on my mind as I contemplate appropriate policy. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. Relative to our previous round, the reports from my directors and other business contacts were a mixture of small positives and negatives. Overall, the tone was quite similar to my discussions prior to recent FOMC meetings, and on balance their comments seem consistent with growth proceeding along at the 2 percent or so pace that we've experienced over the past year.

Starting with the positive reports, my contact at Caterpillar said his dealers were getting more business by refurbishing mining equipment. He also noted that the recent federal highway bill appeared to have state governments floating bonds to gear up for infrastructure spending, though it is unlikely to come online before 2017. More generally, several contacts pointed to improved commercial construction. And making lemonade from the weak May labor market report, labor developments did not appear to coincide with any major decline in business attitudes. With the exception of one or two financial market contacts, no one else was getting bent out of shape over the employment numbers.

Now, for the negatives. Even though my contacts generally were on an even keel, they indicated that business sentiment remained quite weak. For example, one of my banking directors reported on a survey of 75 of the largest companies in Michigan, only a dozen or so of the 75 think the economy will improve over the next 18 months—the rest are about equally split between things staying the same or getting worse. Another director who is a member of the U.S. Business Roundtable noted the same lack of confidence among most of the CEOs in the nation's largest firms. Indeed, one contact characterized today's business leaders as being like the children of the Depression era. Scarred by the Great Recession, they are highly attuned to reasons to worry about the outlook, and CEOs do not want to undertake any capital expenditures or workforce expansions that entail even a small risk of getting help ahead of the product demand.

Factoring the anecdotes in with our analysis of the incoming macroeconomic data, our bank's real GDP forecast continues to be similar to the Tealbook's. We, too, see growth at about 2 percent this year and then a bit stronger in 2017. We currently think that there's a little more slack in labor markets than the Tealbook does, but under our forecast this is eliminated by mid-2017. To be sure, the May labor market report increased uncertainty over the strength of the expansion. It and the GDP data are reminders that the economy still faces substantial headwinds and that the equilibrium real interest rate is still quite low, and our Chicago forecast is predicated on a more accommodative policy rate path than the Tealbook. Still, while there are important risks, I remain reasonably confident that an appropriately accommodative policy will keep us close to our employment mandate.

I cannot express a similar confidence about reaching our inflation target. Let me frame my discussion with the familiar taxonomy used by the Board staff's inflation model. The model forecasts increasing inflation due to three factors. First, there's an unwinding of the transitory effects of lower energy prices and the higher dollar. Second, the short-run Phillips curve will dictate rising inflation, due to the reduction and eventually overshooting of resource slack. And, third, there is the pull of the inflation attractor—I guess sometimes it's referred to as underlying inflation. This is the factor that captures inflation expectations and other elements of price-setting behavior that induce a stochastic trend into actual inflation.

So where do we stand on these stories? Well, the transitory disinflationary effects are waning. On slack, we can debate whether or not any slack remains in labor markets, but in view of the flat slope of the Phillips curve, even the Tealbook's overshooting is not going to provide much boost to inflation.

So that leaves us with the inflation attractor. Will there be enough pull to get us to 2 percent? I'm skeptical, on account of the current state of inflation expectations. The Tealbook forecast embeds an assumption of a gradual target-reverting updrift in the attractor from 1¾ percent in 2017 to 2 percent by 2020, and it is this updrift that lifts the inflation forecast to target in 2020. However, as of today, I think there are important downside risks to this assumption. Indeed, in the near term, I could see the attractor falling even further below 2 percent. None of my contacts talk about anticipating more pricing power when formulating their business plans, even if they wanted to. Most worrisome, measures of inflation expectations may be slipping.

Despite this year's welcome news on energy prices, the dollar, and core inflation, TIPS inflation compensation has moved sideways at very low levels, and household measures of inflation expectations have fallen to new lows.

We have mostly discounted such developments going back to the fall of 2014. This is a long period to think we are only observing statistical noise and coincidences. My SEP submission involves an assumption that we could solidify inflation expectations by communicating a stronger commitment to a symmetric 2 percent inflation target. This commitment would be reflected in the Committee's forward guidance comments. Importantly, my view of appropriate policy includes communications of a very shallow projected path for policy normalization, conditional on economic and inflation developments. If this works, inflationary expectations will solidify back in line with 2 percent, and the attractor will pull inflation up to target within a reasonable amount of time. It is critically important that it does, because I do not see the upward force from the other factors as being adequate to bring inflation close to target over the forecast period to 2018. In contrast, if a steeper path of policy rate normalization is socialized with the public without further economic and inflation improvements, my inflation concerns become stronger on the downside. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. Economic conditions in the Fifth District have continued to improve since the previous FOMC meeting, although survey results have been somewhat mixed. The business activity index from our survey of manufacturing firms fell last month to right around the breakeven level, negative 1 in May versus the April reading of plus 14. Our contacts attribute the softening in manufacturing to weakening exports, and they say that manufacturers that do not export are healthy. Meanwhile, our services-sector revenue indicator fell slightly but remained firmly in a positive territory, at plus 11. The fall in the overall services indicator was due entirely to the retail component, which is very, very volatile—it went from plus 37 in April to plus 1 in May.

The employment indicators in our surveys continue to show expansion. They're strongly positive except for retail, for which the index is right around breakeven. Wage indicators also remained solidly positive in our survey. These figures are consistent with continuing reports we hear of firms having difficulty hiring, including reports that some commercial builders are turning down jobs because their plates are full and expanding their workforce is just too difficult. We heard no reports of cutbacks in planned hiring over the intermeeting period.

Richmond is home to a large national online job search firm that specializes in hourly, low-skilled jobs—think retail and restaurants. They have 1.4 million job postings on their site, which, for comparison, is about one-fourth the size of the JOLTS job openings number, although the JOLTS definition of a job opening is a little stricter than just the posting. So it's not directly comparable, but it gives you a sense of the size of the firm. They're reporting a 30 percent year-over-year increase in openings posted on their site, and that's predominantly expanded postings from existing clients. At the same time, the number of people registered with them to search for jobs has been fairly stable. The average wage growth for postings on their site was up over 10 percent from the summer of 2014 to the summer of 2015, which is the way they compile and report these things. And their survey indicates it's expected to be up more than 10 percent again this summer. They say that job seekers are becoming increasingly selective. The number of applications the typical job seeker submits in their first 30 days on the site is declining, and they have also seen a noticeable shift in the stated reason for searching away from "I need a job" toward "I want a better job."

I think this sheds light on the national labor market data. Obviously, the big news on the national front was the May jobs report—employment growth much weaker than expected, but the unemployment rate declined substantially. The decline, as was noted, was the result of household unemployment being relatively flat and a steep decline in the labor force. As others have noted, it's not uncommon to get an employment report that's out of line with ongoing trends, and I think the May report may turn out to be a fluke. The contribution of the Verizon strike bolsters that possibility.

But the downward revisions in previous months' payroll numbers suggest we may be seeing a sustained downturn in employment growth. Over the past three months, average monthly employment growth has stepped down from over 200,000 per month to about 100,000 per month. I guess that's a larger number if you adjust for the Verizon strike, as President Williams did, but still lower than 200,000.

If a slowdown in employment growth persists, I think there are two ways to interpret this. Here I'm following Governor Brainard's paradigm. One is that employment growth is slowing because final demand is weakening, and, obviously, nonresidential fixed investment has contracted for two straight quarters now. The decline in payroll growth could reflect continuing weakness in this and other related fields. The other interpretation is that the economy has reached its trend growth path, which is something we've been anticipating for some time. Labor supply constraints are starting to bind in this scenario, and employment growth will be limited by the growth in the working-age population. I think there are arguments for either of these interpretations, but to me the case for supply constraints seems more convincing. Since the recession, the U.S. economy has grown at a fairly steady 2 percent annual rate, and the unemployment rate has steadily declined.

Apparently, various frictions in adjustment costs prevented us from reducing the overhang of unemployed and discouraged workers at a pace any more rapid than we actually saw over that period. We've always known, however, that at some point, absent shocks, the underutilization of labor resources would be eliminated, and at that point growth would be governed by demographics and productivity growth. This expectation has been evident in the SEP numbers in recent years, showing real GDP growth moderating and the unemployment rate flattening out over the forecast horizon. I think we need to take seriously the idea that the May employment report is indicating that this transition has arrived sooner than we thought.

At our March meeting, every participant said that the longer-run unemployment rate was greater than or equal to the May number of 4.7 percent. So the notion that labor market resources are fully utilized shouldn't be too controversial. If resource utilization remains stable, employment growth should match the trend determined by demographics. Estimates of that trend range between 50,000 and 100,000. There has been some commentary about that number in reports so far.

So the May employment report is consistent with the notion that we've now converged to that trend path. Of course, the May report, as Governor Brainard noted, is also consistent with the first interpretation that demand growth is weakening and we're in danger of a recession, but I don't think that the other labor market data support that interpretation. For one, firms haven't been cutting back on hiring plans, so we can discern job opening rates have increased significantly over the past three years—as was cited before from the JOLTS report—and at this point there isn't any sign that that trend is reversing. In contrast, prior to the previous recession, job opening rates flattened out in 2006 and had declined noticeably when the cyclical peak arrived in December of 2007. In addition, layoff rates remain stable and initial unemployment insurance claims are at extremely low levels by historical standards. So firms haven't been scaling back on their workforce in anticipation of weak demand. In contrast, initial claims began rising in the fourth quarter of 2007. Quits rates continue to increase and are up 8½ percent year over year. In contrast, the quits rate hit a plateau in 2005 and began falling in the summer of 2007. The notion of weakening demand during an emerging economic downturn, therefore, doesn't seem to me consistent with these gross flow data, nor is it consistent with broader evidence on second-quarter spending picking up from the first quarter, as Governor Brainard pointed out.

Given the data in hand, I find the supply constraint interpretation more compelling. Now, I recognize that the seasonally adjusted flow of workers from "unemployed" to "out of the labor force" in the CPS jumped 300,000 from March to May. This is a fairly choppy series, though, if you take a look at it. And I think it's too soon to make too much of it. For example, the flow rose by over 400,000 from February to April of 2014 but then obviously reversed course. Moreover, the total number of workers out of the labor force fell nearly 1 million from September to March, the recent rise in labor force participation looks like a return to the previous trend.

If we are running into increasingly binding resource constraints, you would expect some effect on wages and prices. As I and many others have pointed out, we actually have seen a clear rise in the rate of nominal wage growth over the past year or two, and the Tealbook points out that real wages are rising faster than labor productivity. Moreover, core inflation has been firming, and it is running higher than expected on net this year—2.1 percent at an annual rate versus a median projection of 1.6 percent in the March SEP.

Obviously, the policy implications of these two scenarios are diametrically opposed. Demand weakness calls for further delay in raising rates, whereas supply constraints call for avoiding delay or, if anything, suggest a steeper rate path. So I have left my funds rate projection unchanged in this submission.

Furthermore, if labor supply constraints are limiting growth, I think we need a shift in how we communicate. I think we should no longer suggest, as the statement does now, that we are dissatisfied with current labor market conditions, and we should find a way to convey to the public—someone else mentioned this, I think—that the monthly employment growth of around 100,000 is quite reasonable and not cause for alarm.

I would like to, finally, just add a comment or two elaborating on President Williams's comments, and this is all a follow-up from Vice Chairman Dudley's question. There is a large literature on the determinants of economic growth over time and a huge number of models and economic analysis that abstract from monetary policy. Expanding that class of models to encompass a nontrivial role for monetary policy is the signal achievement of economics in the past 40 years. For many analytical purposes, it's very useful to conceive of business cycles as fluctuations around a steady state in which the determinants of growth fluctuate around constant means. But that shouldn't distract us from the possibility of the fact that those distributions could shift over time—and indeed, I think this a major message we can take away from this economic expansion. There's no rule written down in nature or that we can divine that those should be constant distributions over time, and President Williams's analysis is an example of that.

As for monetary policy effectiveness, for many analytical purposes, linearizing around such a steady state delivers models with a small system of equations that closely resemble the IS-

LM models that were popular in the ’60s and ’70s. I think, similarly, that shouldn’t distract us from the likelihood that significant asymmetries are relevant to monetary policy and growth. In particular, I think the capacity of monetary policy to disrupt and interfere with growth is arguably much greater than the capacity of monetary policy to achieve growth substantially greater on a sustained basis than the pace given by those fundamental determinants that President Williams referenced.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. My comments will be devoted entirely to the labor market, beginning with whether we should take much of a signal from that May employment report—a topic many of you have already addressed—and, if so, what is being signaled. Then I will turn to the question of how I think we should assess the labor market even if the May numbers prove to be an aberration.

As, again, many of you have already noted, if taken at face value, the May numbers reflect a very rapid deceleration in job growth, seemingly across a wide range of industries. Even adding back all 35,000 striking Verizon workers, we still have a slowdown considerably more pronounced than consensus expectations and considerably short of even low-range estimates of the number of jobs required to absorb new entrants.

But, again, as many of you have noted, there are some grounds for believing that the May report may be an aberration. First, there is the usual caution about noisiness in any one month’s data. Second, there are some other labor market indicators, such as first-time unemployment claims and a Conference Board survey, which continue to suggest improvement. I wouldn’t draw any conclusions, though, from the JOLTS report, which some people have mentioned, because the report that was issued last Wednesday is for April, not for May, so it doesn’t really reflect the same set of labor market developments. And, finally, the unemployment rate ticked down 0.3 percentage point. Of course, that reduction in unemployment was entirely due to an unusually large reported drop in labor force participation, a data series that is, if anything, more prone to noisiness than the others.

So, all in all, I don't think there is enough information with which to answer the signal versus aberration question. Indeed, there's at least one other possible explanation, which is that increasing numbers of businesses are hitting the pause button in advance of a national election, a phenomenon that is often observed in democracies around the world because economic policy directions can depend so much on electoral outcomes.

However, while acknowledging that any view has to be tentative, I lean slightly toward taking some signal from the May numbers because of the numbers for those working part time for economic reasons and temporary business employment. The first—part time for economic reasons—increased 468,000, or about 8 percent, in a single month. Even if one takes the not unreasonable position that the level of PTER may not go all the way down to pre-crisis levels because of structural labor market changes, this much of a jump in a single month, even with some discount for noise, does suggest that there's something more than an aberration. This suggestion is reinforced by the decline of 21,000 in temporary health services employment. Now, in absolute terms, this is a less impressive number than the PTER change, but it does represent an unusually large decline in that category for a month neither at the end of the Christmas rush nor at the end of the summer.

The reason these two numbers incline me toward taking some signal from the May report is that they both can be early indicators of employers beginning to pull back on their workforces in ways that are relatively less disruptive internally than actually laying people off. So assuming for a moment that there is some signal in the employment report, what is being signaled? Well, again, several of you have already mentioned some possibilities, and I count three.

First, the May numbers may reflect a reduction in hiring to levels that seem more consistent with near-trend growth in GDP. Many have expected such a slowing, just not this abruptly. If this turns out to be the case, then the argument that has been advanced for further increases in the federal funds rate would seem to me to be weakened considerably, since there would be no need to slow employment growth further in order to foreclose a substantial overshooting of full employment, which proponents of this argument presume is associated reasonably directly with the risk of an overshoot of the 2 percent target.

A second possibility, in my view a less likely though not trivial one, is that the numbers portend a slowdown throughout the economy that is also reflected in the soft business investment numbers, and that would raise the question of whether more, rather than less, accommodation was appropriate.

And third is the argument that hiring has slowed down for supply-side reasons—this is the one Jeff was just articulating—that employers cannot find qualified workers to hire. This argument, I think, does have some plausibility within some discrete sectors, such as construction and some parts of the IT industry, but I find it also to be somewhat less likely as a broader application, since it's not consistent either with what's been observed in prior expansions, with the broad-based nature of the hiring slowdown, or with the possible signals of increasing slack I mentioned earlier. Moreover, at the lower end of the labor market, in which technical skills or qualifications are not so important, the issue is probably more one of wage increases and the related issue of pulling people back into the labor market.

But let's now assume that the May numbers are an aberration and that we revert to higher levels of job growth, lower than the 200,000 or better performance we have been at for the past couple of years but still solidly in the mid-to-high 100,000s range. The first point worth noting here is that in the past nine months, most of which had job creation of near or above 200,000, the unemployment rate has been essentially unchanged because the rate of job growth needed to meet workforce increases is probably around 100,000. We have had, by this calculus, about 800,000 or 900,000 new jobs filled by people coming back into the workforce—that is, the jobs have been filled from slack not captured in the standard U-3 measure during or even after the time when some had declared the economy had reached full employment.

Now, this is as good a time as any to note, once again, that staff estimates of full employment—as well as estimates of many others who find little slack in the economy—have become largely detached from price inflation. Instead, they rely on estimates of such structural factors as labor force participation. While this approach is interesting for labor economists to pursue in light of the flattened Phillips curve, its utility for monetary policy decisions seems to me at least somewhat questionable. This limited utility is underscored by the reality that the standard errors for estimating the natural rate are relatively high and by the fact that staff estimates find the unemployment rate to have been well below the natural rate for significant periods, such as 1997 to 2001, during which both core inflation and long-run inflation expectations were essentially flat.

Turning back to the present, wages have been accelerating in only a very measured way. Indeed, as shown in a recent interesting report by economists at Morgan Stanley, the diffusion of accelerating wages across industries has been unusually gradual for an expansion and, with a few high-profile but less economically consequential exceptions, concentrated in lower-wage jobs—

the very areas in which people only marginally attached to the workforce or out of it altogether are most likely to be able to reenter. And I actually think this is somewhat consistent with the anecdote that President Lacker was telling a few minutes ago. While the same Morgan Stanley report expects that some continued improvement in the labor market would lead to a continued diffusion of higher wage increases in middle-income jobs, they continue to expect that this would be at a measured pace, with no indication of a job market running hot.

Finally, it is worth repeating that if and as accelerating wage increases do diffuse more broadly through the economy, the size and timing of their effect on price inflation of tightening labor markets remain unclear. As an anecdotal matter, I note that recent NABE and Duke surveys suggest that while an increasing number of firms do expect to increase wages more, they generally do not expect to be able to pass those increased costs along through greater price increases.

At a more theoretical level, I would further note that there is increasing evidence for the proposition that the flattening of the Phillips curve that we have observed at work in recent years actually took place over roughly 20 years from the mid-1970s to the mid-1990s and has been fairly stable since then. Furthermore, as demonstrated by the recent paper by Blanchard, Cerutti, and Summers, this flattening, by and large, occurred not just in the United States, but also around the world. Both of these circumstances would imply, though of course not prove, that even if a snapback to a steeper Phillips curve were to occur in the United States, it is unlikely to happen quickly or simply because labor markets were approaching pre-crisis conditions.

Adding these observations to the fact that growth has not been running particularly hot and it's been only somewhat above what most of us estimate to be the trend, this, again, does suggest a circumstance in which—unless there is some evidence to the contrary—the effect of tighter labor markets on price inflation, while real, will be somewhat attenuated.

The foregoing is not an excuse for complacency about inflation, of course, or a reason to disregard a sustained period of accelerating or high wage increases. But I think it is a reasonable basis for presuming that the causal link between employment and wages on the one hand and inflation on the other will play out only over time. Accordingly, we should have ample time to react, and it doesn't seem as though there is a high risk of falling "behind the curve." Indeed, in light of recent readings on both market- and survey-based inflation and for the reasons that President Evans discussed a few minutes ago, a good case can be made for the proposition that there is as much risk to the downside for inflation as there is to the upside. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. My staff and I found connecting the dots for this meeting a bit of a challenge. What we're hearing from District contacts is not very consistent with the perspective on the economy and outlook that takes a negative signal from the recent employment report.

Overall, businesses reported little change in the economic environment in the most recent cycle compared with earlier in the year. Our contacts describe an economy on a moderate growth path. Most contacts are not seeing evidence of weakening, and most remain cautiously optimistic about the outlook. For the most part, Main Street in my District related "steady as she goes" economic conditions.

We continue to question our contacts about the weakness of business investment. In this case, we got feedback largely in line with the data. Much of the deployment of new capital is replacement, not expansion. At this juncture, we're not hearing much that would point to improvement in business fixed investment spending in the near term.

The feedback from the economic trenches lines up well with the probable growth outcome for the first half. We are assuming a second-quarter bounceback that—taken with the first quarter, which we expect to be revised up to slightly above 1 percent—produces first-half growth a little below 2 percent. This conclusion is supported by our GDP tracking estimate for the second quarter. As of this morning, with the retail sales and inventory numbers included in the computation, our nowcast stands at 2.8 percent for the second quarter.

The forecast I submitted for this meeting projects growth on basically a 2 percent path over the forecast horizon. I expect 2 percent growth to be sufficient to absorb the remaining slack in the labor market and push the inflation trend to target next year. So 2 percent growth, accompanied by effective achievement of our dual-mandate objectives, is my baseline. Around that outlook, I currently see somewhat more downside risks than upside. An important risk question, of course, which many have discussed, is how to interpret the recent employment report and, more generally, how to size up the labor market picture.

The labor market picture is more muddled than it's been for some time. While I am not taking as much negative signal from the payroll survey as could be taken in isolation, I am not interpreting the household survey—that is, the drop in the unemployment rate particularly—as all positive news. About one-third of the decline was due to an unusual flow of unemployed persons out of the labor force.

The majority of our District interactions with contacts preceded the May jobs report. However, in the week following the report, we asked a number of contacts, including our directors, how much signal to take from the soft jobs number. On the whole, our contacts did not hold perceptions of the labor market consistent with the jobs report. On the contrary, we heard a number of anecdotal reports of growing tightness in labor markets. Worker turnover has become a significant problem in some regions and industries. Also, the Federal Reserve Bank of Atlanta's contribution to the recent System labor market survey did not reveal a meaningful drop-off in the demand for workers. Even with mixed information, I am not dismissing the possibility that the slowing trend in employment gains over the past three months signals an incipient growth slowdown.

One other comment on downside risk: Recently my attention has been drawn to the declining trend in corporate profits. Corporate profits could tell us something about how to interpret both business investment and employment data. My staff and I have to do more work on how much weight to give to the profits decline as a causal factor in a possible slowdown. And we'll be doing that work in coming weeks.

So, in light of my perception of greater uncertainty associated with my forecast and the tilt of risks to the downside, I am comfortable with a wait-and-see stance at this meeting. More on that tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Kashkari.

MR. KASHKARI. Thank, you, Madam Chair. The Ninth District economy continues to perform well. Jobs are relatively plentiful, while qualified workers are relatively scarce. I made my first trip to the Bakken a few weeks ago, and I expected to find a bust—that's how it's characterized in the national media—but that's actually not what I found.

A lot of the froth is off the market, and many of the temporary workers who came there to work the oil fields have gone home. But the underlying employment situation is actually still quite healthy and robust, and there is actually a lot of optimism there. The recent uptick, obviously, in oil prices has helped. Several large new infrastructure projects are getting started, including a new almost $4 billion oil pipeline from the Bakken to southern Illinois and a new large refinery in western North Dakota. But my takeaway was, if even the Bakken employment situation is pretty healthy, I think that speaks well for the overall robustness of the employment situation nationally.

My overall take on the national economy is, I don't see a sign of imminent crisis nor do I see signs of unsustainable growth and imminent overheating. Rather, I expect continued modest growth, coupled with low and stable inflation. However, I am concerned about the low global inflation environment and long-term nominal rates that are at or near record lows in many major economies.

The United States doesn't seem to be immune to this low global inflation. The Michigan survey that many people have mentioned for long-term expectations has just fallen to a record low. I'm trying to make sense of what we're seeing in the global economy and what it means for how we think about monetary policy here.

Vice Chairman Dudley's question, I thought, was a good one earlier in the day, and I have a theory that President Evans mentioned, which is psychological scarring from the crisis. It could explain a lot of the things that we are seeing—the persistence of the low-rate environment, the global nature of some of the trends that we are seeing, the low investment, the high savings. I can't quantify it, and I don't have a model behind it. I will certainly work with my staff and, maybe, Board staff—if you have ideas on this, I think it is worth looking at. Because if we are in for a period of extended psychological scarring, I think it's going to affect how we think about monetary policy not just in the forecast horizon, but, potentially, much further beyond that. Thank you.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. Our baseline forecast, like everybody else's, hasn't really changed much since the March meeting. We expect real GDP growth at slightly more than 2 percent over the remainder of the year, and we do continue to expect inflation to move gradually back toward our 2 percent objective over the next few years.

With respect to the funds rate, we've had two interest rate hikes penciled in for 2016, going back to the December 2015 meeting, and we're sticking with that for the time being. But I think there is a risk that our forecast could slip back to one or even no hikes for 2016 by the time we get to the next SEP round in September.

Longer term, we have reduced the number of rate hikes in 2017 to two from three, and, like many others, we've lowered our long-run federal funds rate projection another ¼ point to 3 percent. I think we all have this sort of Bayesian model—the longer we stay in this very low interest rate environment, the more we say, "Well, okay, another quarter."

So to sum up, we made only marginal adjustments to our modal growth and inflation forecast and only small downward adjustments to our federal funds rate trajectory, but we are more worried about the downside risks to our growth, inflation, and interest rate forecast than we were at the time of the April meeting.

On the growth side, I judge the data as mixed. On the one hand, we've had a very strong retail sales report and PCE report for April, and I was gratified by the May retail sales report today, because there was some risk that it was going to reverse the strength that we saw in April. And, in fact, it was actually a bit stronger than expected. So that's good news. But against this, we've seen continued weakness in investment, and we've seen softness in services activity, at least judging by recent declines in the nonmanufacturing ISM index.

Real GDP looks like it's picked up after a weak first quarter, but the rebound is quite modest. Even if we take our nowcast number of 2.8 percent, we're talking about 2 percent growth for the first half of the year, and that's probably on the high side of most estimates at this point. Of the greatest concern, of course, is the fact that the household and payroll employment reports were unambiguously weak. In terms of the effect on the labor market, I'm where Governor Tarullo is. I do suspect that the most recent payroll figures exaggerate the degree of deterioration of the U.S. labor markets, but I do take some signal from the data.

As I noted at the most recent meeting, although there was some prospect that the gap between the strength in payroll growth and the weakness in real GDP could be closed by stronger real GDP growth, there was also the possibility the gap could be closed by weaker employment growth. If you think about what's happened since then, we've really closed the gap in both ways, somewhat stronger real GDP growth and a somewhat weaker labor market. And it seems to me like we should put some signal on both of those things.

With respect to the weakness in the payroll figures, several other measures, I think, harken to some the notion that there has been a significant slowing. If you look at the one-month, three-month, and six-month diffusion indexes for private industry payrolls, for example, they've all fallen very sharply over the past two months, and the one-month and three-month private industry diffusion indexes are at their lowest levels since early 2010. So, in connection with President Mester's point, there has been slowing in the labor market before, but if you look at the diffusion index, this seems a little bit bigger than what we've seen earlier in the cycle.

Now, some people might argue—and Jeff, I think, made this point—that the slowdown in payroll growth reflects supply constraints rather than weakness in the demand for labor. I suppose that's possible, but I don't find that argument particularly compelling, because we don't have one national labor market. We have hundreds of local labor markets at different degrees of labor market slack. Even if the labor market was improving and we were getting to full employment, I would never expect to hit the wall and see a very, very sharp slowdown in payroll growth in a month or two, because I just don't think you'd run out of an available supply of labor at the same time in all of these different labor markets across the country.

If you look at the evidence from past expansions, it basically suggests that when the economy reaches what's viewed as full employment, what happens is the unemployment rate flattens out, but the job gains actually tend to persist in line with the growth rate of real activity, and what happens is that an increasing share of the hires comes from those who are induced by improvement in the labor market to enter the labor force.

I also think it's premature to conclude from the wage compensation data that we've reached full employment. I don't view the pickup in wage compensation as very large. In the ECI, there's basically been none, at least to date, although we're expecting an uptick with the next report. In the trend of average hourly earnings, I think it's a modest uptick, but somewhat less than what I would evaluate as consistent with reaching full employment.

On the growth side, I have several concerns. First, I'm a little bit less sanguine about consumer spending, in view of the fact that we're actually transitioning from a period in which we had very strong real income gains supporting consumer spending to a situation in which real income gains are going to be distinctly slower now because the growth of hours worked has slowed, and we've had an uptick in energy prices. So the situation is exactly the reverse of what it was earlier in the year.

Second, I also worry about the chronic weakness that we've seen in investment spending. Not only has it been persistent, but the election season could contribute to further weakness.

That's because an election can increase uncertainty about future policies, and that increased uncertainty can raise the option value of deferring investment. There was an interesting cross-country study of the effect of elections on investment spending by Brandon Julio and Youngsuk Yook in the February 2012 issue of the *Journal of Finance*. And they concluded, after looking at all of these different countries and all of these different elections, "In the period leading up to the election, investment expenditures decline by an average of 4.8 percent, controlling for growth opportunities, cash flows, and economic conditions." So one could argue that this year's election in the United States is highly uncertain in several respects not only at the presidential level, but also with respect to which party will be in the majority in the U.S. Senate and, as a consequence, what policies will result. So it seems to me the option value of waiting in terms of investment has presumably increased in the current environment. Thus, we shouldn't be surprised if the softness in investment spending persists and probably actually even worsens a bit.

I also have a bit of concern about inventories. They could prove to be a more persistent drag on growth. The rate of inventory accumulation has been pretty high now for the past eight quarters, more than $70 billion at an annual rate each quarter, and so this has really pushed up the business inventories-to-sales ratio over time. So getting inventories back down to normal levels will require a lower inventory accumulation rate, which implies that inventories will likely be a drag on the economy for a while. I raise this issue because inventory cycles—maybe not so much recently, but if you go back to past economic history, they have, at times, been important in influencing the pace of economic activity.

Speaking about monetary policy, another concern I have is that U.S. monetary policy may not be as accommodative as we think it is. I know that several estimates of the equilibrium real short-term rate are currently close to zero, and that suggests that maybe we're roughly

100 basis points above the actual real short-term rate. But I think the measurement of the equilibrium real short-term rate is imprecise and model dependent. We also have to reconcile the notion that monetary policy is relatively accommodative with the fact that we've only been growing at a 1.5 percent rate over the past few quarters.

Another aspect that I think about the monetary policy normalization story may also be in doubt: One motivation we've had for an upward path for short-term rates has been the notion that the headwinds holding back growth will gradually subside over the next few years, and that will push up the neutral real short-term rate. But I ask myself the question, why should we expect these headwinds to subside to any appreciable degree from here? If they haven't subsided much in the seven years since the end of the Great Recession, why is this going to happen in the next year or two?

It could be that these headwinds that we talk about are much more persistent: global savings glut, lower productivity growth, and tighter lending standards for residential mortgages. When you think about the Great Depression, those headwinds lasted for decades, presumably. So my bottom line is that there's a reasonable likelihood that we may not have much more to do in terms of removing monetary policy accommodation in order to get back to neutral.

I've been pretty negative up to now, so I'm going to give you some balance, focusing on what I see as some of the more positive aspects of the outlook. It seems to me, and I think this is the sentiment around the table, that recession risks are low. We have had decent trends in real income, we have accommodative fiscal and monetary policy, and we have buoyant financial market conditions. The stock market has recovered, long-term rates have fallen, and the dollar has been relatively stable. So I feel like we have a pretty supportive environment for continuation of growth.

Moreover, some of the drag we've seen in terms of real GDP should diminish or reverse. I noticed that the staff forecast for trade shows it's a continued drag but less drag in the period ahead than what we've had in the past, which makes sense to me, as the broad trade-weighted dollar has steadied over the past six months or so and the drag on investment, as was noted by many, from the collapse in oil and gas drilling activity is certainly lessening at a minimum and may actually be ending.

On the inflation side of the ledger, my views haven't really changed much. I continue to think that if the growth materializes, then we don't really have to worry too much about inflation. But if the growth doesn't materialize, then there's a risk inflation will stay stuck below our 2 percent objective.

I do get a little worried about the decline in the TIPS five-year, five-year-forward inflation compensation measure, especially in light of the fact that, earlier, we tended to explain it away because it was just correlated with the decline in energy prices. That's a little bit more difficult to do now that energy prices are heading in the opposite direction. Also, I guess I take a little bit of signal from the University of Michigan five-year inflation expectations measure. But I think, on the other hand, if you look at the Federal Reserve Bank of New York's three-year median estimate, that's been pretty stable over this year. It doesn't show a clear trend downward, so I take a little bit of comfort from that. We think this is a better survey—we ask the question better, have a broader sample, and we ask a lot of the same people the same question over time.

So the bottom line for me is, I think we should just hang out, get more information, see what happens in terms of Brexit, and then think really carefully about what we should do about monetary policy. But more on that tomorrow. Thank you, Madam Chair.

CHAIR YELLEN. Well, my thanks to everyone for an interesting discussion of the economic outlook and risks. I'd like to add a few brief comments of my own. Prior to June 3, I would have said that things were going well. Labor market indicators, on the whole, were favorable and suggested continued improvement into the spring. The incoming data showed a sizable pickup in consumer spending after the winter's weakness, as expected, and the housing sector continued its gradual recovery.

Global economic and financial conditions had improved somewhat further and increased my confidence that the drag on the U.S. economy due to external factors would gradually abate later this year and beyond. Of course, indicators of business investment outside the energy sector had remained puzzlingly soft, but with firms still willing to expand their workforces, I was optimistic that capital spending would gradually pick up in response to stronger household spending and foreign growth. Finally, the price data had come in about as I expected, consistent with my forecast that inflation would move up to 2 percent over the next two years or so, conditional on further labor market improvement, reasonably well-anchored inflation expectations, and roughly stable prices for oil and non-energy imports. Under those circumstances, my view was that another ¼ percentage point increase in the target range would soon be warranted, although I was inclined to wait until the July meeting to act in order to verify that any fallout from the Brexit vote would, indeed, be minor, in view of the fact that the cost of waiting a few weeks while clearly signaling a high probability of acting seemed low.

But the release of the May labor market report puts a considerably different light on matters, as many around the table have noted. Although I don't think we should make too much out of one report, the May report was remarkably weak. Adjusting for the effects of the Verizon strike, payrolls increased only 73,000 in May, and the figures for March and April were marked down a total of 85,000.

As a consequence, the average increase over the past three months, while admittedly somewhat better than the May figure, was just 125,000 per month, representing a marked and abrupt slowdown in employment growth whether measured relative to average monthly gains of 220,000 over the preceding three months or the 230,000 per month pace seen last year. And while the unemployment rate in May fell to 4.7 percent, this reduction reflected another large decline in labor force participation, as many of you noted. Indeed, the rise in labor force participation that we had seen since last summer has been largely reversed in the past two months. This development suggests that recovery along that dimension has been much more limited than I had thought. Finally, involuntary part-time employment jumped, leaving the broad U-6 measure of labor utilization little changed since the beginning of the year.

As many of you noted, the implications of this disappointing news are not at all clear. One possibility is that these data are simply an aberration, as many of you suggested, that will disappear with the release of additional employment data. Lending support to this interpretation is that other timely labor market indicators did not deteriorate. Weekly initial claims have continued at a low level. Consumer expectations for labor market conditions were relatively upbeat in May, and net hiring plans by small businesses have changed little since the start of the year. And on the basis of what I heard around the table, and also the results from the recent survey the Banks conducted in their Districts, our contacts' assessment of the economy and the labor market don't seem to have deteriorated significantly, although some of you did note that firms don't seem particularly upbeat, either. Moreover, while payroll employment and the unemployment rate are two of the most reliable indicators we have, they are both subject to considerable sampling error. For example, the 90 percent confidence interval on monthly payroll gains is plus or minus 115,000, according to the BLS.

A second possibility is that the reported slowdown in employment growth is real but reflects a lagged response on the part of firms to the weakness in aggregate spending seen late last year and this winter. Such a slowdown would arguably be consistent with the recent weakness in non-energy-related business investment. On the whole, this interpretation could be a relatively benign one for the economic outlook. In light of the recent rebound in consumer spending, the ongoing recovery in the housing market, and the improvement in global financial and economic conditions, the odds seem reasonably good to me that overall activity will expand at a moderate pace in coming quarters, and if so, we should expect to see a pickup in employment growth relatively soon.

A third possibility is that firms may now be finding it very difficult to hire qualified workers, resulting in employment growth downshifting to a pace more in line with its sustainable long-run rate, as President Lacker suggested. Such a deceleration does have to occur at some point, as a stable unemployment rate probably requires average payroll gains to settle down at less than 100,000 per month in the longer run. But if such a persistent slowdown has just occurred, its abruptness is puzzling. Also, this tight labor market story is difficult to square with the jump in involuntary part-time employment, decreased demand for temporary workers, and wage growth that remains fairly subdued. But if it is true, and in line with Governor Tarullo's suggestion, I think it suggests little need to tighten, as the current stance of monetary policy has already, under that interpretation, succeeded in slowing employment growth to a more sustainable pace, assuming that wage growth doesn't start to accelerate unduly.

Finally, the May report could be a harbinger of a more general and persistent slowdown in the overall economy. This is not my expectation, and I remain cautiously optimistic that the overall economy will expand at a moderate rate over the remainder of the year—and that employment growth will pick up noticeably in the next few months. But with the data we have in hand today, I cannot dismiss the possibility that domestic demand, which has been quite resilient in the face of a range of headwinds in recent years, may now be faltering.

So where does that leave us? For me, the policy implications are clear. We need to leave policy unchanged until we have a better sense of the true state of the labor market and the broader economy. Perhaps we may achieve this as early as the July meeting if the June labor market report shows a marked rebound in payroll growth and significant upward revisions to prior months' data.

Clearly, we would also like to see relatively strong, and hence reassuring, readings on spending and production. But due to the limited amount of information we will receive in the next five weeks, some important questions may well remain unresolved by the time of our next meeting, so I think we will need to be prepared to be patient in order to confirm that conditions are evolving in line with our baseline expectations.

Okay. It is reasonably early, so let's turn to Thomas for his briefing on monetary policy. Then we can start at a reasonable hour tomorrow and discuss policy.

MR. TARULLO. Be animated here, Thomas.

> MR. LAUBACH.[4] I will do my best. Thank you, Madam Chair. I will be referring to the handout labeled "Material for Briefing on Monetary Policy Alternatives." In financial markets, one notable development in recent years has been the sizable decline in longer-term Treasury yields. That decline continued over the intermeeting period, leaving the 10-year yield close to historic lows. Before turning to the draft policy statements, I will briefly explore some of the factors that may have

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

contributed to this decline and consider what it might suggest for the Committee's policy communications.

The top-left panel of exhibit 1 illustrates the extent to which the decline in the 10-year Treasury yield has surprised the forecasters on the Blue Chip panel and has led them to repeatedly mark down their projections for the path of the 10-year yield. For example, as of mid-2014—that's the yellow line—forecasters expected the 10-year Treasury yield to rise about 140 basis points over the coming two years; in fact, it declined 70 basis points. The track record of the staff's projections for longer-term rates over this period is quite similar.

This ratcheting down in the expected path for longer-term Treasury yields in part reflects shifts in the expected path of the federal funds rate, as illustrated on the right. Notably, these shifts occurred even as outcomes for the labor market and inflation were about as expected. The exhibit on the "Evolution of the Staff Forecast" that's always shown in Tealbook A nicely illustrates this point: It shows that, from the staff's perspective, the unemployment rate has declined slightly more than predicted, while core inflation has been only slightly to the low side of earlier projections. The same is broadly true for the Blue Chip forecasters. Taken together, these results suggest that the economy has required a lower-than-anticipated path for the federal funds rate in order to sustain progress toward the Committee's mandated objectives—that is, short-run *r** has fallen to very low levels, as many of you noted in your SEP comments.

The middle two panels review evidence on two other factors likely influencing longer-term yields. First, as shown by the solid line to the left, the nominal term premium as calculated using the Kim-Wright model or, as shown by the dashed-dotted line, derived by the staff from the Blue Chip survey has trended down in the past several years. Although we cannot say for sure what underlies this move, the divergence in nominal yields between the United States and other advanced economies, reflecting in part diverging monetary policies, appears to be one factor. In addition, investors appear to have revised down their views on inflation in the longer run. As shown to the right, some market- and survey-based measures of longer-run expected inflation have moved lower over the past two years. Furthermore, with inflation running persistently low and the global economic outlook still soft, investors likely see a lower probability of an upside inflation surprise, and some may see a greater likelihood of a downside surprise, potentially reducing the inflation risk premium.

The left column of the table at the bottom left shows the results of using Blue Chip surveys in combination with the staff's term structure model of nominal and real yields to quantify the contributions of various factors to the change in the 10-year yield between the June 2014 and June 2016 Blue Chip surveys. The second and fifth lines decompose the total decline in the 10-year yield into changes in the expected path of the short-term rate over the life of the 10-year note and changes in the nominal term premium. The bulk of the decline is estimated to reflect lower term premiums. Lines three and four dig deeper and provide estimates of the real and inflation components of the change in expected short rates; lines six and seven do the same for term premiums. This decomposition points to a drop in the inflation risk premium as the most important driver of the decline in the 10-year yield over the past two years.

To focus more directly on the longer-run determinants of yields, the right column of the table shows the same two decompositions for the 127 basis point decline in the 5-year, 5-year forward yield. The total change in this yield reflects a 52 basis point decline in expected short rates 5 to 10 years into the future and a 75 basis point drop in the corresponding term premium. Notably, as shown on line 3, most of the change in expected short-term nominal rates between 5 to 10 years ahead is due to lower expected short-term *real* rates, consistent with estimates indicating that r^* has declined. Among the term premium components, the inflation risk premium again explains the bulk of the change, as investors may have come to view longer-term fixed-coupon nominal assets as increasingly valuable hedges against lower-than-anticipated inflation. But the real risk premium has come down as well, as investors may also increasingly value insurance against periods of low real interest rates.

Although this decomposition may help identify some of the sources of unanticipated developments, the size and persistence of the forecast errors highlight our limited ability to predict how these factors will evolve. The staff has responded to the persistence of surprisingly low rates by again reducing the estimates of the nominal term premium and longer-run r^* in the Tealbook. Many of you have successively lowered your estimates of longer-run r^* in your projections. As we discussed in April, shifts in trend productivity growth, one of the likely determinants of the longer-run level of r^*, are difficult to recognize in real time. And the term premium is affected by a number of difficult-to-predict factors, including the global economic outlook and associated policy responses as well as the future path of the SOMA portfolio. Another source of uncertainty is how longer-term inflation expectations will evolve, as they appear to have remained low even as labor markets have tightened, core inflation has firmed, and oil prices have risen.

The box at the bottom right summarizes several potential implications for your policy communications. The experience of the past couple of years suggests that we are in a period of elevated uncertainty about the equilibrium real interest rate and the evolution of inflation expectations and, hence, elevated uncertainty about the policy rate path consistent with achieving the Committee’s mandated objectives. In such an environment, policy necessarily needs to be made in a more adaptive way, as indeed your changes to your policy rate paths in recent SEP submissions illustrate. This uncertainty also highlights the importance of communicating, as in paragraph 4 of the postmeeting statement, that the policy rate path associated with achieving and sustaining your labor market and inflation objectives will depend on “realized and expected economic conditions” relative to your objectives. Thus, in your communications, you may be well served by continuing to emphasize that the policy rate path that will be associated with achieving your objectives is in no way preset.

Turning to the draft alternatives for your consideration tomorrow, the important differences across the three drafts are their assessments of the information received over the intermeeting period and their implications for the Committee's policy decision.

Regarding the recent news, alternative B would emphasize the crosscurrents in the recent data but would indicate that the Committee's modal outlook has not changed. With respect to the policy decision, alternative B would indicate that the Committee still expects to raise the target range for the funds rate gradually but avoids signaling the likely timing. It would suggest that, as in April, the Committee judges that it is prudent to wait and see that the economy is evolving as expected before deciding when next to raise the target range for the funds rate. With alternative B, the Committee would communicate that the policy rate path in the period ahead will remain data dependent. Of course, investors will also look to the SEP for guidance on the Committee's thinking about the timing of the next rate increase and the path of the funds rate thereafter.

The first version of paragraph 3 in alternative C would indicate that the Committee views the recent data positively, implying that it views the economy as still on track. Accordingly, it would provide a strong signal that an increase in the target range may come in July or September. The second version of paragraph 3 in alternative C would indicate sufficient confidence that the Committee will achieve its statutory goals to raise the funds rate target at this meeting, which would be a significant surprise to investors. Like alternative B, alternative C would continue to emphasize that the path for the federal funds rate will be data dependent.

By contrast, alternative A would suggest a change in the Committee's expectations for policy normalization in light of the recent disappointing data on employment and inflation compensation, the downside risks to the outlook, and the persistence of inflation below the Committee's objective. It would indicate that the appropriate policy rate path is lower, and that a decision to increase the target range would be deferred until the risks to the economic outlook are more closely balanced and inflation is closer to 2 percent on a sustained basis. More generally, compared with alternatives B and C, it expresses less confidence in the expectation that the target federal funds rate will rise over time.

Finally, I should point out that the draft alternatives in the handout include the changes that we circulated to the Committee yesterday afternoon. In alternative B, the final sentence in paragraph 1 acknowledges the roughly 25 basis point decline in far-forward breakeven inflation and, indirectly, the 0.2 percentage point decline in the Michigan survey measure of longer-term inflation expectations. Thank you, Madam Chair, that concludes my prepared remarks.

CHAIR YELLEN. Thank you. Questions? President Evans.

MR. EVANS. Just a question. Since my earlier comments today and the fact that I anticipate we're going to mention inflation expectations in our statement tomorrow, I was slightly chastened by Governor Fischer's critique of the Michigan survey expectations. When he spoke about deducting 100 basis points from the average Michigan number—some type of change on the level of inflation expectations measured by the survey relative to what we're actually targeting. Does the staff have a response to that critique?

MR. WILCOX. I'll take a crack at that. We have one of the world's experts here. One starting place is to note that the question that's asked of the respondents in the Michigan survey is quite vague. They're asked, "Now, about prices in general, what do you expect over the next 12 months, and what do you expect over the next 5 to 10 years?" So I think it would strain credulity to expect a randomly selected household to have a specific view about a specific price index, but our view has always been that it would be pushing things a bit hard to assume that they're answering specifically about the PCE price index or the CPI. So, historically, I think we've been quite willing to forgive an intercept, and that's exactly what we've done in fitting our Phillips curve equations. Jeremy.

MR. RUDD. This is actually in exhibit 4 of the "Material for Staff Presentation on the Economic and Financial Situation," panel 4. That estimate is shown as "Phillips curve (Michigan)" and it is the estimate one gets from using the Michigan survey in a Phillips curve and allowing for an intercept adjustment that is estimated from the data.

The idea is that what we view all of these survey-based expectation measures as is noisy indicators of the underlying long-term trend in inflation**.** What the intercept of that kind of equation tells you is that over history, in order to get a particular observed inflation outcome as defined by, say, the core PCE price index, you had to have a wedge in that equation. Now, how you estimate that—you can debate whether it's actually a sensible thing to do even—

MR. EVANS. But as soon as you take the view that it's used for a forecasting relationship, the actual index level itself is of far less importance than its co-variation with the thing that you're targeting. That's what I was expecting.

VICE CHAIRMAN DUDLEY. Presumably we don't think consumers make the hedonic adjustments in the consumer price index, I would expect.

MR. RUDD. Well, there's actually a second point about the Michigan survey that's important to note, which is that a lot of people say *a priori* that the Michigan survey is ridiculous, because it's obviously so high it's biased—and so it's not a good measure of an index like the CPI. We don't really know what the raw prices that consumers are facing look like compared with the CPI. As you said, the CPI is heavily massaged. The BLS links prices of goods and services in the index with prices outside of the index, it makes quality adjustments, and it does other things to produce this index. That's even more true for the PCE price index. It covers bundles of goods and services that aren't necessarily what consumers have in mind when they think about what their current consumption costs are.

There's an interesting paper by Moulton and Moses that appeared a number of years back in which they talk about the amount of quality adjustments being made in order to fit observed price quotes into the estimated CPI. It's a pretty large adjustment. Now, whether that can really—

VICE CHAIRMAN DUDLEY. What order of magnitude?

MR. RUDD. An order of magnitude sufficient enough that you could almost make the Michigan survey look reasonable compared with, say, the CPI. Now, you don't want to necessarily look at that estimate and say, “Okay, all of those changes are obviously just statistical messing around.” When you go to buy a tub of yogurt, and it’s 8 ounces versus 16 ounces, that kind of adjustment may be sensible, although there are a number of problems with even those sorts of adjustments that people who worry about price measurement do point out. There’s not linear pricing for a lot of things—things that are sold in bulk are cheaper, that sort of thing. So a lot of what’s being done to the price quotes that are then entering the CPI could be separating them from the kinds of prices that people are actually seeing and reacting to.

On the other hand, if you take the Michigan survey, and if you regressed it on, say, food, energy, and core CPI inflation, let’s say, the weights that you get are pretty close to the relative importance weights that you get for those components in the CPI. This suggests that it’s not a completely irrational measure. But it might be that the change in the measure, as opposed to the absolute level, is what you need to focus on if you want to think about what it means for price developments.

CHAIR YELLEN. President Lacker.

MR. LACKER. First of all, I compliment you on that learned discourse, but I took Governor Fischer’s critique to be that, in view of our uncertainty about the determinants of that gap, a very sharp and precise assumption that long-run inflation expectations are fixed for all time seems unwarranted.

MR. RUDD. The fixity is an issue. Of course, it’s very hard to discern changes in that from other sorts of changes, like changes in the natural rate or something that might affect the inflation equation. In terms of the precision of the estimate—we did give the 70 percent range of that estimate. If you use it in a price equation, that particular wedge is actually surprisingly well estimated because you're basically estimating a mean, and so the more observations you have, the precision of the mean increases reasonably rapidly.

But I would agree with you. We see this issue as well with the SPF. We don't have a very long series for the PCE-based SPF, but if we try to use the CPI-based SPF—we don't really know how to do that particularly well, and how you do it can really influence the results you get and what the long-term inflation forecast would be from this kind of model.

And, again, I'd emphasize that I view these longer-term inflation expectations measures as just a noisy indicator of some kind of underlying trend, which we're not really sure even from a theoretical standpoint how that's tied down or how that's determined. It's just something that seems to work, and a lot of people who use these sorts of measures use them because they appear to have some utility for forecasting.

MR. WILCOX. I'm going to play "bad cop" just for a second to your "good cop." All these measurement challenges are well taken. They're not dramatically different today than they were a couple of years ago. And if you look at Jeremy's panel 3 on exhibit 4, the downward trend, I think, is pretty eye catching despite the fact that, predominantly, the measurement challenges today are substantially the same as they were in 2013.

MR. LACKER. Point well taken. Thank you, though.

CHAIR YELLEN. Governor Fischer.

MR. FISCHER. Well, I thought of the following argument. The reason I know these things is that I once worked with the contents of the Michigan survey long ago, when I was interested in expectations. They're individually ridiculous. They range from plus 100 percent to—I'm describing the situation in 1982. Maybe it hasn't continued.

MR. WILCOX. No, it's substantially the same. [Laughter]

MR. FISCHER. So then you could say, "Well, it was this high, but we're taking that out, and we're just saying that the changes are okay." But that assumes that the changes are affected only by prices. Now, I don't know what exactly is going on, but I thought what you were going to say is, "Well, yes, it's true that their expected inflation has come down because we've had low inflation for a long time. They're adaptive. They've got adaptive expectations." By the way, I think any person who was not trained in statistics would look at a series for a long time and say, "Gee, I've been saying that it's 20 percent, but it hasn't been 20 percent for a while, so maybe I should take it down to 19." You could say that the mean is moving down, and that's what we're really interested in. That's where I thought the—

MR. WILCOX. Well, that's Jeremy's green line.

MR. FISCHER. But the question is, what are they actually estimating? They've got some vague idea of inflation.

MR. RUDD. But one question as well is, why does this longer-run expectations line stay so stable even after, say, when the recession hit? You would expect if expectations really did react adaptively that you would probably see more of a reaction to, say, the—

MR. FISCHER. I would have expected to see more of a reaction, but they knew we were in strange times, and when you said, "Think ahead five years and tell us what you think," you're going to get an answer. We're beginning to think that these are not strange times, this is the new normal. They, therefore, are beginning as a group to change their expectations. Now, that may be right. It may be a justification for using this, but heaven knows what the standard error is.

MR. RUDD. Well, so that's one reason that we use a host of different measures as well as purely statistical approaches to try to filter out what is really going on with inflation's underlying trend. That's actually what table 4 is trying to do. It's using a host of different statistical methods and different proxies for survey expectations. To be completely honest with you, we don't even know why this should matter for price setting. Why should your 10-year expectation matter for price setting? The best I can tell you is it seems to be a reasonable proxy for some stochastic trend in inflation.

MR. FISCHER. Jeremy, you're not going to get me to defend the use of that. [Laughter]

CHAIR YELLEN. President Bullard.

MR. BULLARD. Thank you, Madam Chair. I just had one question about exhibit 1, panel 2, which was the Blue Chip projections for the federal funds rate. I understood you to say that these are what the projections were as of June of all these years, and then you said that what actually happened in terms of unemployment and inflation was not that different from what the Blue Chip projected. And which year was that for? Was that for all four of these?

MR. LAUBACH. No. I can tell you for sure that for June 2014—

MR. BULLARD. June 2014?

MR. LAUBACH. Exactly. If you look at the June 2014 expectations, for example, for CPI inflation for 2015 and the Blue Chip reports' for average unemployment rate over the course of the year—in terms of CPI inflation, they were pretty much spot-on, and in terms of the unemployment rate, they were off by a few tenths.

MR. BULLARD. This is two years ahead.

MR. LAUBACH. The June 2014 expectation for the 2015 outcome.

MR. BULLARD. I just want to make sure I'm reading this right. So Blue Chip projected 200 basis points of normalization as of June 2014. Unemployment and inflation came in as expected, but they got only 25 basis points of normalization—175 basis points off. That's what you're saying?

MR. LAUBACH. That's correct.

MR. BULLARD. Thank you.

CHAIR YELLEN. Other questions? [No response] Okay. We have a reception and a dinner across the street. We will resume tomorrow at 9:00 a.m.

[Meeting recessed]

June 15 Session

CHAIR YELLEN. Good morning, everybody. Let's see. I want to first turn things over to Brian to make a short announcement.

MR. MADIGAN.[5] Thank you, Madam Chair. I'd like to note that a corrected version of one of the exhibits from yesterday's SEP briefing has been distributed and should be on the table in front of you. The version of exhibit 3 included in yesterday's SEP briefing package incorrectly showed the median federal funds rate projected for the end of 2017, a red horizontal line, as 1½ percent. The correct value is 1⅝ percent. The correct value was reflected in the initial projections package distributed to the Committee on Monday. Thank you.

CHAIR YELLEN. Okay. I think we're ready to begin our policy—

MR. FISCHER. Brian, I'm not sure that what I've got shows 1⅝ percent.

CHAIR YELLEN. You're talking about the top panel?

MR. MADIGAN. It's in the top panel, the one for the June projections. Sorry, I should have made that clear.

CHAIR YELLEN. Okay. Why don't we begin our policy go-round? We'll start with President Williams.

MR. WILLIAMS. Thank you, Madam Chair. Before I turn directly to my views on policy, I did want to make a brief comment about the memo on the new policy rule for the staff economic and financial forecast. I was planning on making this comment yesterday, but our conversation moved in a different direction, so I thought it was appropriate to make it today. First of all, I think that the approach the staff is taking is very reasonable, and that it's important for the staff—I've been in the Federal Reserve for over 20 years, and it's an ongoing issue: How

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

does the staff write down an assumption about policy to build a baseline forecast? I think the goal here is not to tell the Committee what it should be doing but to inform the Committee that, under a basic view on monetary policy, these are the consequences in terms of the outlook.

Over the 20 years I've been here, this has evolved in different ways. I think this approach—which, as I understand it, is to basically have an assumption about policy that seems to be close to the Committee's median view or something—makes sense in that it provides some clarity for all of us to understand, "Well, here's the view of policy, and then here's what the outlook would look like." So there aren't these two different things we have to figure out—what's the staff's view on policy, and what's the staff's view on the economy?—and try to discern what the two drivers of the differences in forecasts are. That said, the real point I want to make is that we do have to be cautious in interpreting what the staff assumption is about policy—in particular, that there is a "hall of mirrors" now going on. They've given us a path for policy that they think represents our views, so we have to be careful not to look at this path and maybe get comfort out of the fact that the staff's view on policy is the same as ours.

Obviously, we have all of these alternative ways of thinking about policy, with the policy rules, the optimal control experiments, and things like that. Those are important checks for thinking about how to think about the path for policy and alternatives for that. But the only point I really want to make is that often I will say things, like "My views on the forecast or policy are very similar to the staff's," and then that coherence is somehow reassuring. Well, you just don't want to do that about policy, because the staff, of course, is giving us the policy rate path that they think we essentially have in our own minds. But, again, this was a very valuable change in the approach, and I just think we have to be cautious about not getting comfort out of the fact that the staff seems to agree with our views about policy.

Turning to the outlook for policy, my baseline outlook for the dual-mandate goals has changed very little since April. We're essentially at full employment, and, while we continue to fall short of our inflation goal, the recent news on that front has been consistent with my forecast of a gradual return to 2 percent inflation. So, all else being equal, in light of where we are on our dual-mandate goals and in light of the progress I anticipate seeing over the next year or two, I think that's an economic situation that would call for a continued gradual removal of accommodation being appropriate.

Of course, not all else is equal. There is Brexit, and then there's the question that we discussed at length yesterday: What signal should we take, if any, from the May employment report? As these are acute uncertainties, which, especially in the case of Brexit, we should have better information about in a few weeks—we will get more data on the economic outlook in terms of the labor market and, more generally, economic indicators in the next month or so—as we heard from a number of people, there's a good argument for waiting, based on the fact that these uncertainties should resolve in the next month or two.

But I would reiterate that we can't always delay. There's always uncertainty in the economic outlook, and should the news between now and our next meeting in July be consistent with my forecast, I expect I will be arguing that it's time to reengage on our announced policy of a gradual removal of accommodation.

In the meantime, I am concerned about the message that we're sending with alternative B the way it's written. My modal projection, similar to the Tealbook's, is one of gradual policy normalization later this year. Our discussion here was consistent with that view. But the current version of alt-B is more dovish, if you will, even than the April statement. And if you remember what happened after the April statement, the public and market participants widely viewed this as indicating that we are on an extended hold. It's only after the minutes for the April meeting were released and some other public pronouncements that market participants even allowed for the possibility that there would be a rate hike at the next meeting, and I think we're poised for a repeat performance of that.

So, as I understand what alt-B means in the FOMC and that's the likely outcome, I do think it's important, Madam Chair, to reiterate the key messages, which I believe I heard you and others say—that the outlook remains positive in terms of our dual-mandate goals. Our plan for gradual policy normalization remains in place, and our decision to sit tight today reflects a careful balancing of the costs, benefits, and risks but is not a sign of a shift in strategy or a fundamental reassessment of the outlook for our policy goals. Thank you.

CHAIR YELLEN. Thank you. Let me just assure you that I intend, or at least I hope, to send that message in my press conference statement—that our expectation is, we remain on a gradual path that's not fixed. It's data dependent, but our expectation still is, over time, that some further increases will be appropriate if we do see the labor market on a solid path.

MR. WILLIAMS. Thank you.

CHAIR YELLEN. Okay. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Madam Chair. I support alternative B. It is appropriate to wait to see whether the employment report was anomalous. Should the Brexit vote prove uneventful, which is my expectation, and the next labor market report shows improvement, I would like to keep an open mind on appropriate policy for July.

We are now at my estimate of full employment. As corroborating evidence, wages are now showing more of an upward trend. While I am less worried about undesirably high inflation than about an unemployment rate undershoot, still the lagged effect of oil prices will soon be pushing inflation up, not down. In view of the uncertainty about how low the equilibrium interest rate might be, I would much prefer gradual increases in rates that allow us to gauge how far we have to go. I fear that we might be forced to make much quicker increases if we greatly overshoot full employment.

As I mentioned yesterday, our own election is viewed by many as far riskier than the Brexit vote. I am concerned that we might come to have the same view, which might make us reluctant to move in September, particularly because market participants will point to the Brexit vote as a reason we're not moving today. Thus, if the data improve as I expect, I would want to seriously consider a modest further removal of accommodation in July. Assurances to move later this year seem less promising than taking appropriate action relatively soon.

Because we're at full employment and nearing our inflation goal, and recognizing that we have a poor record of slowing the economy just a little bit when we have fallen well below full employment, it will likely be time to act fairly soon. While I favor a gradual path to normalization, we should not risk falling "behind the curve" and having to move rapidly to catch up. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Bullard.

MR. BULLARD. Thank you, Madam Chair. A large component of actual monetary policy is expected future monetary policy. We represent this to the public and to global financial markets via the so-called dot plot, featuring the future value of the policy rate.

The current policy rate dot plot appears to be too steep. The federal funds futures markets do not believe it. They are priced for a much shallower path of rate increases than that shown by the median dots.

Our own actual pace of rate increases has been much slower than what we mapped out in the past. We only moved once in 2015. It does not seem likely to me that we'll even move more than once in 2016. That's once per year. It would take 14 years to normalize 350 basis points at this pace.

Yesterday Thomas Laubach provided an example of the mismatch between the policy rate dots and reality. The 2014 June Blue Chip forecast was very accurate. The economy has evolved almost exactly as expected by Blue Chip between June 2014 and today. The Blue Chip forecasters should have also been right concerning the path of the policy rate between June 2014 and today. But, based in part on Committee guidance, they predicted a policy rate of around 200 basis points today. They were off by more than 150 basis points, a huge miss in this game.

This mismatch between what we are saying and what we are doing is arguably wreaking havoc in global market pricing, causing unnecessary confusion over future FOMC policy, and eroding the credibility of this Committee. Why are we doing this? First, gaps are close to zero, implying that we should set the policy rate equal to the natural rate of interest. Second, we think in terms of a long-run steady state to which the economy must converge. All variables must trend toward the steady-state values. This implies that the policy rate has a substantial upward trend. This is, in fact, reflected in our policy-rate dot plot. Even if we argue that r^* is low today, it would also have to trend back toward steady state, sending the policy rate higher in tandem.

What are the Committee reactions to this situation? One Committee reaction is to lower gradually the steady-state values over time. This is a perfectly fine thing to do, but it can send a pessimistic signal about the future of the U.S. economy. Another reaction is to stretch out the adjustment time. We've often told a headwinds story, for instance, and some of the discussion yesterday—Vice Chairman Dudley brought this up—was that the headwinds story seems to be losing credibility, as we've been using it ever since the end of the recession seven years ago.

What can be done? The policy rate dot plot logic puts too much weight on the idea that we "know" the long-run steady state of the economy. In reality, we are uncertain about the medium- and long-run outcomes for the economy. We need a manageable way to express this uncertainty. One way of doing this is to adopt a regime-based approach to the description of medium- and longer-term outcomes for the economy. The regime-based approach arguably allows one to describe the current situation for policy more accurately. In particular, in the Federal Reserve Bank of St. Louis forecast, we argue that r†, the real return on short-term government debt, is exceptionally low due to an abnormally large liquidity premium. We put this r† at minus 137 basis points. We use the regime-based argument to say that this value is unlikely to change over the forecast horizon, as opposed to some kind of slow mean reversion. So r† just stays where it is over the forecast horizon.

Combined with other elements of our forecast, this means that the optimal regime-dependent policy rate is just 63 basis points through the forecast horizon—that is, through the end of 2018. There are risks to this forecast that may imply a somewhat higher policy rate over the forecast horizon, but the baseline is for an essentially flat policy rate outlook. The regime-switching approach holds out some optimism for the future, as the economy can switch back to a high-growth and lower-liquidity-premium outcome.

Under the SEP submission I've described yesterday and today, we need only one further rate increase to get to the correct level for the policy rate, under the regime that we're in. I prefer to make that move on the back of good news about the U.S. economy. The recent jobs report was not good news, so I do not think we should move today. Accordingly, today I'm supporting alternative B as written. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Tarullo.

MR. TARULLO. Thank you, Madam Chair. I'm fine with alternative B as written. This is a text that hasn't changed a lot in the past several meetings other than the normal adjustments that are made to paragraphs 1 and 2, reflecting recent developments. And I've actually been in the camp that has favored minimal changes, certainly to the rest of the statement, because I thought the alternative was something that leaned more toward another rate increase, which is something I haven't favored.

But I do think we've got some issues to address in connection with communication, which may counsel some nontrivial changes to the statement in the not-too-distant future, including in the action paragraphs lower in the statement. I'll return to this topic in a moment.

First, I wanted to explain a bit more the way I am thinking about the future course of policy, and I'll note specifically what being data dependent means for me. Essentially, I begin from the language of the Federal Reserve Act, which instructs us to seek maximum employment consistent with price stability, not some extrapolated concept of full employment that is substantially disconnected from price inflation and thereby the second part of the mandate. Among other practical implications of pursuing this goal is that more progress in the labor market is more likely to benefit groups that are more on the margins of the labor market—blacks, Hispanics, and those generally with a weaker connection to the labor market.

As explained yesterday, a flattened Phillips curve—and, insofar as one has confidence in inflation expectations as a driving factor, well-anchored inflation expectations—makes it likely that there would be ample time for measured monetary policy reactions if the economy seemed to be overheating, rather than simply chugging along, or if inflation was demonstrably, and in a nontransitory fashion, moving not just in the direction of, but actually to, the target rate. The notion that there's enough time to react, I think, is further supported by the low equilibrium real interest rate, meaning we don't have that far to go to reach a neutral or even restrictive position, and by some of the factors mentioned by Bill Wascher in yesterday's session that may account for this low rate. I might, in passing, add to yesterday's list that the aggregated fiscal policies of the world's major economies are hardly stimulative.

I think one can remain agnostic in the larger debate that was joined by Presidents Bullard and Williams during yesterday's session but still take account of important nontransitory economic characteristics and conditions that shape the environment in which we're making monetary policy. I think those do shift from time to time and from business cycle to business cycle, and, arguably, the shifts have been even greater in the wake of the crisis.

So, for me, being data dependent means, in essence, looking for data that demonstrate, as I mentioned a moment ago, that inflation will get all of the way to 2 percent and then stay around that level on the basis of appropriate monetary policy adjustments. Now, obviously, I've been going along with statements that don't really reflect that view, and it hasn't been articulated in the minutes or elsewhere. But, in and of itself, that doesn't suggest there's a problem. It's somewhat inevitable in a collective process, and neither those of us somewhat less inclined to move nor those of us somewhat more inclined to move are going to be totally comfortable with any statement that tries to walk more down the middle of the positions of the members of the Committee.

The fairly significant range of views around this table make it a little more challenging. But, again, I don't think that's, in and of itself, a problem that needs to be corrected. I actually think the greater problem may be that the Committee's communications—taking together the statements, minutes, and rather plentiful public comments by Committee participants—may not accurately be reflecting the views of even those closest to the middle of the Committee.

What we're projecting to the public, I think, at some points is that we'll raise rates at some relatively near point in the future if the economy evolves as expected. And, particularly when this projection is augmented by the frequent references to specific meetings made publicly by members of the Committee, I think the message becomes, or is at least heard by many as suggesting, that rates will rise soon unless something pretty dramatic happens. That is, there's an inference that the Committee is pretty confident that the economy will evolve as it expects, since we're only a month or two away from the meetings being discussed.

But we've now had several occasions when things have come along—China, Brexit, and the labor market report—that, in my view, sensibly lead a majority of the Committee to want to hold back. But, as President Williams mentioned a couple of minutes ago, that message then becomes confusing, particularly as these instances add up, because at that point, I think, people are having more difficulty understanding exactly what the Committee's reaction function is.

I think the center of the Committee has, in fact, had a higher hurdle regarding another rate increase than has been perceived, although I don't think it's as high a hurdle as the one that I would fashion. I suspect this reflects some of the underlying uneasiness about the various factors that Bill and others were mentioning yesterday. So the pauses conform well to an approach that wants a higher degree of confidence that growth is not going to be thrown off track, but our communication is not reflecting that.

Now, I certainly don't have the formulation to suggest right now to adjust the communication strategy to be more accurate in communicating, certainly, where the critical mass of the center of the Committee is. But I do think we need to begin working on something, unless perhaps all of the stars align and the economy starts moving ahead vigorously in the coming months.

Perhaps the preferable option would be a more precise statement of what the data on which our decisions are dependent are supposed to be showing. I guess the fallback would simply be no real guidance or not making the pretense of actually offering any guidance, but instead having a statement that was really stripped of anything resembling forward intentionality, which would kind of reflect the fact that there was a lot of disagreement and everybody was data dependent in their own terms. But, for obvious reasons, the first path would be preferable.

Now, changing toward something different than reference to the path the Committee expects the economy to follow will very probably make it more difficult for one or the other end of the spectrum that has defined the working consensus to stay on board. Ideally, of course, we would be able to find a formulation that would accomplish that, but, at some point, the efficacy of communication and the credibility costs associated with not communicating effectively might make the tradeoff—meaning some more dissent—the better of a not entirely appealing set of options. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President George.

MS. GEORGE. Thank you, Madam Chair. I can support alternative B today, in light of the sharp slowdown in employment growth in May, along with uncertainties and potential risks to our economy associated with the looming U.K. referendum.

My own view has been that our policy actions have not kept pace with the strengthening of the economy and our outlook for inflation and unemployment. Because monetary policy affects the economy with a lag, steps to withdraw accommodation ought to be initiated before our goals are fully reached. In view of the current level of unemployment and actual and expected increases in inflation, we look to be approaching, if not close to achieving, our mandated goals. For that reason, I believe that, as described in alternative C, "a modest increase in the federal funds rate will likely be appropriate in coming months if incoming information confirms . . . expectations for economic activity, the labor market, and inflation."

While the May employment report was particularly disappointing, I believe it should be viewed in the context of a labor market that is at or near full employment, a secularly declining labor force participation rate, and a potential growth rate that has likely fallen below 2 percent. I would not expect to continue seeing the kinds of increases in employment we saw in the first quarter, nor should we expect broad strengthening of labor market indicators, but rather, moderate job gains consistent with maintaining full employment.

If structural factors are restraining productivity and labor force growth, our monetary policy may be pushing against the economy's productive capacity. In this situation, it would be appropriate, in my view, to continue gradually removing accommodation even with a lower terminal rate in mind. Thank you.

CHAIR YELLEN. Thank you. President Harker.

MR. HARKER. Thank you, Madam Chair. In light of the recent disappointing employment report, I am supportive of no change in the funds rate at this meeting. Inflation is only gradually returning to target, and some patience is called for as more data allow us to better assess whether the falloff in employment is transitory or a signal of a more persistent decline in the demand for labor.

With many other labor market indicators still appearing healthy, my modal outlook is for employment growth to return to a pace greater than a mere replacement rate but not to return to the robust numbers that characterized its behavior over much of last year. If that scenario was to unfold, I would favor a move in July, conditional on the Brexit vote and subsequent market reactions.

Regarding alternative B, however, my impression is that the language does not adequately prepare the public for that possibility. Most significantly, substantial intermeeting communication would be required to make July a live meeting. If others share my view of the economy and the language, then some modification of paragraph 1 would, I think, prove useful. Specifically, I suggest that the second sentence be changed to the following: "Job gains have diminished, but the unemployment rate has declined and other labor market indicators appear healthy."

Wage growth is improving, new claims remain at low levels, and my overall reading of the JOLTS report is that the labor market remains vibrant. Now, granted, the JOLTS data are for April, as mentioned yesterday. But I think it is unlikely that we will see a game-changing shift in May. At least, my contacts in my region largely leave me with the opposite impression.

So I am skeptical that the language in alternative B adequately leaves July on the table, and I strongly believe that the appropriate policy will require every meeting to be viewed as live. The language in alternative C is probably a bit too aggressive for my taste. So, with that in mind, I would like to propose alternative language in paragraph 1 for alternative B. Thank you, Madam Chair.

CHAIR YELLEN. Could you say again your suggestion?

MR. HARKER. Sure. "Job gains have diminished, but the unemployment rate has declined and other labor market indicators appear healthy." I'm just arguing for a slightly more balanced view of the labor market.

CHAIR YELLEN. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Madam Chair. I do believe we are moving closer to achieving our dual-mandate objectives regarding unemployment and inflation, and I think I would be comfortable if paragraph 1 maybe reflected that to a greater, more balanced degree.

Having said that, I'm also sensitive to the fact that sluggish, longer-term U.S. growth prospects have combined with expanded worldwide demand for safe assets and a weak and uncertain economic and political outlook abroad to put downward pressure on the real federal funds rate. The implication for me is that monetary policy is less accommodative at a given federal funds rate setting than might have been expected previously. Global financial integration means that financial market conditions are sensitive to increases in the level of U.S. short-term rates relative to foreign rates. And as long as the foreign economic outlook remains subdued, I am supportive of a shallower path for U.S. interest rates.

What does all of this mean for today's decision? I was not, specifically, as much concerned by the weak May employment report as such. But I am worried about the fact that it was, to me, the third consecutive month of a slowing in job growth, although, I think, within the context of a strong jobs market. Also, I note the falloff in the ISM nonmanufacturing survey, and I am struck by the fact that, although different than some of the anecdotes given around the room, the anecdotal reports I am getting from business contacts are more mixed. Obviously, when you overlay on that the potential fallout from the Brexit vote, I certainly agree with being patient before removing accommodation. And if current policy is only mildly accommodative, I think we can afford to exercise some patience.

Beyond this meeting, I will be in a wait-and-see mode regarding upcoming economic data that would reaffirm my GDP forecast and give me confidence in continued improvement in the jobs market as well as continued progress in reaching our 2 percent medium-term inflation target. I'm very open that we may, in fact, get that confirming data in the near future.

More broadly, though, I would say my assessment of conditions reinforces my view that economic policy aside from monetary policy—that is, structural reforms and fiscal policy—is going to be necessary to address key secular trends we've been talking about: aging demographics; high levels of debt to GDP, which, at a minimum, make fiscal policy more difficult; the impact of globalization; and the growing effects of disruption, which are increasingly creating dislocations across industries. Examples of actions outside monetary policy include appropriate immigration reform; infrastructure spending; investment in education, particularly with an emphasis on public-private partnerships for vocational training and retraining; and a thorough review and cost-benefit analysis of regulation at the state, local, and national levels. All of these need to be considered.

While paralysis has been prevalent over the past eight years, I believe we are now entering a phase in which policy options must be broadened beyond monetary policy. And if I take President Bullard's approach, to break out of this regime, I think we're going to need actions beyond just monetary policy. We're going to need to find ways to increase real GDP growth.

In the meantime, debt is growing faster than nominal GDP, and therefore we are becoming more leveraged in the United States, for sure, and across advanced economies. This will ultimately have implications for the future. Actions beyond monetary policy are going to be necessary to fuel improved GDP growth, and I think it'll be worth noting that increasingly in the future in our public comments. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Evans.

MR. EVANS. Thank you, Madam Chair. For today, I support alternative B, but I have to say that my support is largely because the Committee has already so strongly signaled that conditions may seem to be about right for policy renormalization to continue. I'm far from confident that this signal is appropriate now, but reversing course would be a very big step. Still, if conditions deteriorate sufficiently to justify seriously reconsidering the conditions required to resume renormalization, then I'd find alternative A rather attractive.

I have to say that I'm sympathetic to Governor Tarullo's communications concerns, his emphasis on the maximum-employment mandate, and his emphasis on data dependence as it relates to inflation. I'm also sympathetic to President Bullard's concern over the effect that our communications risk sort of Delphic interpretations of what we're doing, and that every time we delay, it indicates that maybe we have less confidence that the economy is recovering as strongly. Something different might help.

In particular, I'm drawn to the forward guidance in alternative A that says "The Committee judges that an increase in the target range will not be warranted until the risks to the outlook are more closely balanced and inflation moves closer to 2 percent on a sustained basis." It's that 2 percent that I find attractive. It would be less Delphic.

Let me explain why this seems attractive. The Committee has strongly communicated that the timing and size of future adjustments to the federal funds rate will be determined by our confidence in achieving our employment and inflation objectives. This is an appropriate outcome-based policy commitment. An important question is, how far ahead of actual inflation should we be increasing rates? Our experience from the 1970s suggests that "falling behind the curve" risks an unacceptable overshooting of our inflation target. Lags in both the inflation process and the effects of monetary policy on the economy play strong roles in this assessment.

The 1970s are clearly an important historical lesson we will always remember. But failing to account for these lags was probably less critical than was our lack of appreciation for the slowdown in potential output and for the role of expectations in the inflationary process.

Changes in potential output and inflation expectations are key to our policy discussions today as well, but we're in a much different place now. Humility is always wise, but we certainly seem well attuned to the likelihood that potential output growth, both in the United States and around the world, has been and will likely continue to be quite weak for some time to come.

With regard to inflation expectations, instead of being elevated seven years into this business expansion, today we face a strong risk that expectations may persistently fall short of our 2 percent target. There also is a sense in which today's downside risks to inflation expectations are distinctly different than the upside risks in the 1970s. Back then, the risks probably came from the public's doubt that we would do the right thing and bring inflation under control. The public worried that we lacked the courage to stabilize inflation at a reasonable level. Today, with the lower bound still staring us in the face, the public may think we lack the ability to stabilize inflation at our target. That kind of possibility really worries me.

So, for me, the language in alternative A has a lot going for it. In order to have strong enough confidence that the United States will get to 2 percent inflation, it may be best to hold off raising interest rates until we are at 2 percent on a sustained basis. First, the sluggish world economy argues that equilibrium rates are low and likely to rise only slowly. With an unchanged federal funds rate target, sustained higher inflation would be one signal that the current low rate has become overly accommodative whenever r^* is on the increase. If r^* increases markedly and inflation rises, policy rates should track these improvements to the degree appropriate.

Second, such a commitment could be necessary to solidify currently low inflation expectations and allow expectations to increase and assert an upward pull on actual inflation. As I noted yesterday, if this does not occur, I doubt the upward force from other factors will be adequate to bring inflation back to target over the forecast period.

Third, with downside risks large, losing credibility on the downside would make it all that more difficult to reach our inflation target. In view of how close we are to the lower bound, the most effective policy available to counter these risks is forward guidance that powerfully articulates our commitment to hitting our symmetric 2 percent inflation target sooner rather than later. Language in alt-A does that better.

As many have also said, on the other side of the ledger, the upside risks on inflation seem much smaller. Currently, financial market bets on core inflation rising above 2½ percent are minimal, and the odds on 3 or 4 percent are truly small. Would such upside risks increase substantially under alternative A? Golly, the purpose would be to move inflation expectations up, so I hope so. That's not currently likely, in view of the shallow path of market expectations today. And when inflation does rise more sustainably to 2 percent, we know how to respond.

Where does this leave us? Asymmetric risks, asymmetric policy tools, and risk management—to me, they all come down to being very patient in our normalization process. My alt-B-consistent SEP submission has one 25 basis point increase in the funds rate this year, three next year, and four in 2018.

Although I see the argument for altering my policy-rate assumption, notably along the lines of alternative A, I take this Committee's previous communications very seriously. At the moment, since today I think a funds rate range of 50 to 75 basis points at the end of 2016 may be okay, I wouldn't dissent over alternative B–like slow and gradual increases, which are not too much steeper than mine, as long as the relevant outcomes are close enough to both mandate responsibilities. But if more adverse developments occur than we have assumed in the Tealbook, then I think it would be time to bring something like alternative A onto the table for discussion. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Powell.

MR. POWELL. Thank you, Madam Chair. I support alternative B as written. As to President Harker's proposed language, I'll just say that I don't think it's unreasonable. But to shift in the direction of taking positive signal from a decline in the unemployment rate that is driven entirely by a decline in participation is probably not the right thing. I think I would see it as a healthier thing if participation had remained high rather than dropping significantly. So I prefer the current language.

My baseline narrative is still for 2 percent growth and job creation continuing at a healthy pace. But the recent weakening in job creation has materially increased uncertainty about the underlying state and momentum of the economy. To see a case for moving at the July meeting, I would need some confirming evidence that the April and May employment reports, taken together, are anomalous. It would be particularly helpful to see upward revisions for those months as well as a strong labor report for June. In addition, polls suggest an increasing chance that the Brexit vote will be in favor of leaving the EU. There could well be significant market reaction, and, although I don't see this as anything like a systemic event, that outcome could be another factor calling for patience in July on the Committee's part.

As of now, the market is currently pricing in about a 15 percent possibility of a move at the July meeting, and that feels about right to me. To move ahead with a program of gradual tightening, I would want to be confident of continued labor market strength, with an increase in payroll jobs of at least 150,000 or 175,000. In view of the uncertainty generated by the apparent break in the level of job creation, I'd be inclined to let the data clarify things for a while before raising the federal funds rate again. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Fischer.

MR. FISCHER. Thank you, Madam Chair. I'd like to first make my policy round statement and then add a few comments on the discussion we're also having about our overall strategy.

Our discussion yesterday made it clear that we need to take time to await both the Brexit decision on Thursday, June 23, and further evidence on the significance of the extremely low payroll data we received on June 3. The FOMC meeting after this one is on July 26 and 27. By then, we'll have had over a month to absorb and, if necessary, to react to the results of the Brexit vote. We'll have had two and a half weeks to absorb the payrolls data that will be published on Friday, July 8, as well as the other economic and financial information, including data on June retail and motor vehicle sales and data on May capital goods and trade, that we will receive over the intermeeting period.

Although the odds are that we will not have enough evidence by the time of the July meeting to justify a decision to change the interest rate, we should be careful in our communications not to rule out a July decision until we've had time to discuss and analyze the incoming data and to make a well-based decision as to whether to move in July or to await additional information on the economic outlook. On that score, I'd emphasize that we're close to our full employment objective, that the underlying pace of inflation is not far from 2 percent, and that our best guess at the value of the equilibrium real federal funds rate is near but above zero. Depending on the data, it could be appropriate to take another cautious policy step in July.

Now, that's the statement I prepared for this, and I think it is consistent with what most people have said. I'd like to take up for a few minutes the discussion that has been developing over the overall strategy, and let me start with the hall-of-mirrors phrase of President Williams, which, when I first heard about that problem, was described as the "monkey in the mirror" problem. And you described it very well as an interaction between what the staff says and what we say. The staff made, in my mind, one change that we really all noticed and which possibly nearly all took into account—namely, they lowered their r^* estimate by ¼ percentage point. The SEP median long-run federal funds rate number also went down by ¼ percentage point. I'm not sure whether we could find out what the influence of the staff's reduction was on what people wrote down in the SEP, but I suspect there was some influence.

What I'd like to get to is the issue that we're on: What are we looking for? There's a tradition in the United States that you get going on a long path that moves in one direction for a very long time. We don't engage in interest rates that go up, then sometimes go down on the path, and then go up on the path, although we may be in a situation today where, if that was the way we were thinking, we'd be more willing to reduce the rate to deal with a little local disturbance and to see where it takes us than in the mindset we all have. Are we for raising the rate to 3 percent, or are we for reducing it to the effective lower bound?

That's what we implicitly are thinking about when we're discussing whether we want to raise the rate or whether we don't. And I have some sympathy for what I've heard from Governor Tarullo, from President Bullard, and from almost everyone who spoke of the view that this is a situation where, if we were willing to go up and down from time to time along the path we're taking, we'd possibly do better.

Now, that's fine-tuning. Well, for those of us who grew up with radios before they had buttons, fine-tuning is actually something that's desirable. You really want to hit the station on the nose, not approximately. So let's leave the emotional baggage that comes with fine-tuning: "These guys are always trying to get the economy precisely where they want it—terrible guys," which is the sort of story we're being told about fine-tuning. We know that we will get to the steady state with the feedback rules we're using now. We won't be doing it by reference to a path that leads in three and a quarter years, or however many years it is, to the steady state that we're looking for. But the steady state of a model that has a monetary feedback rule of the sort we're using will end up at the steady state that these steady paths take us to.

So I keep wondering whether we shouldn't be a little more willing to go up and to go down. There's the same point, incidentally, just as a footnote to a footnote, that you should be willing to move when you're near the lower bound. If you're willing to go back down after you've moved up, then it's no big deal moving up if that's what looks like reasonably the right thing to do at the moment. If you're not willing to go down, then you're in a whole other world in which you've got to look all of the way through to the end of the horizon, and I don't think we need to take that viewpoint.

Now, that would be a reasonably radical change in the way the FOMC has always behaved. So I'm talking about it not with the idea of asking anybody to accept that possibility tomorrow morning or at the next meeting, but to put it in people's heads that we really need to think about whether what we're doing each time we vote is deciding where we're going over the next three years or deciding where we're going over the next two months.

I don't think we need to decide where we're going over the next three years. We'd have to keep the markets informed of what we're doing—that we're not going off on these long treks to the steady state—and ask ourselves whether there's anything wrong with that approach as opposed to the one we're doing.

And this has now come back to the hall of mirrors. Our thinking—well, I have to speak only for myself. I'm not allowed to refer to what other people on the Committee think. Is that right, Madam Chair?

CHAIR YELLEN. You can in here.

MR. FISCHER. In here I can do it.

CHAIR YELLEN. Not outside.

MR. FISCHER. Our thinking is heavily influenced by the nature of the forecast that we get from the staff in the SEP process. Those forecasts are monotonic approaches to the steady state, and I'm not sure that it's the best strategy to operate in that way.

What you're doing with fine-tuning is a strategy that most of us know is called hill climbing. Hill climbing says that you change gears when you go up and you change gears when you go down, and what you do depends on what you encounter en route. Economies get buffeted around, and it doesn't mean that when we see a—let's suppose that Brexit was a bigger deal than it is now. It would have been rational in facing a big thing like Brexit to say, "Okay, we're going to take the rate down for a while because we may have to deal with this problem, but we don't intend to keep it down forever. That's not a sign that we're heading off in the direction of the effective lower bound." That's footnote 1.

Footnote 2 is, I had a discussion with Jeremy Rudd yesterday, in which I think I wasn't accurate enough, and I just want to come back to it. See, the trouble is, I took a shower between yesterday and today, and I tend to think in the shower but not elsewhere. So here we are. [Laughter]

This is what I really wanted to say about fixed long-term expectations of inflation and what's happening in the Michigan survey. I think that we put far too much emphasis on the fixity of long-run expectations, and that it is not stupid in a model with learning to have the expected inflation rate react to actual inflation. Now, you could call that adaptive expectations and get all upset because it's not optimal, but there are models in which it is optimal. My view is that people should, after several years, actually begin to pay attention to the environment and say, "My gosh, maybe we're not actually going back to the target rate now, over the next three years, or over the next five years." Furthermore, our world of inflation will not come to an end if the expected inflation rate starts moving. We just have to deal with that, and we deal with it by probably making our policy a little more active and a little stronger in relation to what's going on. But it's not the end of the world.

Models work when people's expectations change, and we've got ourselves into a situation that I think is implausible. It requires the public to hold its expectation of the five-year inflation rate fixed. I think that the expectation may stay fixed only because somebody's put a number out there and, when asked the question "What is it going to be 10 years from now?" they say, "Well, I don't know, but those guys say they're going to keep it at 2 percent, so, well, I'll write down 2 percent. Am I certain that the Congress is not going to change the Federal Reserve law? Well, I'd like to be," et cetera. So there are lots of reasons to think that the 2 percent we write down is not the only number that could be there if we asked people a whole series of other questions.

What I should have said yesterday was, we shouldn't be so worried about a move in the expected inflation rate, because that's how people ought to behave. And it's rational to base your expectations on what's actually happening, particularly when it's been going on for a very long time. Our models should possibly even include that, and we could deal with that. It would have some implications for the optimal policies of the moment, and it might tie in with the first footnote I was talking about. But I can see, Madam Chair, that I've used my spare time from my very short introductory statement to—

CHAIR YELLEN. Well, fortunately, we have lots of time. Very good comments.

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

CHAIR YELLEN. That gives us a lot to think about. President Mester.

MS. MESTER. Thank you, Madam Chair. In light of my outlook and the risks, I believe a gradual upward path of interest rates over the forecast horizon remains appropriate.

In terms of the statement, I prefer alternative C. I believe its characterization of economic developments over the intermeeting period is more reflective of my views. In my view, alternative B has a more negative tone that places too much weight on the disappointing May employment report. Also, unlike alternative C, alternative B doesn't acknowledge the increase in inflation we've been seeing over time.

I also prefer alternative C's language in paragraph 3 about the anticipated path of the policy rate. The language does not lock the Committee in. It still conveys the message that our policy actions are dependent on how the economy evolves, but it makes it clear that if the data remain consistent with the Committee's expectations for economic activity, the labor market, and inflation, then the Committee will likely make another increase in the federal funds rate target in coming months. And this seems to be consistent with the SEP median path.

More generally, I'm becoming increasingly concerned that the FOMC statements are not providing enough information to help the public understand the Committee's reaction function—that is, its systematic reaction to incoming information that changes the economic outlook. As

I've said at previous meetings, while the statement's first paragraph delineates some of the changes in incoming information observed since the preceding meeting, it does little to suggest how that information has affected the outlook or how the Committee is translating that information into action or inaction.

The danger of leaving the statement vague is that it gives the impression that the Committee is acting in a discretionary manner. Instead, I believe it's crucial that we react to the data in a systematic and disciplined way, using our models and analytics to decipher incoming information and its implications for the outlook. This systematic approach is critical to making the best policy decisions and to effectively communicating to the public our decisions and rationale for those decisions.

The Committee continues to indicate that it views a gradual upward path of rates as appropriate and consistent with our outlook. The SEP suggests that most participants continue to view such a path as appropriate. The Committee has acknowledged there are uncertainties, but it has not suggested to the public that its outlook has materially changed. Yet we are very reluctant, in light of the uncertainties, to take another step on the gradual path. How long can we keep the statement and policy in stasis without undermining our credibility?

If the Committee's views have changed and the consensus view now is that policy is likely to be on hold for quite some time, then we need to communicate that to the public in a transparent way rather than relying on a vague statement like alternative B. And if, as Governor Tarullo says, that delivers more dissent, so be it.

Were it not for the upcoming Brexit vote, with its potential for increased volatility and disruption in financial markets, I would be advocating increasing the rate at this meeting, on the basis of the economic outlook. I can go along with holding off at this meeting, but if the data continue to support the current outlook, I believe it will be appropriate to raise the funds rate very soon. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lacker.

MR. LACKER. Thank you, Madam Chair. The discussion today occurs under the long shadow cast by the May employment report. As I pointed out yesterday, how one interprets the apparent slowdown in employment growth has strong implications for policy and for how our statement should read.

I argued yesterday that the evidence favored the view that job growth is being restrained increasingly by binding labor market constraints rather than an undesired slowdown in demand in the face of continued labor market slack. Accordingly, I think we should use the statement to communicate to the public that somewhat lower future employment growth is likely to be consistent with achieving our mandate for maximum sustainable employment and does not necessarily call for an easier policy rate path. To the extent that lower employment growth reflects tighter resource constraints, then more rapid increases in the funds rate are going to be warranted.

With this in mind, I have some suggestions. When our policy statement refers to improvement in labor market conditions, as it does in paragraphs 1 and 3 of alternative B, it implies that there is still a meaningful employment gap monetary policy can and should counteract. But that seems at odds with the SEP, as the median unemployment rate in the SEP is below the median longer-run normal level. I think it would have been appropriate to back away from this type of language even without the low May employment growth number. That number makes the issue more urgent, though, because it suggests that further improvement in labor market conditions may not be desirable or even attainable in the near term.

Alternative C contains some constructive changes along these lines. Paragraph 2 drops the word "strengthen," and it states that employment growth "will expand at moderate rates," instead of "labor market indicators will continue to strengthen." And paragraph 3 of alternative C states that "the stance of monetary policy remains accommodative, thereby supporting further strengthening in labor market conditions," instead of "further improvement in labor market conditions."

The word "strengthening" is better than "improvement," in my mind, but I think both words imply the existence of a gap relative to some normative benchmark. So, as an alternative to the second sentence in alt-B(3), I'd propose that we say "The stance of monetary policy remains accommodative, thereby supporting a return to 2 percent inflation in the context of stable labor market conditions." Or we could say "in the context of continued employment growth." This formulation would convey that we no longer view ourselves as closing positive labor resource utilization gaps. In light of the fact that, for the SEP, all but one participant wrote down longer-run unemployment rates greater than or equal to the current unemployment rate, I think this is a change that almost all of us should support—if not at this meeting, then very soon.

More broadly, I think there's a need to pay heed to our most recent intermeeting experience with communication. My recollection of our April discussion was that our intention was for the April statement to signal that a June move was clearly on the table, and that it would be appropriate if the data flow was reasonably close to our expectations. Yet markets came out of that meeting placing very little probability on us moving in June, at least until the release of the April minutes, and my fear is that alternative B as written is likely to have as little effect on market expectations as the April statement and will still leave, again, a sizable gap between market views and the Committee's expectations. So I'd favor communicating more forcefully about our intention to raise rates, as in the language in paragraph 3 of alternative C, which says that "a modest increase in the federal funds rate will likely be appropriate in coming months."

Alternatively, President Harker's suggestion is attractive to me. I recognize Governor Powell's observation about the decline in the unemployment rate being attributable to a decline in the labor force participation rate. The other perspective on that confluence is that the upward move in labor force participation in recent months was anomalous itself and we're back on trend with respect to labor force participation. This unemployment rate of 4.7 percent is more consistent with that broad movement.

I again want to follow up on something President Williams said, this time about the staff's memo on the new policy rule. I take it that the economy affects policy via the reaction function, and that policy rules and reaction functions affect the economy. And outcomes are the joint product of the interaction of the two. I can understand the staff realigning their assumption about the reaction function and aligning theirs with the Committee's more closely. That makes perfect sense.

But the staff didn't alter their forecast. They made an offsetting change in their implied assessment of the effect of monetary policy on the economy. I take as a supposition that they provide us with their own best independent assessment of the effects of alternative monetary policy strategies in the economy. I know the Committee members are smart, but we're not that smart, and that's why we need an outstanding professional staff like the one we have. So I hope that they feel as if they can provide us with their own best judgment rather than adopting our implied assessment of the effects of policy on the economy. Thank you.

CHAIR YELLEN. President Lacker, would you read again your proposed change in paragraph 3? "The stance of monetary policy remains accommodative"—what?

MR. LACKER. I'd be delighted, Madam Chair. "The stance of monetary policy remains accommodative, thereby supporting a return to 2 percent inflation in the context of stable labor market conditions." And I also offered a variant. We could say "in the context of continued employment growth."

MR. WILCOX. Madam Chair, may I clarify one aspect of the handling of the change in the policy rule and its role in the forecast?

CHAIR YELLEN. Yes, please.

MR. WILCOX. There were two components. One was an adjustment to the long-run *r**, and for that one, indeed, we took the long-run *r** down by 25 basis points and didn't allow that to show through in the form of greater strength in aggregate demand, because it was our assessment that that reflected a change in our view about what level of interest rates would be consistent with attainment and maintenance of the dual mandate.

We did allow the other one, the adjustment to the intercept in the near term, to show through to the forecast. Now, it does so in line with FRB/US simulations, and those simulations indicate that the effect on the near-term outlook for economic activity and inflation is very modest. But it is there in principle, and I think that's important to note.

In fact, we spent a great deal of time thinking as well about the hall of mirrors. I think the fact that we have kept track of the influence of the change in the profile of the short rate and reflected that in the economic projection provides some reassurance, although I take the point very seriously that we need to be careful about engaging in sort of a hall of mirrors. But if the policy that we use to construct the baseline would, in our judgment, drive economic activity away from attainment of the dual mandate, we'll do our level best to show that.

The last point I'd like to make is that the policy rule—very deliberately, I think—has never been meant to have an element of optimality or staff recommendation. In fact, we've shied away very much from that. It's our view that you're not looking to us in Tealbook A to recommend an optimal monetary policy but to give you a sensible vehicle to use as a foil for your discussion.

MR. LACKER. Thank you very much, David. That was a really helpful clarification. I appreciate it.

CHAIR YELLEN. President Kashkari.

MR. KASHKARI. Thank you, Madam Chair. I am comfortable with alternative B, and, like many members of the Committee, I want to see how the labor market evolves—how much of what we recently saw was noise and how much was signal. As I mentioned yesterday, I'm also thinking a lot about what we're seeing in the global economy. As others have noted, inflation can be global or it can be local. In the 1970s, we saw high global inflation. Today we're seeing low global inflation, with many major economies at or below the zero lower bound. I'm trying to understand what this global inflation and this global context mean for the risks that we face in our decisions, and I think about four different scenarios. One scenario is that the whole world reverses and we see increasing inflation globally in the next few years. This strikes me as quite unlikely, though not impossible. I think it would be a positive development, and we all agree that central banks have the necessary tools to keep inflation in check.

A second scenario, which also seems quite unlikely to me, is that the United States experiences increasing inflation while the rest of the world is stuck effectively at zero. Again, I would argue that this would be a positive development, and we have the tools and the will necessary to keep inflation in check.

A third scenario would be that the rest of the world experiences high inflation and we're stuck with low inflation. I think this is extremely unlikely.

But then the final and most likely scenario, in my mind, is that the world continues to experience low inflation globally. We all acknowledge that central banks have fewer tools to address this than to address high inflation.

For me, in light of these scenarios and the asymmetric risks associated with them, I don't see a compelling reason to "normalize" rates for the sake of normalizing them in the absence of sustained increases in inflation, inflation expectations, or financial-stability risks. To me, unless something changes, raising rates in this context wouldn't be normalizing them. It would be "abnormalizing" them. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Madam Chair. I support alternative B, and I'm comfortable with the statement as written.

While my outlook for the economy has not changed materially since the April meeting, the mixed and sometimes conflicting information received over the intermeeting period definitely leaves me questioning somewhat more the underlying strength of the economy. So I think it's sensible to wait for more information over the coming weeks in hopes of arriving at greater clarity about the true health of the economy.

Given that leaning, the uncertainty regarding the Brexit matter makes it easy for me to support alternative B. If the domestic economy was unambiguous and positive—that is, if we had a less concerning May employment report—it would be a harder call, in my opinion, and I would probably support action today, as President Mester suggested.

Looking ahead to the July meeting, I think Governor Tarullo described the situation very well. I could even call it something of a dilemma. I come out at a little different place, but I very much appreciate the description of the communication issues that we're facing.

My starting point is a bias—call that a soft lean—in favor of moving at the July meeting, while I would indicate with that little about any subsequent rate increases. I'll be looking at the second-quarter GDP picture, which will firm up—that is, the confidence interval around the ultimate reading will narrow—as the meeting approaches. And I'll be looking closely at the June employment report, of course. A number for the jobs report of 150,000 net of the Verizon effect was mentioned yesterday, and Governor Powell mentioned it a few moments ago, along with some other criteria. That strikes me as reasonable. It's above the number required to cover labor force growth. Since there will be, relatively speaking, a dearth of data before the July meeting, it appears that a lot is going to ride on the June employment report. We collectively may have to work hard to position what an acceptable employment report will be.

How an acceptable employment report is framed in the context of other data, particularly the data that speak to growth momentum, may very well be the factor that swings our decision in July. The approach I intend to apply is to look for evidence that invalidates my baseline assumptions about the path of the economy, as opposed to an approach that requires something like building the case for a move from a zero base. This may be a somewhat lower bar than that applied by some of my colleagues around the table.

I'd like to express a broad concern. I'm concerned that we're dealing with economic conditions that will likely be ambiguous, and there will always be data that give some pause. So my posture in the next few weeks will be a soft lean in favor of a rate increase in July while watching for evidence that disproves my assumption that the economy is on a steady path. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Governor Brainard.

MS. BRAINARD. Thank you, Madam Chair. I support alternative B with no changes.

The mixed data we have in hand to date could plausibly be consistent with very different scenarios for the outlook—one in which resource constraints are binding, one in which we're seeing the beginning of a downshift in activity, and one in which we continue to make very slow progress. Each of these scenarios would call for a very different policy response. I thus want to be sensitive to the consequences if the economy evolves in a way consistent with a different economic scenario than assumed, as well as the risks.

In determining appropriate policy, we're going to need to assess not just what scenario best describes the incoming data, but also what risks are associated with that particular path. While there are upside risks to inflation in the scenario featuring binding resource constraints, I believe we're relatively well positioned, relying solely on conventional policy, to deal with this eventuality. In contrast, I continue to see downside risks to both inflation and activity that would pose greater challenges to sole reliance on conventional policy, due to the asymmetry prevailing near the effective lower bound in the other two scenarios. Let me spend a moment on each of these.

Suppose the outlook turns out to be best described as increasingly subject to binding resource constraints that imply that inflationary pressures in the period ahead are larger than we currently anticipate while labor market improvement slows notably. Arguably, we have ample room to adjust to such a contingency using conventional tools that are well calibrated, on the basis of ample historical experience.

Especially in view of the depressed global environment, if markets came to expect a steeper policy rate path here than in other countries, this greater divergence in rates would be expected to have a strong effect on the dollar, which would reinforce our policy rate path. Indeed, the evidence the staff has presented suggests that, over the past year, dollar exchange rate movements have become considerably greater in response to those kinds of anticipated changes. As a result, I would expect the policy shift needed to address greater-than-expected inflationary pressures to be relatively moderate. Even so, a possible danger is that the path of policy needed to respond would be so steep and the policy change so abrupt that it would tip the economy into recession. But such a scenario would likely occur only if inflation expectations became unanchored or if the rise in inflation was quite rapid. For a variety of reasons that people have spoken about around this table, that seems pretty unlikely.

In contrast, if we think that additional data are likely to validate a downshift in activity or even continued slow progress, when the economy is hit by an adverse shock, such as financial turbulence in response to an unexpected Brexit vote outcome or a reemergence of financial stress associated with China's exchange rate or financial imbalances, in responding to such events we might need to rely on unconventional policies, which are less tested and themselves likely to be subject to constraints. In addition, fiscal policy is likely to be constrained. As a result, the risk the economy faces from negative demand shocks is greater than that faced from positive shocks in the presence of steeply sloped supply curves.

My sense of the danger of downside risks is informed by the other side of the cautionary-tale spectrum that President Evans was referring to—in particular, the experience of two other major advanced economies, Japan and the euro area. Most observers would likely conclude in hindsight that monetary policy should have been more forceful earlier on in counteracting weak demand. For a variety of reasons, it didn't happen. It could be that some policymakers thought that if the forces holding down demand and inflation were stronger and more persistent than expected, more accommodative policy could be pursued farther down the road. But perhaps few anticipated how difficult it would be to move inflation back to target in such a contingency.

Recently, policymakers in both economic areas have been both determined and creative in their efforts. Yet many observers, including Board staff, expect inflation in the euro area to fall short of its target throughout the medium term, and that inflation in Japan will not even come close to its target. Such persistent underperformance not only damages the credibility of inflation targets, but also leaves these economies very vulnerable to adverse demand shocks.

On balance, prudent risk management would argue for waiting until the totality of the data provides greater confidence in a rebound in domestic activity and there's greater certainty regarding the Brexit vote, especially because of the amplified feedback loop operating through exchange rate and financial market channels.

In addition, the appropriate path to return monetary policy to a neutral stance looks like it could be even more shallow and gradual in the medium term than we may previously have anticipated, because it increasingly appears likely that the medium-term neutral rate may be quite low. Earlier in the recovery, it seemed likely that the low level of the neutral rate was largely due to temporary factors that we described as cyclical headwinds, such as tight credit, weak consumer confidence, and the loss in household wealth following the crisis. However, with the recovery well into its seventh full year, credit in many markets is widely available, and consumer confidence and household net worth are at high levels. As a result, it appears more likely that much of the decline in the neutral rate is likely to prove quite persistent, consistent with a variety of estimates. With productivity running very low, substantial overcapacity and disinflationary pressures abroad, and less favorable demographics, the medium-term neutral rate may be lower and today's federal funds rate closer to neutral than we previously anticipated. Thank you, Madam Chair.

CHAIR YELLEN. Thank you. Vice Chairman.

VICE CHAIRMAN DUDLEY. Thank you, Madam Chair. I support alternative B. I don't see a good case for tightening monetary policy at this meeting. I don't think the outlook supports it, in view of the uncertainties raised by the employment report. Even if the data there were a bit better, risk-management considerations would argue for deferring such a decision until after the Brexit vote next week.

Looking forward, I don't yet see a compelling narrative pushing for a July rate hike. Now, if the forthcoming data were very strong, then I might be willing to move in July. But it seems to me it will likely take longer to resolve some of the uncertainties about the outlook raised by the recent data. So what I'm thinking about the next rate hike, if there is going to be a next rate hike, is that September seems more likely, in my mind. The statement, along with the SEP, will probably be read that way. The probability of July probably will drop a little bit further with the statement and the SEP because the SEP revisions, I think, are going to be bigger downward revisions than what market participants are expecting.

More broadly, I worry that we may have become a bit biased in terms of how we think about monetary policy right now. The goal seems to be to normalize the federal funds rate, and that seems to be the default view. By "normalizing," it means pushing up the federal funds rate methodically in coming quarters to some long-run value that is well above where we are right now. I don't accept the notion that we should necessarily be committed to a project to push up the federal funds rate. I think we should only do it if it's consistent with our dual-mandate objectives.

It's possible that the current federal funds rate setting is very close to the equilibrium real short-term interest rate, and it's also possible that the headwinds keeping the equilibrium short-term rate low will not dissipate further. We could find that the appropriate monetary policy would be to keep the federal funds rate at the current level for many quarters. Now, that's a depressing thought, perhaps, but maybe the normalization project has been largely completed, at least until Europe and Japan get closer to ending their extraordinary sets of policy. I think our monetary policy is increasingly going to depend on what happens elsewhere in the world. This is reinforcing things that Governor Brainard just said.

I also think our focus on Taylor rule formulations push us maybe in the wrong direction. They reinforce the notion that policy is very accommodative, and that interest rates need to move up in the near future. Now, maybe that guidance is right. But, as I've said for many meetings, I think it's hard to square the Taylor-rule formulations with the data that we're actually seeing. And I worry that using the Taylor rule as our guide to policy introduces a bias in terms of our monetary policy deliberations that could lead to policy error. I was pleased to see the staff do the realignment to the Taylor rule in the recent Tealbook. So that brings the staff forecast, I think, more in line with the Committee.

I would argue, though, that the staff isn't quite there yet, and I'll just give you an example of this. In the Tealbook, there's a scenario called "Disorderly Brexit," and in the "Disorderly Brexit" scenario, the economy slows, the unemployment rate rises, and inflation falls. Yet, because of the inertial Taylor rule, policy continues to tighten. I would find it bizarre if that scenario unfolded and the Committee was actually tightening during that period. So there's still a little bit of a gap, I think, between how the Committee would actually act and what an inertial Taylor rule describes, and we just need to be aware of those differences.

In terms of the language that President Harker suggested, I thought his sentence, in my mind, understated the degree of weakness that we actually see in the labor market. As I mentioned yesterday, the diffusion indexes are a good example. The one- and three-month diffusion indexes for private industry are at the weakest level since early 2010. And I also feel like the drop in the unemployment rate—I don't take that much signal from it, because it was, as Governor Powell mentioned, due to a big drop in the participation rate. So I feel like it provides a little bit too much confidence in the labor market report weakness being temporary than I would be comfortable with. Thank you, Madam Chair.

CHAIR YELLEN. Well, thank you for very thoughtful comments on policy. Before I turn to the statement and go over the suggestions that have been made, I'd just like to comment briefly on an issue that many of you have raised. That's whether our communications are helpful or even accurate in emphasizing that the federal funds rate is likely to rise gradually over the next two or three years and by an appreciable amount, on the basis of the SEP numbers and our other public communications.

As many of you have noted, our pace of tightening this year is turning out, for a variety of reasons, to be notably slower than we anticipated back in December. Most likely, the public doesn't fully appreciate the conditional and highly uncertain nature of the dot plot, and I think that's a problem because—and President Bullard has emphasized this—we have only the vaguest notion about how much tightening will eventually be needed to stabilize the economy at full employment and 2 percent inflation.

To my mind, in light of all of these considerations, there is a question of whether we should think about de-emphasizing expected movements in the federal funds rate over the medium term in our communications. A number of you have suggested this, and let me say I really think that this is an issue that deserves serious thought in the near future. It's an issue that we will be giving thought to here at the Board, and I would urge others to do likewise. If we wanted to revise our communications, how would we go about doing that?

With those comments, let me turn to the statement and briefly consider the two concrete suggestions that have been made. I did hear a number of people weigh in with support for alt-B as written, but let's just spend a moment on the two suggestions. In paragraph 1, President Harker suggested a change in the statement about the labor market to "Job gains have diminished, but the unemployment rate has declined and other labor market indicators appear healthy."

I have heard a number of suggestions. I myself am concerned about saying that a wide range of other labor market indicators appear healthy, because there are a number that show deterioration. Our labor market conditions index is actually declining because it is gearing off quite a number of things that are declining, including a Conference Board alternative measure of job openings, a help-wanted index that has really tailed off. But let me just see. Does anybody want to support President Harker's suggestion, or are you strongly in favor of it? [No response] Okay. Let's go on now.

The second suggestion, from President Lacker, concerns paragraph 3—that instead of constantly talking about further improvement in the labor market, now that we think we're in the vicinity of the longer-run normal unemployment rate, we change that language. And let me see if there is anybody who would like to pursue that. We could go over the—

VICE CHAIRMAN DUDLEY. Could I make one point? I can see doing that at some point. I think it would just be a very odd time to do it after a very weak labor market report. It would be hard to square that with the labor market report we just saw. I certainly agree that, at some point, you can imagine that the Committee views that we're basically where we want to be in terms of the labor market, and then a change like that would be appropriate. But I think it would be hard to square that with what we just saw.

MR. LACKER. Can I comment? The question I have for you is, how does employment gain fit into that? Can you imagine us getting to that point with lower employment gains if it looks like we're in sort of a resource-constrained situation? That's kind of the question. Are we going to hold out employment gains as something we need—150,000 or 200,000 a month?

VICE CHAIRMAN DUDLEY. No. At some point, you would presumably get to full employment—or somewhat below full employment if you actually wanted to push inflation expectations up. At that point, you wouldn't want to see further improvement in labor market conditions. I think people accept that. I guess I think that after a very weak employment report, people would scratch their heads and say, "Well, wait a second. So you're really saying that you were at full employment a meeting ago?" I think they would have trouble interpreting it.

MR. LACKER. I understand the timing, in view of the widespread interpretation of the employment report. But imagine we're 6 or 12 months down the road or a couple of meetings down the road, and we've gotten 100,000 a month for 6 months.

VICE CHAIRMAN DUDLEY. I could see making the change at that time.

MR. LACKER. Okay. At some point, we're going to have to tilt how people perceive low employment growth. That's the point.

VICE CHAIRMAN DUDLEY. I accept the concept. I think the Committee will have to come together and decide, are we actually at the place at which we think we could achieve—

MR. LACKER. No, I understand. On the point about time, I'm totally good.

MR. KAPLAN. I guess this is more of a question. I agree with not changing the statement. I'm just wondering: In your press conference today, will you point out that, at this stage, it wouldn't be unreasonable to see a lower expected breakeven rate of job growth to keep the unemployment rate constant? Will you comment on that? Just to restate, it seems to me the public is expecting job growth that is well above, I think, our own forecast and what we're expecting for a breakeven. I wonder if, at some point—if not today, then maybe in one of the future press conferences—maybe that's the appropriate place to point out that the breakeven level has declined. I don't know if you're going to comment on that at all.

CHAIR YELLEN. I think there's nothing in my statement about it, but if it comes up in Q&A, I will try to make that point.

Okay. My suggestion, then, is that we vote on alternative B as distributed. Brian, maybe you can review.

MR. MADIGAN. Thank you, Madam Chair. As you said, this vote will be on the policy statement for alternative B shown on pages 6 and 7 of Thomas's briefing package and also on the directive to the Desk as included in the implementation note shown on page 10 of that package.

Chair Yellen	Yes
Vice Chairman Dudley	Yes
Governor Brainard	Yes
President Bullard	Yes
Governor Fischer	Yes
President George	Yes
President Mester	Yes
Governor Powell	Yes
President Rosengren	Yes
Governor Tarullo	Yes

Thank you.

CHAIR YELLEN. Okay. Well, thanks to everybody. Let's see. I have a couple of things. The date of the Committee's next meeting is Tuesday and Wednesday, July 26 and 27. I believe that, at this point—just about now or at 10:30—box lunches will be available in the anteroom, and you're welcome to take them. And if anybody is going to stay around and wants to watch me get beaten up at the press conference [laughter], there will be a TV set up in the Special Library. I think that's it for today. Thanks, everybody.

END OF MEETING