

**Meeting of the Federal Open Market Committee
September 17–18, 2019**

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, September 17, 2019, at 10:15 a.m. and continued on Wednesday, September 18, 2019, at 9:00 a.m.

PRESENT:

Jerome H. Powell, Chair
John C. Williams, Vice Chair
Michelle W. Bowman
Lael Brainard
James Bullard
Richard H. Clarida
Charles L. Evans
Esther L. George
Randal K. Quarles
Eric Rosengren

Patrick Harker, Robert S. Kaplan, Neel Kashkari, Loretta J. Mester, and Michael Strine,
Alternate Members of the Federal Open Market Committee

Thomas I. Barkin, Raphael W. Bostic, and Mary C. Daly, Presidents of the Federal Reserve
Banks of Richmond, Atlanta, and San Francisco, respectively

James A. Clouse, Secretary
Matthew M. Luecke, Deputy Secretary
David W. Skidmore, Assistant Secretary
Michelle A. Smith, Assistant Secretary
Mark E. Van Der Weide, General Counsel
Michael Held, Deputy General Counsel
Steven B. Kamin, Economist
Thomas Laubach, Economist
Stacey Tevlin, Economist

Rochelle M. Edge, Eric M. Engen, William Wascher, Jonathan L. Willis, and Beth Anne
Wilson, Associate Economists

Lorie K. Logan, Manager pro tem, System Open Market Account

Ann E. Misback, Secretary, Office of the Secretary, Board of Governors

Eric Belsky,¹ Director, Division of Consumer and Community Affairs, Board of Governors; Matthew J. Eichner,² Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors; Michael S. Gibson, Director, Division of Supervision and Regulation, Board of Governors; Andreas Lehnert, Director, Division of Financial Stability, Board of Governors

Daniel M. Covitz, Deputy Director, Division of Research and Statistics, Board of Governors; Michael T. Kiley, Deputy Director, Division of Financial Stability, Board of Governors; Trevor A. Reeve, Deputy Director, Division of Monetary Affairs, Board of Governors

Jon Faust, Senior Special Adviser to the Chair, Office of Board Members, Board of Governors

Joshua Gallin, Special Adviser to the Chair, Office of Board Members, Board of Governors

Brian M. Doyle, Wendy E. Dunn, Joseph W. Gruber, Ellen E. Meade, and Ivan Vidangos, Special Advisers to the Board, Office of Board Members, Board of Governors

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

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

Antulio Bomfim, Jane E. Ihrig, and Edward Nelson, Senior Advisers, Division of Monetary Affairs, Board of Governors; Jeremy B. Rudd, Senior Adviser, Division of Research and Statistics, Board of Governors

David López-Salido, Associate Director, Division of Monetary Affairs, Board of Governors; John J. Stevens, Associate Director, Division of Research and Statistics, Board of Governors

Andrew Figura and John M. Roberts, Deputy Associate Directors, Division of Research and Statistics, Board of Governors; Christopher J. Gust, Deputy Associate Director, Division of Monetary Affairs, Board of Governors; Matteo Iacoviello and Andrea Raffo,² Deputy Associate Directors, Division of International Finance, Board of Governors; Jeffrey D. Walker,³ Deputy Associate Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Zeynep Senyuz,³ Assistant Director, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie,⁴ Assistant to the Secretary, Office of the Secretary, Board of Governors

Martin Bodenstein,² Section Chief, Division of International Finance, Board of Governors

¹ Attended through the discussion of the review of the monetary policy framework.

² Attended through the discussion of developments in financial markets and open market operations.

³ Attended the discussion of developments in financial markets and open market operations.

⁴ Attended Tuesday's session only.

David H. Small,⁵ Project Manager, Division of Monetary Affairs, Board of Governors

Hess T. Chung,² Group Manager, Division of Research and Statistics, Board of Governors

Jonathan E. Goldberg, Edward Herbst,² and Benjamin K. Johannsen, Principal Economists, Division of Monetary Affairs, Board of Governors

Fabian Winkler,² Senior Economist, Division of Monetary Affairs, Board of Governors

Randall A. Williams,² Senior Information Manager, Division of Monetary Affairs, Board of Governors

James Hebden,² Senior Technology Analyst, Division of Monetary Affairs, Board of Governors

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Kenneth C. Montgomery, First Vice President, Federal Reserve Bank of Boston

David Altig,² Kartik B. Athreya, Michael Dotsey, Jeffrey Fuhrer,² Sylvain Leduc, Simon Potter,⁶ and Ellis W. Tallman, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, Philadelphia, Boston, San Francisco, New York, and Cleveland, respectively

David Andolfatto, Marc Giannoni, Evan F. Koenig,² Paula Tkac, and Mark L.J. Wright, Senior Vice Presidents, Federal Reserve Banks of St. Louis, Dallas, Dallas, Atlanta, and Minneapolis, respectively

Jonas Fisher, Giovanni Olivei, Giorgio Topa, and Patricia Zobel, Vice Presidents, Federal Reserve Banks of Chicago, Boston, New York, and New York, respectively

Jonas Arias,² Thorsten Drautzburg,² and Leonardo Melosi,² Senior Economists, Federal Reserve Banks of Philadelphia, Philadelphia, and Chicago, respectively

Fernando Duarte,² Financial Economist, Federal Reserve Bank of New York

⁵ Attended the discussion of the review of the monetary policy framework through the end of the meeting.

⁶ Attended opening remarks for Tuesday session only.

**Transcript of the Federal Open Market Committee Meeting on
September 17–18, 2019**

September 17 Session

CHAIR POWELL. Okay. Good morning, everyone. This meeting, as usual, will be a joint meeting of the FOMC and the Board. I need a motion from a Board member to close the meeting.

MR. CLARIDA. So moved.

CHAIR POWELL. Without objection. Before we begin the formal agenda items today, we will take a moment to recognize Simon Potter for his many contributions to the Federal Reserve and particularly for his work in support of the FOMC during his time as manager of the Desk.

Simon joined the Federal Reserve Bank of New York in 1998 after spending eight years teaching at UCLA. He rose quickly through the ranks in the research department at the New York Fed and was appointed co-head of research in 2010. Not having endured enough punishment in that role [laughter], Simon took on the role of manager of the System Open Market Account in 2012—a job that entails managing a group with more than 500 people and has an extraordinarily wide range of responsibilities, including market and policy analysis, coordination with counterparts at other central banks, work for the Treasury in executing fiscal agent duties, and a host of very important operational matters. And on top of all that, Simon had the daunting task of attempting to answer questions on global financial developments from this very audience at every FOMC meeting.

During his time as manager, Simon dealt with countless issues in overseeing the implementation of large-scale asset purchases, the planning for the normalization of interest rates in the balance sheet, and the planning and development of the Federal Reserve's long-run policy

implementation framework. On the implementation framework, Simon was a driving force in the System's extraordinarily wide-ranging project in 2016 that examined dozens of issues associated with policy implementation in a post-crisis world—a project that generated several hundred pages of light reading for this Committee [laughter] and that formed the basis for our decisions on the implementation framework earlier this year.

Simon, on behalf of the Committee, I want to thank you for all of your contributions to this Committee, to the Federal Reserve, to the global community of central bankers, and to the country over the course of your career. We wish you the very best in your future. Thank you very much. [Applause]

VICE CHAIR WILLIAMS. Mr. Chair, if I could add a few words of my own. You covered the ground very well, but—Simon represents the best of the Fed, in terms of analytical firepower, in terms of commitment to our mission, in terms of focusing on getting the Committee to very good outcomes.

I would just highlight two things you mentioned. One is the policy normalization project, which was a huge undertaking. We now take it as a given that this has run successfully and smoothly. But, at the time, there were a lot of known unknowns and unknown unknowns. And the success of that is in large part due to Simon's work with his team.

And the second is, really, the once-in-a-generation project on the operational framework. It's rare that the Fed contemplates a significant shift—a dramatic shift—in how we conduct monetary policy. As the Chair mentioned, that entailed an enormous amount of work and collaboration across the System—an enormous number of pages of memos and thought and research. And, again, Simon should be given due credit for leading that and helping get us to a very good decision. A lot of thought went into the pros and cons on the various issues, and,

again, I want to thank Simon for all the hard work and all of the accomplishments he made in serving this Committee.

CHAIR POWELL. Great. Thank you. Thanks again, Simon. Don't be a stranger.

MR. POTTER. Thank you. It's been a real honor and privilege to work with you all. I wish you the best of luck. [Laughter and applause]

CHAIR POWELL. Okay. Before we get started on our formal agenda, I'm going to ask Lorie and Patricia if you could please bring us up to date on developments in the past few days and today. Thanks.

MS. LOGAN.¹ Thank you, Chair. I'll be referring to the "Statement Regarding Repurchase Operation." Money markets were highly volatile yesterday. This continued into this morning. Since last Thursday, corporate tax inflows to the TGA and midmonth Treasury settlement resulted in reserves declining \$110 billion. These resulted in deposit outflows from banks and withdrawals from money funds, while at the same time Treasury settlement increased dealers' needs for funding in repo markets.

Amid these pressures, repo rates soared yesterday morning, with a significant amount of volume occurring at materially elevated levels. The SOFR "printed" at 2.43 percent, and the 75th and 99th percentiles of SOFR transactions were at 2.55 percent and 4.60 percent, respectively. Although elevated repo rates have, in the past, induced banks and money funds to increase lending into secured markets, some were reportedly less willing to lend even at these very high rates as they anticipated potential outflows.

Pressure in repo markets passed through to unsecured markets. Federal Home Loan Banks (FHLBs) experienced higher advance demand from banks and lent more in repo, a process that lowered their lending in federal funds. These dynamics collectively resulted in the effective federal funds rate "printing" at 2.25 percent, 11 basis points higher than the day before and at the top of the target range. Moreover, the distribution of trades was very wide and highly skewed. The 75th and 99th percentiles were 2.45 percent and 3 percent, respectively.

This morning, money market rates opened at higher levels. Trading in repo markets occurred at rates as high as 8 percent, with federal funds trades occurring as high as 5 percent. The Desk anticipates that pressure will ease in coming days.

¹ The materials used by Ms. Logan are appended to this transcript (appendix 1).

However, trading in markets was significantly elevated and somewhat dislocated this morning.

In accordance with the FOMC Directive issued on July 31, 2019, the Desk undertook an overnight repurchase agreement operation in order to help maintain the federal funds rate within the target range. The announcement was made at 9:10, and the operation was concluded just before this meeting. The operation was conducted with primary dealers for an aggregate amount of \$53 billion and included Treasury securities, agency debt, and agency MBS as eligible collateral.

After the announcement, repo rates softened to some degree, and are now quoted below 3 percent. We will provide a more comprehensive update on conditions in money markets at the Desk briefing this afternoon. And we'd be happy to take any questions.

CHAIR POWELL. Questions? [No response] Great. Okay. Thanks very much. Let's move to our first agenda item, which is the second installment on our strategic review of the monetary policy framework, and we'll get started with staff briefings from Fernando, Andrea, and Ed. Fernando, would you like to begin?

MR. DUARTE.² Thank you, Mr. Chair. As you continue your deliberations about the monetary policy framework, it seems natural to analyze how well the current framework will perform in the future in light of the effective lower bound (ELB), and what changes could be made to mitigate the constraint posed by the ELB. The three memos that Andrea, Ed, and I will summarize are, in different ways, directed at this goal.

As outlined in slide 1, under the current framework, the ELB is likely to be a constraint for policymakers in the future. Historically, the FOMC has lowered the federal funds rate more than 4 percentage points during recessions, but all responses to the June SEP indicate that the longer-run normal level of the federal funds rate is less than 3½ percent. As a result, it is likely that the ELB will bind in most future recessions. A variety of statistical and economic models confirm this result and show that ELB episodes are likely accompanied by high unemployment and low inflation.

Please turn to the slide on page 2. The increased risk that the ELB will bind in the future may inhibit the Committee's ability to achieve inflation outcomes that are symmetric around 2 percent and to stabilize the labor market even when the federal funds rate is away from the ELB. As summarized in slide 2, one way to reduce this "low inflation bias" within the current framework could be to keep the federal funds rate during expansions at a level lower than justified in the absence of the ELB. The Committee would have to agree on the level justified in the absence of the ELB as

² The materials used by Messrs. Duarte, Raffo, and Herbst are appended to this transcript (appendix 2).

well as the appropriate offset from that level. An alternative strategy may be to adjust the federal funds rate less aggressively when inflation is above 2 percent than when inflation is below 2 percent.

There are also ways to strengthen the Committee's use of its current tools at the ELB, which are shown in slide 3. First, forward guidance and balance sheet policies could be deployed more rapidly and more aggressively than in the past, in view of the lack of significant negative side effects and what we have learned about their efficacy since 2008. Several models indicate that sooner-and-stronger policies can have meaningful quantitative effects on inflation and employment. Second, the Committee could announce in advance more details of how the FOMC plans to respond to future ELB episodes. The public's expectations would then be affected before the ELB binds, making this tactic an automatic stabilizer. The effectiveness of this idea depends on the expectations formation process, a topic that will be discussed more fully by Ed in his remarks. Third, forward guidance could be explicit about the situations in which the provided guidance will cease to apply. Forward guidance that is too firm or covers too long a horizon could put the Committee in a future situation in which inflation is above, or projected to be above, 2 percent. The current framework would then call for increasing interest rates to reduce inflation, which may clash with the form of forward guidance announced earlier. Specifying the situations in which the forward guidance will cease to apply may help reduce the possibility of such situations.

The Committee may nevertheless judge that to overcome the constraint posed by the ELB, it could be valuable to consider more ambitious forms of forward guidance that require commitment and are outside the current framework. Now please turn to slide 4. More generally, the Committee may want to consider policy strategies that overshoot the FOMC's objectives, including makeup strategies. The costs and benefits of overshooting strategies in a simplified economic model are illustrated in the figure on slide 4. Promising to overshoot the FOMC's objectives after a recession can lift inflation and employment during the recession because of higher expected future inflation and employment. However, once inflation returns to 2 percent and the unemployment rate is near its natural rate, the Committee would have to provide the additional policy accommodation that it previously promised. The benefits of overshooting, shown in blue in the figure, are front loaded, as they occur during the recession. The costs, shown in red, are only realized later, once the recession has passed. The public might expect that future Committees may be unwilling to incur the costs after having already reaped the benefits, limiting the expansionary effects of the overshooting policy during the recession. The incentive to renege on past promises is known as the "time-inconsistency problem."

Time-inconsistent strategies are likely to be easier to implement when there is broad public support. Irrespective of the degree of public support, we highlight four tactics, detailed in slide 5, that the FOMC could use to mitigate the time-inconsistency problem. First, the FOMC could make verifiable promises to which it can be held measurably accountable. Reneging on these promises could jeopardize the credibility of the Committee's communications. Second, the FOMC could

communicate its policy to the public through a variety of channels. Third, the FOMC could choose a policy strategy that is in effect during both recessions and expansions, offering the public the opportunity to verify policymakers' commitment to the strategy outside periods of economic stress. Fourth, the FOMC could rely on shorter-term promises that may deliver smaller economic gains than longer-term policies but are likely to be more credible.

Our memo ends by discussing central bank policies in the Czech Republic and Japan, whose policymakers have recently attempted to overshoot their inflation objectives, summarized in slide 6. Policymakers in the Czech Republic have sustainably raised inflation above their 2 percent target using an exchange rate policy. Notably, the Czech National Bank published forecasts that implied inflation would rise above its 2 percent target over a relatively short horizon. Furthermore, the projected overshoot was small. By contrast, in Japan, inflation has remained below its objective. The Bank of Japan's announcement that it intended to overshoot its objective was seen as a relatively minor deviation from past policies that had produced low inflation for a number of years.

An important unresolved empirical issue is the extent to which these strategies might be able to outperform the current framework in the United States. This issue, in part, will be discussed next by Andrea and Ed.

MS. RAFFO. Thank you. As noted by Fernando, we sensed that only a trilogy could satisfy your appetite for reading in these last days of summer. The next two books in this saga explore whether the adoption of makeup strategies could better serve the Committee in addressing future downturns.

Compared to the current framework, a makeup strategy would require the FOMC to explicitly endorse a principle whereby bygones are no longer bygones and past misses in inflation are, at least in part, made up. A potential benefit of such a strategy is that, in a recession, this commitment would create expectations that policymakers will keep the policy interest rate lower for longer during the subsequent expansion, thus supporting aggregate demand and inflation even while the ELB binds. More stable inflation, on average, may also lower the sensitivity of inflation to transient developments and help anchor inflation expectations.

As indicated in your next exhibit, in my remarks I focus on the design of an average inflation targeting (AIT) in which policymakers continue to respond to economic slack but seek to undo past deviations of inflation from its long-run goal over a rolling window of fixed length. That said, similar considerations apply to other makeup strategies.

A central aspect of the AIT strategy is the choice of the length of the makeup window. As time advances, inflation misses that occurred further in the past eventually drop out of the window and become bygones. A longer window will generally imply more extended lower-for-longer interest rate paths. This intuition comes out in the recession scenario reported at the bottom of the page. We construct

the baseline recession scenario, in black, in the FRB/US model with negative shocks to aggregate demand and inflation. Here, under the inertial Taylor (1999) rule, the ELB binds for about three years, the unemployment rate increases to 5½ percent, and inflation falls to 1¼ percent.

We then compare outcomes under the inertial Taylor rule to a four-year AIT rule, in yellow, an eight-year AIT rule, in red, and a price-level-targeting rule that can be thought of as an AIT rule with an extremely long makeup window, in green. To facilitate comparison, we use simple interest rate rules and abstract from additional monetary policy stimulus that the Committee would likely provide through asset purchases and other tools were such a scenario to materialize.

This recession scenario highlights three main points. First, makeup rules with longer windows call for lower paths of the policy rate, leading to smaller increases in the unemployment rate, smaller declines in inflation, and faster returns of inflation to target. Second, to convince you of this claim, I probably had to test your eye prescription, because some of these lines are very close to each other. This observation is largely due to two features of the FRB/US model that limit the effectiveness of monetary policy—namely, the low sensitivity of the economy to interest rates and of inflation to slack. Higher sensitivity in both dimensions would yield quantitatively larger gains, as shown in the memo and often found in academic studies. That said, even the ¼ percentage point reduction in peak unemployment featured in the scenario corresponds to 430,000 jobs saved, so it is a close call to judge if the glass is half full or half empty. Lastly, the low responsiveness of inflation to slack embedded in the FRB/US model also implies that AIT rules deliver very small inflation overshooting a decade later, as the larger misses that occurred early in the recession are thrown, literally, out of the window. In this sense, some of the time-inconsistency concerns discussed previously are alleviated here.

Your next exhibit addresses another important aspect of the design of an AIT strategy—namely, the symmetric or asymmetric nature of the makeup. This decision roughly boils down to policymakers' willingness to slow the economy because inflation averaged above 2 percent in the past. In particular, a symmetric AIT strategy may constrain the desire to act promptly at the onset of the recession.

The panels at the bottom of the exhibit present outcomes in our mild recession scenario under a symmetric eight-year AIT rule, in yellow. Here we assume that policymakers inherited a positive inflation gap because inflation was, on average, nearly 2½ percent in the years before the recession. The red line represents an asymmetric eight-year AIT rule that ignores this inflation gap. The most striking difference between the two AIT strategies is that the symmetric rule calls for higher policy rates early on in the recession to make up for the accumulated inflation gap, resulting in higher unemployment rates. Later on, as these past inflation misses drop out of the window, the two makeup strategies deliver very similar prescriptions and outcomes.

As discussed in your next exhibit, these strategies will likely require adjustments to the Committee's communications. The effectiveness of a makeup strategy critically relies on the public's understanding of its elements. Consequently, the Committee may want to consider explaining details about the makeup measure and its evolution to clarify the implications for the stance of policy. Similarly, the public may wonder about the relation between current overall inflation developments and the evolution of a makeup measure specified in terms of core inflation. As shown in the chart, swings in energy and food prices may create persistent deviations between these measures. In sum, the realization of the full benefits of these strategies hinges on the policymakers' ability to steer agents' expectations. But this is the subject of your next and final book in our trilogy.

MR. HERBST. Thanks, Andrea. The materials for the memo "How Robust Are the Alternative Strategies to Key Alternative Assumptions" begin on slide 11. The memo begins by surveying empirical evidence on the public's inflation expectations, because makeup strategies—such as the strategies that Andrea discussed—are most powerful when policymakers can influence these expectations. Measures of long-run inflation expectations appear to be well anchored, though there is uncertainty about the degree of anchoring and whether any such anchoring will persist into the future should inflation drift away from the FOMC's longer-run inflation objective for a sustained period of time. Many studies have documented that short-run inflation expectations seem to react to new information more slowly and to a lesser extent than would be the case in an economic model under the assumption of "Full Information, Rational Expectations," the paradigm that is used most in model-based studies of monetary policy. Slide 11 highlights some empirical estimates in studies that use different techniques and data of the responsiveness of inflation expectations to incoming information. All estimates indicate substantial underreaction relative to the "Full Information, Rational Expectations" benchmark. This evidence is important because it suggests that the strength of the expectations channel of a makeup strategy—that is, the idea that current inflation will increase simply because of the expectations of higher inflation in the future associated with the makeup commitment—may be overstated in many macroeconomic models.

Informed by these empirical findings, the rest of the memo examines how makeup strategies—with an emphasis on average inflation targeting, as in the companion memo—perform in the FRB/US model under different assumptions about expectations formation. Crucially, in the FRB/US model, expectations can be separately modified for decisionmakers in different sectors of the economy—for example, consumers or financial market participants. Thus, the extent to which the entire public understands policymakers' commitment to a makeup strategy—and the degree to which aggregate economic variables react to news about the future—can be set from the "bottom up" by adjusting the expectation formation in each sector.

The memo assesses how makeup strategies perform in the context of large shocks that bring the federal funds rate to the ELB using different model simulations to highlight key issues surrounding the efficacy of makeup strategies. The results begin on slide 12. First, as with the previous memo, we find that, in general, makeup

strategies moderately increase inflation from low levels while also offsetting some of the real effects of adverse economic shocks. This represents an improvement in outcomes relative to those under a traditional inflation-targeting regime. Moreover, this holds true even when much of the public is uninformed about the monetary policy strategy so long as financial market participants—whose views help determine key long-term interest rates—understand and believe policymakers’ commitment to the strategy. There is an important caveat to this result. If the public is uninformed about—or does not believe in or act on—the commitment to a makeup strategy, policymakers will be unable to mitigate the initial period of low inflation caused by the large shock. Instead, the attempt to meet the target for average inflation requires more aggressive policy accommodation, because the diminished strength of the expectations channel of inflation renders monetary policy less potent. This aggressive accommodation could potentially lead subsequently to a sustained period of inflation above the 2 percent objective and a substantial overheating of the economy.

Second, as highlighted on slide 13, it is possible that under a makeup strategy, which aims to influence short-run inflation expectations, inflation outcomes over time could inadvertently unanchor longer-run inflation expectations if these long-run expectations are affected by actual inflation persistently above or below policymakers’ objectives. In particular, following through on a commitment to a sustained overshoot of the 2 percent inflation objective could lead to an increase in long-run inflation expectations and result in a longer period of inflation above 2 percent than intended. This risk is particularly salient in the case of asymmetric strategies, under which policymakers do not react to average inflation above 2 percent. In assessing the size of this risk, though, it is important to point out that the past decade’s experience of low inflation has not led to dramatic changes in long-run inflation expectations.

Third, if the public learns about a new policy strategy only over time, then early adoption is important to maximize the effectiveness of the makeup strategy rather than waiting for an adverse shock to materialize. This is particularly significant because, in the case of a large adverse shock, the federal funds rate is likely to be constrained by the ELB, rendering it initially very difficult for the public to distinguish between many different policy strategies on the basis of the behavior of the level of the federal funds rate alone. In such a setting, a switch to a makeup strategy might not lead to an improvement in outcomes, as the public would not initially understand or believe policymakers’ commitment to the new strategy.

Slide 14 highlights a few important caveats related to these conclusions. First, we still do not understand a lot about the expectations formation processes, the measurement of expectations, and, in particular, the extent to which policymakers can influence those expectations. Second, the FRB/US model is only one model of the economy, and conclusions about the merits of makeup strategies can differ somewhat across models. Third, the specific dimensions of robustness analyzed in our memo do not capture all the potential situations that policymakers may face.

Thank you. This concludes our prepared remarks. We would be happy to answer any questions.

CHAIR POWELL. Questions for the briefers? President Daly.

MS. DALY. I have two questions. The first one is just a clarification question. On page 8—and you're using the FRB/US model—you say that it depends entirely on the sensitivity of the economy to interest rates, and the response of inflation to economic slack. When you're thinking about the FRB/US model calibration, is it using the old Phillips curve or the new, flatter one that we have? What's the sensitivity you have in the model?

MR. RAFFO. So the coefficient in FRB/US—the response of inflation to slack—is 0.1, which is the most recent estimate.

MS. DALY. Okay. I just wanted to understand the pictures we were looking at. My other question is more of a discussion question. When you're thinking about AIT, it's always, even with a short window—let's say, three years—it's just backward looking. Have you ever run a model—or do people think of it as, you have two years of looking backward and one year of looking forward, or some similar approach in which—you were centering the window. And the reason is, it seems to get us out of this concern that if we hit a recession, then we have to be making up. Well, if you hit a recession, you'd see that inflation pressures go down, and if you had this looking-forward and looking-back averaging, it wouldn't be so costly. Have we ever thought about that? Have you run models with this “mixed” strategy?

MR. RAFFO. We discussed some of those variations, but we ended up featuring in the memo only backward-looking formulations of the average inflation target.

MS. DALY. I may be the only one, but I would be interested to see some additional work in which we get simulations to see what happens when you examine such mixed

strategies—if you just look at the recent history, what would happen if you had this “mixed” strategy, centering the window a bit more?

CHAIR POWELL. Vice Chair.

VICE CHAIR WILLIAMS. I have a question on slide 11. I thought it was very interesting. Of course, it was covered in the memo. And I guess my question is—I’m leading the witness here—this literature has really been looking at how agents form their expectations in the historical sample relative to the rational expectations benchmark. And there’s been a lot of really good research here, which I think is very nicely summarized.

The question, however, that I think the Committee is contemplating is not just how inflation expectations are formed in the current regime, but in a shift in the regime. So if you shift from, say—I’m just going to take the largest move, from inflation targeting to price-level targeting—presumably, with experience and over time, people would start forming their expectations differently in that regime than they did before.

I think Larry Ball—and I’m going way back now—did some work on looking at how inflation expectations were formed during the period of the gold standard, which is kind of like a price-level-targeting regime or shares similarities with that, versus the post–World War II period, when inflation had a lot of persistence.

So I guess my question to the group is, I take this evidence as given, and it is very informative, but does that really help us think about, if we were to change regimes to something like makeup strategies or average inflation targeting or one of these others, over time, wouldn’t inflation expectations change with that change in regime?

MR. HERBST. I think a switch to a price-level-targeting regime would, to me, represent a pretty big shock, and I want to be upfront that most of these studies are talking about small

pieces of information. I do think it's sort of consistent with what we've shown here. If you read this literally, people do eventually figure out what's going on, it's just that they're not as sophisticated as the rational expectations assumption that is often viewed as the benchmark standard for analysis in the literature. So I wouldn't want our memo to be read such that no one will be able to figure out anything over time.

MR. LAUBACH. If I can add one point. I think we have evidence that suggests the updating of longer-run inflation expectations changed from the Great Inflation period to more recently. We also observe that longer-run inflation expectations remained remarkably stable in the face of very large fluctuations in resource utilization following the Great Recession. And that makes me wonder whether there is something like a rational inattention mechanism going on—namely, that as long as inflation remains low and somewhere around 2 percent, people will not take a whole lot of signal from any change in the FOMC's regime but will rather say, “Well, basically this is still not a problem to which I will devote a lot of resources.” It's a possibility. We don't know that.

VICE CHAIR WILLIAMS. Just as a follow-up—as a macroeconomist, I'm loath to bring this up. But the Lucas critique is right here: if you change the policy regime, you presumably change how people form expectations. And your example, Thomas, was exactly the one I was thinking of: As our predecessors courageously brought inflation down in the '80s and '90s and got us to this stable inflation world, we've seen a significant change in how people form expectations, in terms of both long-run inflation expectations and the whole discussion about the flatter Phillips curve and all that. So I think we shouldn't take as given that the people won't shift their behavior if we change our approach. Thank you.

CHAIR POWELL. President Rosengren.

MR. ROSENGREN. When I looked at the simulations, I was struck by the magnitudes being relatively small. So I'm wondering whether the staff found it surprising how small the magnitudes were. If you think over the course of this year, in the spring, we had core PCE inflation at 1.6 percent. If we're right in the Tealbook, we'll be at 1.8 percent at the end of the year—that's 0.2 percent. We haven't done a huge amount to generate the difference between 1.6 and 1.8. So when you look at one-tenth or two-tenths going through this entire framework change, does the magnitude surprise you? Is it model specific? So tell us a little bit more about the magnitudes. And then, if the magnitudes are really only one- or two-tenths, explaining to the public why we're completely changing our framework for one- or two-tenths, given that that's well within the standard error of forecasting of PCE inflation, makes it kind of hard to justify trying—I mean, it's somewhat complicated. None of these charts are that easy for a non-economist, so how much of informing the public do we want to do for one- or two-tenths?

MR. RAFFO. I will offer a couple of considerations. First, one point we tried to make explicit in the memo is that there are structural features of the economy that obviously affect how big of a stabilization gain policymakers would gain from switching to a makeup strategy. In this case, we are showing results from the FRB/US model, which has a very flat Phillips curve, as we were discussing before. It also has a pretty low sensitivity of aggregate demand to the interest rate. And we thought that it was a good insight to provide—that, under these assumptions, you might end up having quantitative gains that are not very large. That said, we also run similar simulations in the other models, and we show that the gains can actually become, in terms of magnitude, larger.

The second observation that I would offer is that one question we faced was, what is the benchmark against which we want to compare these results? We started off from an inertial

Taylor rule, but, arguably, the inertial Taylor rule already includes a makeup component because, through the lag in the interest rate, essentially, the policy rate responds as if it has an implicit makeup component. So that was the best we could do to approximate a baseline, but it affects the magnitude of some of these gains.

Last but not least, in our simulations, a result that comes out clearly is that once the economy hits the ELB, the distribution of inflation outcomes actually shifts upward under makeup strategies. So, in some sense, at exactly the points when the economy hits the ELB, we are going to experience periods of low inflation, and those are going to be moments when the Committee might wonder about inflation expectations or possibly the de-anchoring of inflation expectations.

So these makeup strategies conditioned on being at the ELB will actually provide more support to inflation. From a risk-management perspective, at the margin, these strategies might help keep long-run inflation expectations better anchored, which is one of the points that we tried to emphasize. To the extent that the performance of inflation improves in terms of being closer to 2 percent, on average, there might be a benefit, in terms of keeping inflation expectations anchored.

CHAIR POWELL. Governor Clarida.

MR. CLARIDA. Thank you, Chair Powell. A combination of an observation and a question on slide 8. I'm going to pick up on something that President Rosengren mentioned. I was struck as well, if you tune out the PLT line—showing something about my preference function—and you look at the AIT lines, it's striking. Two things. First, how similar they are. Second, even with the presumed theoretical benefits of AIT, how long it takes to get to 2 percent

inflation. It takes, whatever, 10 years to get there under the benchmark, and it takes 9 years to get there under the AITs, and so I think there's that dimension.

The other thing, of course, which works the other way—it's more of a presentational thing. You did this exactly the right way. You show the shock jumping off from the initial core PCE inflation of 1.8 percent. Part of why it takes so long to get to 2 percent is, we were already starting off below 2 percent. If you look at how long it took to get back from where it started, it's a little bit more of a favorable comparison. But, again, in our model, what the effects are is striking relative to the benchmark.

On slide 12, a similar comment here on both good news and bad news. The good news is that if financial markets or wage and price setters or both figured this out quickly, then you get results similar to the full rational expectations. But in what I consider to be probably not the fully plausible case, but maybe closer to reality than perhaps some on the staff do, if you have a case of a substantial backward-looking component—I see Jeff Fuhrer nodding over there—then there is a pretty substantial difference, both in terms of the time dimension and, in particular, the overshooting dynamics. And I know that in our previous meetings we've talked about robustness. The sort of thing I think about is that anything that relies on expectations, if you've got a substantial backward component, illustrates, probably in an extreme form, some of the costs of that. Anyway, very well done, thank you. Thank you, Chair Powell.

CHAIR POWELL. President Evans. Sorry, do you want to respond?

MR. RAFFO. I would just add the observation that we decided to go with a mild recession scenario, hence the PLT doesn't come out as particularly different. But if one were to simulate a more severe scenario, at that point the PLT would be different from the standard AIT,

with the AIT window exactly—because at that point the severity of the recession would be deeper and inflation would fall even more.

CHAIR POWELL. Thanks. President Evans.

MR. EVANS. Thank you, Mr. Chair. I thought the last two interventions by President Rosengren and Governor Clarida were terrific, because they crystalized a couple of things. I had the same kind of reaction that Eric did looking at the small numbers, one- or two-tenths. Every time I look at loss calculations, things always seem to be kind of small.

Now, the *Fed Listens* conferences, I think, have been really nice, and they challenge us to think a little bit differently than economists. I'm reminded of a famous study I read, maybe in graduate school, by Bob Lucas on the topic of the cost of business cycles. And he did a little simple calculation, and he said, "You know, how costly is it to have a recession? And what would you pay in order to smooth this out?" And the answer he got wasn't that different from a nickel—really small—because consumption is already smooth. Output varies, but consumption, complete markets, and things like that—and a lot of work has been done since then to improve those calculations and make them more meaningful. But there's a lot of economic analysis that reminds us that if we've got a lot of insurance markets and things like that, a lot of people aren't hurt that much—one-tenth here, two-tenths there.

Now, looking with my own eyes at, for instance, page 12, I more quickly gravitate to the charts in which inflation went above 2 percent, because we're so challenged to do that. In fact, the one that actually got us there as quickly as any of them was the completely uninformed—I mean, it started off slower, but then all of a sudden it really took off or something. And I guess I wonder: If you ask the public to look at this, what type of preference ordering would they have for outcomes like that? What might they gravitate toward? That's coming back to the *Fed*

Listens kind of comment. Because as economists and analysts and looking at loss functions, I say, “Yes, maybe it’s not worth doing this. It doesn’t seem like there’s a lot of difference.” On the other hand, some of these trajectories might not really take hold unless we do something very different. And that’s the “takeaway” that I had from that.

As a question, does anybody actually have a study of how the public might view scenarios like this differently than just calculating loss functions? That would be more behavioral, I would guess.

MR. LAUBACH. If I can offer one thought: I’m looking not so much at slide 12, which basically says, according to what you just said, that it would be helpful if the public formed vector autoregressive expectations—because, then, you get the better picture. But if you look at page 8—for example, the curve on the price-level-targeting strategy—what you do see is not only the inflation path, but also the lower unemployment rate path. Now, our loss functions mechanically penalize that. I mean, they don’t like these undershoots. But that’s, in some sense, because we have this natural-rate assumption, and we say that it’s not a good thing to be away from the natural rate on either side.

If you took a different view on that, then obviously you would say, well, maybe—I’m integrating here by eyeballing it—on average, over the cycle here, the unemployment rate path, for example, is more centered on the natural rate under the price-level-targeting strategy than under the other ones. I mean, the baseline certainly looks to me like the loss during the recession is much higher than the subsequent undershoot.

MR. EVANS. Yes. My preference ordering was different from Governor Clarida’s apparently, too, because I think he didn’t like the PLT line. Just to clarify: It’s not my intention to disparage the economic analysis, which is good. You’ve got rules of the game. You calculate

the losses and all of that. It's just trying to broaden the perspective and wonder, in terms of other valuations, how it might be perceived, what might be a different ordering. Thank you very much.

MR. ROSENGREN. Could I just follow up on Charlie's observation? Because I had the exact opposite reaction to that same line. And the reason is, when I look on page 12 at the green line for the completely uninformed, it has the advantage that it overshoots on inflation, but it requires us, in a relatively modest recession, to hold interest rates at zero for, it looks like, seven years. So a promise to keep interest rates at zero for seven years, with no financial-stability risks. I understand the model here doesn't have financial-stability risks. But promising people that they have seven years in which they can take as much leverage as they want strikes me as a risky strategy.

So when you think about low-for-long of this magnitude, when we're talking seven years, does it worry you that you don't have financial stability modeled in the equations that you have? The way this is working, the only cost is between inflation and unemployment. But in the real world, people are going to go crazy with—or at least, potentially, people are going to take advantage of the fact that you're promising to keep rates low for so long that somebody who is informed is going to say, "This is a great opportunity to get as levered as I possibly can." Any reaction to that?

MR. BARKIN. I think that's a leading question, in case you were wondering.

[Laughter]

MR. RAFFO. We discussed to what extent we could feature simulations to address exactly the concern that you raised. And then we concluded that, number one, in the current model it would have been difficult to actually model financial stability risk. Number two, we

thought that those kinds of risk-management considerations probably would be better addressed in a subsequent memo. And, number three, I will offer a few insights that came out of our discussion. The tradeoff here is essentially between some financial imbalances that might emerge because of low-for-long, and some very bad market economic outcomes that might materialize if not enough monetary stimulus is provided at the ELB. For example, we already have to tweak the model a little bit to avoid deflationary spirals, which would be, obviously, a very bad macroeconomic outcome. So balancing those two risks, we felt, was difficult in the current environment, but, obviously, it's a very important consideration.

The other comment I would add is, for simplicity, we decided to model monetary policy with simple interest rate rules. So there is no role for balance sheet policies, and there is no role for market prudential tools, and there is no role for all the sorts of tools that the Committee could actually deploy in many of those circumstances. We felt that it was important at this juncture to provide a little bit of insight inside the mechanics of how these makeup strategies work and a preliminary assessment about the quantitative gains or losses that might emerge because of adopting a certain strategy or another.

CHAIR POWELL. Yes, President Barkin. Oh, you're good—all right. Other questions? President Bullard.

MR. BULLARD. Yes. I'd like to weigh in on these charts on page 8, which purport to show that effects are small. I guess my main comment would be that the idea that the effects are small is more about the model than it is about reality. I think this type of model is not going to tell you very much, other than that price-level targeting is a better policy than something that's suboptimal and away from price-level targeting. So there would be gains to be had.

One thing I would say about the FRB/US model is: It way over-informs the judgment around the Committee here. I mean, what are we doing to validate this model? Why should we even be looking at these charts, as opposed to some other charts that are coming from some other model? So that's one thing.

One way you can see this, though, is that for this exercise, you should insist that the model could explain the Japanese data and the European data and then come back and say what it's going to say about adopting price-level targeting in the United States. And I doubt that the model has much of an explanation—not that any of us do—for 20 years at the zero lower bound, because what you're really worried about here, in my view, is that you get stuck in this bad situation and you never come out of it.

In this framework with this model, one might say, “Oh, the zero lower bound—oh, yes, we stay there for a year and a half, according to this picture here, and then you bounce off, and all is well.” That doesn't seem to be the thing that's causing the framework review in the first place. So, from the staff perspective, they have to choose something to do—you know, something simple that can be presented. But I don't think it should overly inform the judgment of the Committee on this topic.

CHAIR POWELL. Okay, thanks very much. Let's begin our go-round, and we'll begin with Governor Clarida.

MR. CLARIDA. Thank you very much, Chair Powell, and a special thank you to the staff and the steering committee for three excellent memos. They are densely packed with substance and insight, and I think they will provide us with a good foundation on which to build discussions of potential changes to our framework in this and coming meetings.

As we've said from the start, this framework review is ambitious in its scope—a scope that covers possible changes to strategy, the toolkit, and communication. Today's briefing concludes the scheduled memos on alternative frameworks, and we have briefings scheduled in October on additions to the toolkit and in December on “takeaways” from the *Fed Listens* events. At each of these FOMC meetings, we will allocate some time, as we did in July and today, to general discussion of the framework as well as to the specific memos presented at the meetings.

Now, the goals of these general discussions will be, in part, to begin to identify areas of potential agreement on how our consensus statement might be refined and improved. I went back and reread the transcript of our July meeting. If you have not done so, it will take you about 15 minutes, and it's well worthwhile. In the eight meetings that I have attended in my time as a Governor, I have found it incredibly helpful to hear the insightful thinking of each of you as well as the way we interacted with one another.

For example, as we discussed last time, as we think about the consensus statement—and there was a lot of commentary around the table. I'll identify several areas. First, the statement, I think to many of us, is imprecise on how it defines our symmetric inflation objective—how it is to be interpreted—and on whether or not it constrains the Committee to treat 2 percent inflation as a ceiling. The existing statement is also silent on the ELB and its implications for policy as well as potential implications for inflation expectations. The statement's existing discussion of maximum employment and u^* does not align well with how we decide on policy in a world with both below-target inflation and well-below- u^* unemployment. And so, at least for me, I take it from our July go-round that these elements of the consensus statement appear to be worthy of our time and attention even if, in the end, we decide to retain our existing framework.

Now, with regard to our existing framework, the consensus statement is imprecise as to the time dimension over which the price-stability objective is to be achieved and the definition of “success” in achieving it. For example, if you look at the communication of other central banks around the world, one could imagine a statement that would define “success” in price stability, say, over a business cycle or on average over a cycle or within a specified range on average. There are a lot of combinations, but other central banks do provide more insight on time dimension and success than we do.

Obviously, any decision that we might make along these lines is enormously consequential. And as Chair Powell indicated at the July meeting, our priority should be on getting this right and not on rushing to meet an artificial deadline of January 2020. Indeed, in all of our public comments on the review, we’ve emphasized the first half of 2020 as the likely time frame in which the review will be concluded. To remind you: The plan as we laid it out in July is to have staff briefings and framework go-rounds at each remaining FOMC meeting this year.

Importantly, as we pivot later this fall from staff briefings and general discussion to a more focused assessment and debate of specific options for the statement and our strategy, we will be briefed, with memos available in advance, by the framework review steering committee chaired by Thomas Laubach on specific options and alternatives we should consider and debate. The steering committee will be charged with identifying a range of options for changes in the statement, as well as more fundamental changes to our strategy and possible additions to the toolkit that are consistent with the briefings and the discussions that we’ve had in FOMC meetings so far and in future meetings.

If, as I expect, we believe at the December FOMC meeting that these discussions will carry into 2020, the minutes of the December meeting can convey that the framework review is

ongoing, and that the Committee expects to finalize the review and report sometime in the first half of 2020.

Now, in terms of ultimate deliverables, the most important one is any revision to a refinement of the consensus statement. Of course, if we do adopt a new strategy to replace flexible inflation targeting, then of course the Committee will need to agree on and then release an in-depth addendum, or perhaps a white paper or white papers, that would outline how we expect the new strategy to operate and what benefits we expect it to deliver over our current strategy. This addendum would also be a natural vehicle for any discussion and analysis of any new tools that we decide to add to our toolkit. One thing that I heard last time, and you'll see in the transcript, is a general sense to keep the consensus statement as a broad statement and not get into too much detail on particular tools and details, and I think that's served us well.

In terms of communication, the subcommittee is well advanced on developing a set of recommendations to the FOMC for improving the SEP, the presentation of the minutes, and the potential format of the policy decision statement. The subcommittee plans to reserve time at a future meeting to present these recommendations to the Committee so that we can have a full discussion on whether some of them should be adopted.

A statement on these changes to the SEP—of course, once agreed upon—would be prepared and released to the public at the same time that we make any other announcements about the framework review. So I thought I would allocate my time to the sort of roadmap for the process. Thank you very much, Chair Powell.

CHAIR POWELL. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chair. And thank you, Governor Clarida. I appreciate your insightful comments. I want to thank the staff for an excellent set of analyses that will help

inform our framework discussions. The memos clearly show that the effective lower bound poses a key threat to our dual-mandate goals. The memos are also chock full of useful technical analyses that are important for assessing the potential relative performance of various policies. My research background makes me appreciate many of the details in the memos, but the analyses seem focused more on executing particular tactical policy options than about picking a good overarching strategic approach to U.S. monetary policy to take over the next decade. And for me, the best approach should be built upon a strong commitment to pursue outcome-based policies that are clearly aimed at achieving our dual-mandate objectives.

Let's start with our current framework. The memos, both this round and in July, stated that the current framework doesn't allow for any kind of makeup strategy. That's a pretty big handicap to put out there. Given that assumption, the memos make it clear that our current framework will deliver average inflation below 2 percent. This means that, over time, our inflation goal will increasingly be viewed as a ceiling of 2 percent. For good reason, we rejected the ceiling interpretation of our price-stability objective when we developed our current framework. Instead, we embraced symmetry, indicating in our long-run strategy statement that we would be concerned if inflation were running persistently above or below 2 percent. But we already face a widespread perception that 2 percent is essentially a ceiling.

For example, former Chair Bernanke, in a very nice paper with Mike Kiley and John Roberts, describes one makeup strategy that they study as having "good attributes," because it limits inflation overshooting. For me, pejorative comments about overshooting reinforce the public's perception that monetary policymakers will react with strong displeasure whenever inflation actually rises above 2 percent. And I thought the figure, on page 4 of the handout, that

had overshooting characterized as the cost of overshooting when the undershoot was twice as large as the overshoot was another example of that.

It's particularly troubling whenever any of our own communications encourage the public to view "overshooting" as a dirty word. This language challenges the public's understanding of inflation symmetry and is damaging to our monetary policy objectives. We lived through such a damaging experience from 2011 through 2015. Our communications and actions repeatedly reinforced the public's perception that we would lift off prematurely, to avoid an inflation overshoot. As a result, we ended up having to take more and more action to support the recovery—progressively stronger quantitative easing and forward guidance, well beyond what many had envisioned when we started the journey. And this was likely more than would have been necessary had we successfully defended symmetry from the outset. In the end, the initial failures were very real and very costly.

So when it comes to strategy, I continue to favor a simple but powerful full-throated commitment to follow outcome-based monetary policies aimed at achieving maximum employment and symmetric 2 percent inflation within a reasonable amount of time. I subscribe to the view that, when necessary, such a framework would prescribe overshooting our 2 percent inflation objective with momentum, like the path I discussed at our July meeting with the handout chart. And I don't see this as much of a stretch because, in contrast to the presumption in the staff memos, I think this tactic is compatible with our current framework under an appropriate view of symmetry.

Our Committee's interpretation of symmetry cannot ignore long periods of inflation running too low. So, for me, symmetry in our current framework means paying attention to both past and prospective inflation undershoots to ensure that inflation averages 2 percent over the

long haul. This interpretation can be made operational, it is outcome oriented, and its forward-looking element allows for the flexibility needed to address an array of economic circumstances.

One could view this concept of symmetry as having some of the flavor of an *ex-ante* bias-reduction framework, such as in the Mertens-Williams model, or the perspective that's been written about by business economists like Ethan Harris at Bank of America Merrill Lynch. And he spoke up and mentioned, during the *Fed Listens* conference, breaking up the economic cycle into two pieces. During the first part, when inflation is undershooting for a time, you want to work really hard to get it up. And then, over the second part, which is a little unknown but lengthy, you want it to be above 2 percent. So you actually average 2 percent and it's well known.

Today, our job is complicated by a world in which r^* is perilously low; in which fiscal authorities are likely to do less, not more, during a crisis; and in which global cooperation appears to be falling, not rising. A fundamental lesson that I have learned from my experience on this Committee is that, in such a world, we have to be relentlessly focused on our symmetric 2 percent objective throughout the cycle. We have to have a do-whatever-it-takes attitude toward policy all the time—in a downturn when we are constrained by the ELB and in an expansion if inflation remains stubbornly below our objective. I also recognize and accept that monetary policy will never be a panacea. But when it comes to price stability, it's the monetary authority alone that has the sole responsibility for achieving our inflation objective. For us, this is symmetric 2 percent inflation. We must always keep that in focus. Persistently underrunning 2 percent inflation is dangerous.

When it comes to evaluating alternative policy proposals, the staff's model analyses have been very helpful for understanding the factors determining the various options and success as

well as suggesting potential orders of magnitude for the policy's effects. The work on robustness was particularly useful, with its emphasis on how households, firms, and financial markets understand tactical policy details and expect them to be implemented. But my "takeaway" from the memos and other work in this area is that there is little chance that any particular monetary policy rule will be robust to all of the changes in the economic environment that inevitably will occur.

In contrast, one thing that can assuredly remain constant throughout is a commitment by this Committee to act in order to achieve our policy-mandated goals and to critically gauge our progress and setbacks at every step along the way. So I think a robust, efficient, and effective monetary policy strategy is to communicate relentlessly, today and in the future, that we will use the policy tools best suited for the times to achieve maximum employment and price stability.

The tactics likely will vary with the particular economic circumstances we face, particularly at the effective lower bound. At times, the best tactic might mean a state-contingent policy that commits to not moving the funds rate up until certain criteria are met, like in some makeup rules. At other times, it might mean open-ended large-scale asset purchases.

There certainly will be challenges to executing such policies. For example, can we adequately communicate a lower-for-longer state-contingent funds rate rule via some complex formula? Will the public view as credible our commitment to purchasing assets when we say we are not concerned over the size of our balance sheet? Is seven years with the funds rate at zero in order to get inflation up too risky, in terms of financial-instability risk? People will be asking those questions. Meeting these challenges will be difficult. To do so, it will be critical to keep our communications squarely focused on our dual-mandate objectives and on assessing our performance in achieving those outcomes and also in using our regulatory and supervisory tools.

I assume that Vice Chair Quarles is going to be on the job to make sure that those overleveraged banks aren't going to be doing what they shouldn't be. You know, those policies need to be paid attention to.

The case for outcome-based policy without explicit rules may sound overly discretionary and time inconsistent. So let me finish with this. Any complete characterization of our framework's strategy should include the thought that the Committee has a strong commitment to relentlessly communicate that we are committed to following outcome-based monetary policy. If we communicate this, and if we appropriately frame the outcomes within our mandated objectives, I will not worry that future Committees will "walk back" from those objectives. The clear focus on the outcomes we seek will reinforce the sturdiness of these so-called time-inconsistent actions. The public will understand that the reason the specific tactics change from episode to episode is so that we can best achieve our mandated policy goals. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. And thanks to the staff for the excellent analysis in the memos. A great deal has been said, probably more than can adequately be commented on in these remarks. I do agree that the effective lower bound is likely to continue to be an important issue for the Committee. The effectiveness of a business cycle stabilization policy is compromised at the effective lower bound. This can leave the economy more exposed to macroeconomic shocks than it otherwise would be.

Unconventional monetary policies, which may be applied at the effective lower bound, can have important effects on the macroeconomy but are not well understood at the theoretical or empirical levels. Accordingly, the key medium-term challenge for the FOMC is to avoid a

prolonged encounter with the effective lower bound. This admonition—“Stay away from the effective lower bound”—carries with it a certain electricity when we consider the empirical evidence staring us in the face. Japan, one of the largest and most sophisticated economies in the world, has not had a policy rate above 50 basis points for decades and has not been able to achieve a 2 percent inflation target despite aggressive, unconventional monetary policy. The euro area, also large and sophisticated, has experienced monetary policy pinned down at the effective lower bound for a decade and now appears set, as indicated by a new round of unconventional monetary policy actions, to remain at the ELB over the medium term. These economies—drivers of the global economy—will apparently be more exposed to macroeconomic shocks in the years ahead because their ability to pursue business cycle stabilization policy has been greatly compromised.

The timelines here—decades for the BOJ and what looks like a decade and a half for the ECB—suggest that the ELB is more than a mere temporary inconvenience as it is portrayed in the staff memos. Instead, the ELB appears to have more permanent features—a sort of black hole of modern central banking from which it is difficult to escape. Accordingly, the consequences of getting stuck in such a situation are much more severe than supposed in the staff analysis. Such an interpretation would be more consistent with the research of Benhabib, Schmitt-Grohé, and Uribe, which identified the ELB with a steady-state outcome of modern macroeconomic models. In the Benhabib and others interpretation, lower-for-longer once at the ELB may only serve to reinforce the steady state and keep the economy in the bad equilibrium.

Given these considerations, I think it may be wise to focus attention on strengthening the Committee’s framework away from the ELB as opposed to at the ELB, as the best outcome that will likely be achieved if a future encounter with the effective lower bound can be avoided

altogether. And strengthening the framework away from the ELB means only one thing—policy has to lean more toward the “dovish” end of the spectrum than it otherwise would to avoid the risk of becoming enmeshed in the quagmire with which our Japanese and European friends are struggling.

The memos make clear that there are many approaches that could be used, but, generally speaking, one could assume an r^* at or below the lower end of available estimates, pledge to defend the inflation target from the low side especially aggressively, and allow calculated overshoots of the inflation target in the name of actually achieving the inflation target, on average, over the medium term. Another option is to treat the 2 percent inflation target more as a floor instead of as a ceiling in order to stay away from the ELB. We could state our target as above but close to 2 percent, in a mirror image of the ECB’s language. I do not necessarily see any of these as viable options once the ELB is encountered. Instead, I see them as changes to attitudes and rhetoric of this Committee before the next encounter with the effective lower bound, and we hopefully avoid said encounter entirely.

Time consistency is, of course, a first-order issue. I do think it takes time to build credibility for policies that have not been commonly employed in the past. However, I also want to point out that it can be done, and has been done, by this Committee over the years. In the beginning of the Volcker era, inflation was running at double-digit levels, and a leading theory developed by Kydland and Prescott as well as Barro and Gordon suggested that the desired low-inflation outcome was time inconsistent, so it would be difficult or impossible for the Committee to achieve. Essentially, the private sector would understand the Committee’s incentives to renege on past promises to keep inflation low, so the theory went, and, therefore, the private sector would continue to expect high inflation, and actual inflation would therefore remain high.

That theory was blown out of the water during the '80s and '90s as the FOMC and other central banks gradually built up credibility for low and stable inflation outcomes.

The point of telling the story is that credibility can be achieved over time, and time-consistency problems can be, and have been, circumvented. The desire to build credibility over time suggests that the Committee should take seriously the learning analysis in the memos. We should make changes, understanding that it will take time to establish full credibility for the new framework. There's essentially no reason for the private sector to believe, based only on announcements, that Committee behavior well entrenched from past actions has suddenly changed. Instead, private-sector expectations will likely change only gradually as the Committee behaves somewhat differently at certain junctures than it has in the past.

Finally, and relatedly, I think any pending framework change should be a matter of evolution and not revolution. Any elaborate announcement of something like price-level targeting or nominal GDP targeting could easily fall flat, as the new policy may lack sufficient credibility to change private-sector expectations appropriately. In that case, it may be that nothing changes, the attempted framework update would have no effect at all, and, worse, subsequent attempts to make changes would be all that much more difficult. Better to make modest changes that can be backed up with clear actions in order to push expectations in the right direction, given our policy objectives. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chair. My own views are similar to Governor Clarida's on some of the benefits of a through-the-cycle time dimension for our inflation target, and I agree that that implies accepting overshooting, as President Evans has emphasized.

After reading the three memos, I was less convinced that rigid makeup strategies would provide benefits that clearly exceed the cost, for the following reasons. First, I do not find rigid makeup strategies or rules that may require promises that extend over long periods as attractive for the reasons highlighted in the memos. Committing future policymakers to decisions taken by previous policymakers may not be particularly enforceable and, hence, credible. If such promises are not believed, they will not likely have the desired effect on expectations and economic outcomes. Under current law, I cannot readily think of a commitment device that would enforce such a promise, and I'm not sure we would want to use one if it were available. Central banks should not make promises they cannot, or will not, keep.

Second, once constrained to relatively short-term time frames, the benefits in the memos seem relatively modest. In part, this appears to be an artifact of the properties of the inertial Taylor rule benchmark. It builds in a response to lagged averages of inflation and output gaps. Thus, we already garner some of the benefits of an AIT strategy with our current approach.

Third, most of the examples seem to focus on demand shocks. Large supply shocks, which we've been reminded of very recently, that raise both inflation and possibly unemployment would present potentially significant issues of concern. An inertial Taylor rule that responds appreciably to the output gap has the appealing property of reducing the role of inflation averaging precisely when it is less desirable.

Fourth, all of these strategies, including the inertial Taylor rule, do not incorporate potentially important aspects of financial markets. In particular, the implications of strategies that hold rates low for long for asset prices, such as the potential for bubbles, are not in the models. Small gains in inflation stabilization could come at a cost of excessive leverage and asset price appreciation—a tradeoff that would concern me, because of the potential havoc

created by the popping of bubbles. I am not convinced that we have the supervisory tools to limit leverage of households or firms.

Tying into my first point: A commitment to a low interest rate path, regardless of the financial-stability consequences, seems like a risky strategy. A less costly way to address our unfortunate proximity to the lower bound is that once we know we are in a recession, we use all of our tools more aggressively. Knowing what we know now, it is likely that more aggressive use of forward guidance and balance sheet policy may be more effective than committing to an inflexible makeup strategy. However, the suggestion that we should move quickly is hampered by the fact that we do not instantaneously identify the onset of a recession, and certainly we have a flawed record of predicting the timing of the onset of a recession ahead of time.

On a more positive note, I do find the example of the Czech experience interesting. First, the central bank adopted an inflation range, which made it clear that periods moderately away from the target are acceptable. I would prefer to avoid excessive fine-tuning in response to small deviations on either side of our target. In the current circumstances, I would be comfortable with a through-the-cycle approach in which we accept inflation above target during expansions, recognizing that recessions under the ELB will likely entail inflation below target for some time. I would also not resist opportunistic inflation shocks, but, in a situation with tight labor markets and rising financial stability risks, I would feel uneasy contorting markets to attain a slightly higher inflation rate. Adding to the probability of an episode of financial instability might pose much greater risks to the economy than missing our inflation target by a few tenths of a percentage point.

In summary, I found the memos quite instructive. They helped me think through the underlying assumptions that could make alternative strategies work, the likelihood of these

assumptions holding, and also some of the practical implications of putting such strategies into practice. That thought process has convinced me that, although rigid makeup strategies appear beguiling in the stylized models, a rigid commitment to such a strategy that ignores financial stability tradeoffs may not provide the desired benefits and would likely have costs that exceed the benefits. However, a more flexible range that averages through the cycle, so that periods of inflation somewhat above 2 percent were expected during good times, would ensure that 2 percent was not a ceiling. Thank you very much.

CHAIR POWELL. Thank you. President Mester.

MS. MESTER. Thank you, Mr. Chair. I also want to thank the System staff for all the work that they've done on these memos. I think you can tell by the discussion around the table today that they really raised a lot of issues and food for thought. And they're not easy issues. There's a lot of things that you have to think about when you think about our framework and how we actually implement monetary policy.

Our experience during the Great Recession and the aftermath, I think, really underscores the challenges posed by a low interest rate environment. I think we might have differed in our approaches of how to address policy. But I think no one would disagree that it was a very challenging time as we came through that period. And, even now, I think we still face challenges.

If there's a way to change our framework so that we can actually be more effective—and I agree with President Evans, who said it very eloquently, that we need to really focus on our goals and achieving our goals—if there's a way of doing that so we can actually address some of the issues posed by the low interest rate environment, I think we really need to consider those changes—and consider them carefully.

So, to me, a clear message in the memos is that, in theory, makeup strategies like price-level targeting and average inflation targeting can have benefits, albeit modest ones, but those benefits depend crucially on the public understanding our policy strategy and policymakers being able to credibly commit to following through on their past promises. So these makeup strategies really depend on policymakers yielding some of their discretion. And we should understand that it's not going to be enough to simply announce that we're targeting average inflation now. We're going to also have to indicate how we would systematically set policy to achieve that target. This type of communication has proven, I think, difficult for the Committee in the past.

So along the lines of Occam's razor, I'd like us to explore other ways we could actually communicate better and make our current policy framework more effective before we decide to change frameworks. And I also, like President Rosengren, found the Czech experience very instructive. Their economy, of course, is quite different from ours. But the experience suggests that coupling clear communication of commitments over relatively short periods with economic projections can be effective when at the lower bound. And I think the memo by Duarte and others, which was the first memo in the packet, also makes some suggestions for addressing the low-inflation bias induced by the ELB, including changing the policy rule we follow in a flexible inflation-targeting framework to act more aggressively when inflation deviates from its target. So I agree with President Bullard that this might be a useful approach and a way of thinking about our current framework and making it more effective.

I also was gratified to see in the memo some discussion of the possible benefits of an inflation-targeting range as opposed to a point target as a communications device. And I agree with President Rosengren that thinking about addressing the inflation bias by a through-the-cycle strategy for the way we target inflation is worth exploring. And that would maybe actually get at

some of President Evans's question—that we say “symmetric,” but what does it really mean when we implement policy?

Regardless of which framework we ultimately decide on, I hope we'll explore ways to better communicate our reaction function and our strategy. This strategy document is very useful, and I certainly think having the explicit inflation target was a real step in the right direction. But there's really not much strategy in the strategy document. We say we take a “balanced approach,” but what does that really mean? And I think some of the memos were very good at focusing on the question, what does it really mean when we're setting policy and making decisions?

So the magnitude of the benefits achievable with the different makeup frameworks discussed in the memos depends on how likely the current Committee and future Committees are able and willing to make those commitments. And, to my mind, the time-inconsistency problems loom large. In the models, the stabilization benefits are greater when the policy commitment is longer, but lengthening the commitment makes the policy less credible. So if you look at the credible window, the benefits of the makeup strategy could be quite small. And in the memo, looking across models, a four-year average inflation-targeting rule doesn't do that much better at stabilizing inflation than the inertial Taylor rule. And an eight-year rule is somewhat more successful, but such a long window would likely overlap business cycle turning points and, in the “mild recession” scenario, would require the Committee to keep the funds rate below its neutral level for almost 20 years.

To my mind, in a situation in which demand was weakening and inflation was currently running at 2 percent, I think it would be very hard for the Committee to explain that, nonetheless, it was going to keep its policy rate elevated to make up for the past overshoot of inflation. And,

similarly, if inflation had been running low for a time, would the Committee be able to keep interest rates low if inflation were now well above target and with growth that's well above trend? I think in such a situation, inflation expectations may well become unanchored or move in directions that wouldn't necessarily capture benefits. So that tilts me toward the asymmetric or temporary makeup policies, should we opt to change frameworks.

I think before we do anything, the robustness testing of a proposed framework from both theoretical and practical perspectives is extremely important. And I thought the analysis in the memo by Hebden and others—the third memo—was very instructive. But as was pointed out, it's based on one model, the FRB/US model, rather than a set of models used in the Arias and others memo. And it focuses on demand shocks and not supply shocks. So I think we need to evaluate any proposed framework using a range of models across alternative economic conditions and further examine how the expected benefits could vary with different assumptions about the shape of the Phillips curve and how agents form expectations. As President Rosengren pointed out, if the models suggest that the benefits are modest, do we want to go through a big change in strategy that's going to be difficult to explain to the public? In other words, I'd like to continue along those lines so we really can road-test the theory.

There are some benefits that I think the model pointed out in terms of inflation expectations formation by households and businesses. No, they're not fully rational, but they do seem to respond to information, which, again, to me underscores the importance of the communications that we use to explain what we're doing no matter what our framework.

Now, on the practical side, I think consultations with other central bankers about how their framework works in practice and what types of challenges they've confronted that may not be expected from the theoretical viewpoint could be quite instructive. I think it would also be

useful to road-test any proposed changes with policymakers. I'm thinking about something along the lines of a "tabletop" exercise. The Financial Stability Subcommittee of the Conference of Presidents held two of these exercises. Of course, the focus was different, on the nexus between monetary policy and macroprudential policy, but I think we found these exercises quite useful. And I think we could set up similar exercises as a way to take us out of the models and to road-test how the proposed framework might actually work when policymakers are confronted with real-world choices under particular economic scenarios. And I think that would also help us figure out our communications and what type would be valuable on an ongoing basis to help us make policy more effective, independent of which framework we actually adopt.

Finally, the discussion so far has, again, pointed up the fact that we may want to discuss our loss function. We've talked about having further discussions before. I think we use the symmetric quadratic loss function because there are microfoundations for that in the models about how that's a simplification to optimally achieve our monetary policy goals. But the discussions and the *Fed Listens* events have often turned to, why are we worried about undershooting on the unemployment rate versus why are we so focused on that, and why do we think there's a loss there? This may be, as part of this framework review, another chance to think about those microfoundations and think further about, well, in a low- r^* environment, does that change? Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bostic.

MR. BOSTIC. Thank you, Mr. Chair. First, like others, I'd like to thank the staff for the excellent memos developed for this meeting. They have very much helped me understand the key dimensions to be considered and helped me weigh the pros and cons of taking various approaches.

Let me offer my top-line conclusion. I'm not persuaded that there are substantial gains to be realized from enhancing the current framework by formally adopting makeup strategies to address concerns about policy efficacy at the effective lower bound. In my view, the current framework was reasonably effective in managing the previous downturn and recovery. This was an important point that I took from the July meeting's special-topic memos and from assessments such as those in the *Fed Listens* conference paper by Eberly, Stock, and Wright.

Moreover, I think that the lessons learned from past experience will allow us to deploy our existing unconventional tools faster, more aggressively, and more effectively in the event that they are needed. I can see there is still a considerable amount of uncertainty about these tools. But I don't think this uncertainty is more significant than the uncertainties associated with the alternative strategies described in the briefings for this meeting. In particular, it is clear that the effective use of any makeup strategy requires a degree of credibility in following through on commitments over time. I have to say, my eyebrows definitely raised when I noticed some of the time horizons for some of these policies. As Governor Clarida and many others around the table have noted, these are pretty long, and that makes this a very serious issue.

Now, for sure, forward guidance raises the same questions as makeup strategies regarding commitment and credibility. But I'm not convinced that it's easier to solve these problems within a makeup strategy. To the contrary, I'm fairly convinced that the communications challenges associated with most of the makeup strategies are larger than under forward guidance.

To give an example, I'm pretty sure that it will be somewhat confounding to normal people when we have to explain that what we call "average inflation targeting" does not actually guarantee, or even really necessarily aim at, 2 percent average inflation. I would rather not just go there unless I can be convinced that we can accomplish things with the makeup scheme that

we cannot accomplish with forward guidance. I'm also not convinced these strategies buy us much at the ELB. My read of the simulations contained in the memos for this meeting is that the mechanism at the heart of these strategies is a lower-for-longer path of the federal funds rate. It seems to me that this can be accomplished with clear, perhaps state-contingent, forward guidance, and perhaps the Czech model can be instructive in thinking about this.

To summarize my responses to the specific questions posed for this go-round: Regarding question 1, I am not convinced that the costs and benefits relative to the current framework argue for a framework that explicitly incorporates a makeup strategy. For question 2, if the Committee does decide to move forward in formally adopting a framework that incorporates makeup strategies, I feel strongly that the strategy should be in place both at and away from the ELB. And regarding symmetry, I prefer an emphasis on state dependence rather than locking into a symmetric or asymmetric stance. And, finally, on the question of robustness of relative expectations, I am largely persuaded by the memos that if we get financial markets and businesses on board, we will be in good shape. I'm also convinced that any issues with these stakeholders can be resolved by coherent communications and consistent application of our strategies within the current framework.

I'd like to close by raising one issue that I think is conspicuously missing in our discussion thus far. The conversation on makeup strategies, in particular, has been largely cast in terms of what should be done about the effective lower bound. Now, this is obviously a vitally important question, and others have noted that this has been an issue that other central banks have struggled with. But there's an additional—and, in my view, more fundamental—question, something that President Evans pointed to. And the question is, do we, as a Committee, actually care if we define our price-stability objective in terms of convergence toward the 2 percent goal

as opposed to actually averaging 2 percent over some relevant horizon? And the answer to that question determines what forms of makeup strategies we want to actively consider and which ones we want to rule out. Or, as was discussed earlier, what dimensions of our current strategy require particular heightened attention to consider as a change?

For example, if our objective is to ensure that we do not stray too far from a 2 percent average, then it seems clear that we ought to be focused on some version, perhaps, of price-level targeting or change to a range or a full-throated, relentless commitment to symmetry as pushed by President Evans. If we decide that some form of makeup strategy is absolutely what we need to deal with ELB issues, I don't think that we should proceed further without first wrestling to the ground the question of how we should explicitly represent the 2 percent goal as a general matter. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Harker.

MR. HARKER. Thank you, Mr. Chair. I agree with much of what's already been said, so let me just add a few of my own comments. So, first, let me also add my thanks—*danke schön*, just to mix it up a little bit [laughter]—for the great work. These are thought-provoking and very well done memos. I want to thank you for that. They obviously touch on a host of issues surrounding our ability to maintain well-anchored inflation expectations. As we know, because inflation is likely to run below target when a zero-lower-bound event occurs, it will be necessary to let inflation average slightly above 2 percent. I mean, that was the whole point of the memos.

In that regard, I think we should just depart from the symmetric language regarding our target, and I think that's something we should do relatively soon. When inflation finally exceeds 2 percent, the Committee could indicate—and we could do this sooner than that—that a slight

overshoot is consistent with the long-run goal of the average inflation rate of 2 percent, and the Committee is comfortable with inflation running a bit above 2 percent when we're away from the ELB. This conduct of policy has been explicated by Mertens and Williams and is referred to as "average inflation targeting over the long run." I think that's what we can do, without changing the whole framework.

In that sense, I am in favor of a slightly asymmetric approach to policy when we are away from the effective lower bound. But until inflation actually exceeds 2 percent, I think it's premature to indicate that the Committee has changed its policy—that is, I'd rather walk the walk before we talk the talk. And I think this goes back to some comments—I think President Bullard's—earlier that the best way of proving that we can do this is to do it and not talk about doing it.

I do not believe, however, as I said, that we should formally adopt average inflation targeting, either symmetric or asymmetric. Although it's very attractive from an analytical point of view, I am uncertain as to how these types of policies would be perceived in a world with less than fully rational agents. Now, although there are potential gains from such an approach, as we see, they may not be large enough to risk the potential cost that could ensue if we simply end up confusing people. As memo 3 points out, both average and symmetric inflation targeting run the risk of unanchoring inflation expectations when the public does not possess fully rational expectations. And although, in the FRB/US model, it's enough that the financial market participants are rational for expectations to remain anchored, I'm not confident that this is a robust result that would be obtained in other settings with other models.

Regarding a symmetric average inflation target, I also worry about the credibility, as others have, of such a policy. Do we really think that future Committees would be willing to

offset misses to the upside? And do we think the public will believe that is going to be the case? We know that policies work quite differently when they're not believed compared with when they are, and I'm skeptical that average inflation targeting would be a credible policy strategy. Additionally, the makeup strategies would be extraordinarily difficult to communicate, as we've all said.

To summarize, I favor dropping symmetry from our statement and letting inflation run slightly above 2 percent when away from the effective lower bound, but I would only wish to formalize this strategy once we've delivered an inflation rate of at least 2 percent—that is, when we've walked the walk. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Barkin.

MR. BARKIN. Thus far, we've had a well-constructed but heavy emphasis on makeup strategies. I'm looking forward to the coming sessions that Governor Clarida outlined where, like others, I hope we'll also be exploring ranging our target using multiple supporting core inflation metrics and evolving our communication. All that said, if the Committee were to formally adopt a makeup strategy, I would be drawn to the temporary variants, which are more likely to be credible even if less effective, and the asymmetric ones, which are more likely to be palatable.

At the core, like President Bostic just said, I do focus on concerns about credibility and the difficulty of communications. With respect to President Evans's earlier question on public reaction, I understand the Bank of Canada, in its last review, decided against makeup strategies after conducting a field test that convinced them the public would not respond as the models predict. In a flat Phillips curve world, these concerns are especially relevant. Makeup strategies have us going all in to push inflation up, but we really don't know how long that will take.

Adopting a strategy such as this would be an aggressive experiment on the world's most important economy, and I really don't feel it's been well tested elsewhere. And that testing matters because success elsewhere would be critical to the credibility we need. The Czech example, while interesting, isn't exactly on point.

What concerns me? With the promise of low rates for a long time, a number of things can go wrong. President Rosengren mentioned asset bubbles, and, of course, inflation might eventually rise more than we want. But there's also a third risk I'll discuss tomorrow: the excessive substitution for labor. Central bank credibility is also a risk. A makeup strategy commits us to a rule. If we don't have the success we desire, it could erode our reputation. Can we rule out that extended low-rate policies aimed at preventing a low-inflation outcome end up causing exactly that as businesses become pessimistic, banks become weaker, leverage constrains investment, and people become accustomed to low interest rates, which they expect to last indefinitely?

I agree with President Bullard on the following: The longest effective-lower-bound episodes are in Japan and Europe, and both arguably added strong verbal commitments, yet neither gives much hope that extended time at the lower bound delivers inflation at target. Thank you.

CHAIR POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Mr. Chairman. And thank you to the staff for these memos. They certainly spurred a lot of debate among our team at the Dallas Fed. And, I guess, first and foremost, a big part of our discussion was trying to define the term "adopt," and what does the term "commitment" mean? Is it an obligation to act? Is it a presumption that you will act, but it's not an obligation? Or is it simply a consideration?

We had a long conversation about the decision process of the FOMC. First, there's the analytical phase, in which we take into account tools, decision rules, and maybe average inflation targeting. And then the second phase is, everyone around the table uses their judgment, and, as we've seen as part of a balanced approach, each of us—and today is a good example—weight those various considerations differently and come to a different place, even though we're using the same analytics. And then, as a group, we take action. And what we're confused about on some of these issues, and I think even around our own team—each person had a slightly different understanding of what the term “adopt” means, as I think you heard some feedback about.

I'm very reluctant to adopt strategies that obligate us to act and skip the judgment phase, in which people can balance. I'm probably also very hesitant even to adopt an approach that gives a presumption during the judgment phase that people will act. I don't think I am opposed to a tool that is a consideration in the analysis phase but allows each of us, as part of a balanced approach, to weight these different factors.

In that regard, we also had a long conversation, and my team explained to me that we actually have average inflation targeting right now, it's just that it's based on one year—basically, it's 12-month lagging headline PCE inflation. And, in that regard, going to two years or three years or four years—it's a change, and it might be something to consider. I think our team prefers to use headline PCE inflation or some other measure, not core inflation, but it would only be comfortable using that approach if it's part of the analytical part of the process and not a presumption or an obligation to act on it.

Average inflation targeting, for me, could be very useful if it's one of several considerations. I think the Taylor rule, or modified Taylor rule, could be another consideration.

And I think, in that regard, my own view is, average inflation targeting could be very useful as one other item to consider in the analysis before we get to our judgments.

I liked a number of the comments led by President Evans about being committed to an outcome-based approach but not committing to a rule or rules-based approach. And I thought that was a great way to say it. I would be willing to tolerate an inflation overshoot if we wanted to be more analytical about how we describe that. Maybe average inflation targeting over some makeup window could be a useful way to quantify that, and so I'm open to it, but, again, as long as it's a consideration, not a presumption or an obligation to act. And I think in our discussions of these matters, we may have to start being much more precise about what we mean, because I think these rules strike each of us very differently based on what it is—is it an obligation or presumption or just a consideration? For me, a consideration might make it very useful.

Last comment. I do think we have a public communication problem. I mentioned this at the July meeting, and I'll say it again. I don't think we've adequately explained to the public why low inflation below target by itself is undesirable. The public understands why low real GDP growth is bad. I think the public understands why low nominal GDP growth is bad. I think the public understands why high inflation is bad, which is why I think some of this old language about "We're going to be careful above 2 percent" lags, associated with previous generations when the issue was we had high inflation.

I don't think the public understands—if my regional and Dallas Fed boards are any indication, which I think they are—why below-target inflation by itself is bad or even inconsistent with price stability unless it's in the context of low nominal GDP growth. Once we explain it that way, they get it. And I wonder if, in our public communication, particularly if we're going to beef up, at a minimum, mention in our framework about being willing to

overshoot in our efforts to avoid the lower bound, I think that we might, as a Committee, be well served to get some communication advice. Maybe we'd be better off doing a better job reframing the dangers of low inflation. For me, the most resonant way to explain it is in the context of low nominal GDP growth. Encounters with the lower bound make sense to us, but I don't think they resonate very well with people "outside the trade," so to speak. But I think framing this in a better way, in terms of the risk of running low nominal GDP or other explanations on why low inflation is dangerous, I think we'd be well served to beef this up as part of the framework review so we get more public support for what we're about to potentially do. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. And with that, we will take our lunch break and resume at 1:00 p.m. sharp. Thank you.

[Lunch recess]

CHAIR POWELL. We will resume our go-round with Governor Bowman.

MS. BOWMAN. Thank you, Mr. Chair. I'd also like to start by thanking the staff for their work on the framework review. These questions are challenging, and the memos on the alternative strategies provide a lot to think about. I think it's very valuable to engage in these discussions and the framework review process more broadly.

I viewed the latest three memos as addressing a narrow question: What actions could the Committee consider when the existing toolkit fails to bring inflation up to its 2 percent target? The memos provide a description of what outcomes we can expect to achieve using various makeup strategies but without the influence of balance sheet policies or effective forward guidance.

When we engage in discussions about our policy framework, it's important to consider our current state. The unemployment rate is lower than at any time since the 1960s, inflation has remained close to our target relative to historical standards, and the financial system generally looks to be resilient. In this regard, the current policy framework has served us well, and our challenge now is whether to consider taking action that would move us closer to our inflation target.

I recognize that our experience with forward guidance and balance sheet policies is limited. However, there is evidence that these policies helped reduce or at least contain the economic damage inflicted during the recent financial crisis. The analysis presented in the memos focuses on addressing the issues we're facing at present. We're in an environment in which the natural rate of interest is very low and in which inflation is not responding as we expect when we run a "hot" economy. But in order to complete a thorough review of our framework, in my mind, we need to address inflation in a broader context. We should give careful consideration to whether these or other strategies would be effective or even appropriate during a time of a persistent overshooting of inflation.

We can all recall episodes when high and volatile inflation was a problem, and we should acknowledge the possibility that events we can't anticipate or control could once again push us in that direction. We also need to be open to the idea that the low interest rate environment may not be an indefinite circumstance. Our understanding of the structural changes that exist now are incomplete, and the effects of these structural changes are uncertain. It's possible that the factors that led to a lower natural rate of interest will unwind and, therefore, make it less likely that we run up against the lower-bound constraint over an extended time horizon.

If we decide to go forward with some form of makeup strategy, communicating this new approach will be challenging. Even if we're careful to provide a clear and comprehensive roadmap in good times, that will not necessarily ensure that the implementation occurs smoothly when the time comes to actually use the makeup strategy.

I would also like to see the Committee communicate more precisely what we mean by the goal of price stability. In the short time I've been on the FOMC, I've observed material differences in our individual interpretations of the 2 percent inflation target. Should we view where we are now as essentially achieving our target, or should we consider it a deviation that we should take action to address? Outside what range around the 2 percent target would we consider it necessary to implement one of these strategies or another one? Other central banks have set a range for their inflation rates. We've defined a target, but we've not come to a consensus about what level of inflation warrants Committee action.

The strength of our monetary policy framework depends on our answers to these questions and on the public's understanding of them. I believe that we could strengthen our policy framework by providing the public more clarity on these issues. Agreeing upon and articulating our goals for inflation as clearly as possible will give us the best chance to ensure that our policy actions are effective. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Daly.

MS. DALY. Thank you, Mr. Chair. Like everyone else, let me also thank the staff for the excellent memos. I was struck by something President Mester said, and I completely agree that you can judge the success of the memos you produced—not just now but in the previous versions—from the level of the discussion around the table. And I think from that mark, it's hard to say you get anything but an A+. So I really appreciate it.

Now, as part of executing on our dual mandate, we have set ourselves the explicit goal of achieving PCE inflation of 2 percent. And I have interpreted that as 2 percent, on average, over an averaging window that is a year or more, but really that we want it on average. That's what I thought of as symmetric, so it's in that framework that I am thinking about the framework.

So the review of our monetary policy framework, then, asks how best to do that in the world we see before us. Now, as I view it, we start from a really good position. The framework that we have used since the Volcker disinflation anchored long-term inflation expectations and contributed to the Great Moderation. This has kept inflation low and stable in both good times and bad. But looking back, it is clear that those were different times—times when inflation was mostly at or above target, the Phillips curve was steep, and we had ample policy space to achieve our goals.

Economic conditions have changed since then. Structural changes in global labor and product markets are putting downward pressure on inflation, forcing us to confront a sustained deflationary environment. In addition, the Phillips curve is flatter, and it can be hard to see the tradeoff between economic slack and wages and prices, at least in the short run. And slowing productivity growth and changes in demographics have led to a lower real neutral rate of interest, leaving us less policy space and limiting our ability to meet our policy objectives.

Indeed, I would argue that we are in the midst of these new economic conditions right now. The Phillips curve is flat, policy space is limited, and inflation has undershot our 2 percent target for most of the past decade. The sustained downside miss on inflation has already shown through into lower market-based and survey expectations, which have edged lower over the past five years. Ongoing future misses, both immediately and as we proceed over the next decade,

carry the risk that a nominal anchor may slip below our 2 percent goal, further reducing our policy space. This is currently happening in Europe.

So the question is, what can be done in these new and different times—not the ones we’ve come from, but the ones we’re in and looking ahead to—that ensures we consistently meet our 2 percent PCE inflation target and maintain our nominal inflation anchor? And in that context, I am pulled to strongly consider an alternative framework that makes up for past inflation misses and telegraphs to the public that we remain committed to our 2 percent target. Such alternative frameworks clearly tell businesses and households that we dislike extended periods of inflation undershooting and that we are ready to make up for them. As the memos detail, establishing the credibility of such a framework before we experience a recession provides the added benefit of offsetting, at least partially, the deflationary bias induced by the effective lower bound.

Now, of course, as the memos also note, any multiyear strategy suffers from time inconsistency. Policies we commit to today may appear too costly to implement when the time comes to act. So the public will likely be skeptical of our promises until we deliver them. As President Harker said, we are going to need to “walk the walk” before the talk becomes actually more than just that. So this pushes me to policies with the following features. First, they should be easily understandable and observationally verifiable. Providing the public with measurable markers over reasonable periods allows households and businesses to check our work, if you will, and quickly see if we are delivering on our stated objectives.

Second, the commitments can’t be so long that they are producing financial risks or other unintended consequences. I’m persuaded by the remarks of Presidents Rosengren and Mester and others about how we don’t want to create unintended imbalances. It won’t serve us well if

our commitments place future Committees in the difficult position of choosing between keeping our promises—and, thus, our credibility—or creating these imbalances.

An attractive option that balances these objectives is average inflation targeting with a very short window. And by “very short,” I mean three years. It has the advantage over the current framework of keeping policy rates lower for longer following periods of below-target inflation. And with a short averaging window, this policy would mitigate some of the financial stability risks that lower-for-longer strategies may entail.

Now, in the materials we were given, it looks like the effect of these things can be minimis, but, in fact, I would argue that such a framework might have helped today. It would signal that we are prepared to be slightly accommodative until PCE inflation averages 2 percent over the defined window. It would also have the added benefit of building credibility and an understanding of a framework such as this before the next downturn. And it might allow us to walk the walk.

I didn’t have this in my remarks, but I think President Bullard made a really good point earlier, which is, when we and our predecessors were going through the Volcker disinflation, there was a lot of skepticism about whether we could really deliver 2 percent anchored inflation expectations, and we did. So the idea that it’s difficult doesn’t mean that it’s impossible. That’s just something to highlight. But you do have to walk the walk.

That said, no framework is a panacea, and average inflation targeting, even with a short window, is not without risk: risk that households and businesses will be slow to grasp the change and focus on realized rather than promised inflation, mitigating or tempering some of the effects of the strategy; risk that we will face unwanted inflation, inflation that’s too high, and have to offset it rather than simply curb it and bring it back to 2; and risk that any framework we

choose will not be enough to manage the considerable challenges we face in the future. So whatever we decide on as our framework, we likely will need to be fully prepared to deploy our complete set of tools—conventional and unconventional—if we are to achieve our goals in this new environment.

The last thing I want to say is that there's this concept that I've been grappling with, and it was really influenced by some of the remarks today of "We don't want to go lower for longer for too long." That's clear. But there's also a pull to be intentionally lower for longer and not have to be reactively lower for longer, like Europe has to do right now. I mean, you can wait, but then you have to do it, or you're forced to do it, whereas you could be systematic and front-run it and maybe prevent getting there in the first place. So with that, I'll conclude. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chair. I join others in thanking the staff for these background papers. Whether or not we ultimately make any changes to our framework, I think this process is essential, in my view, to the credibility of our decisionmaking, our commitment to transparency, and our collective learning about the changing landscape. So I hope the exercise will become a regular feature of the Committee's policy framework.

Regarding the three questions posed by the staff, my responses are more general than specific to the alternative strategies and focus primarily on clear and credible communications rather than a fundamental strategy reset. The costs and benefits associated with committing to a makeup strategy strike me as highly uncertain and difficult to communicate to the public in a clear and credible manner. While the modest benefits of makeup strategies are evident in the models that we've been talking about, how the public would come to view and understand a

change in our strategy that will necessarily entail numerous implementation details suggests to me that the costs could be significant.

These makeup policies necessitate decisions to manage or fine-tune inflation in the short run, moving inflation at times above and possibly at other times below 2 percent to achieve a longer-run objective on average. Such fine-tuning risks destabilizing inflation expectations and raises questions about whether short-term actions would be consistent with longer-run goals. Moving to a framework like this could also put at risk the credibility that already exists around our current strategy and goals in favor of an untested alternative that's likely to be difficult to explain. Given the costs and uncertainties associated with alternative makeup policies, my preference is to consider how to bolster the credibility of our existing framework.

I thought Governor Philip Lowe of the Reserve Bank of Australia framed it well in his remarks at Jackson Hole when he said, "Keeping inflation close to target is part of the answer, but it is not the full answer." Given the uncertainties we face, it's appropriate that we have a degree of flexibility. But when we use this flexibility, we need to explain why we're doing it and how our decisions are consistent with our mandate.

We also recognize that short-term inflation control looks harder than it once was, and there is more uncertainty about what is required to deliver this outcome. In the end, simple and clear communication that the broader public can understand is critical, and I find myself agreeing wholeheartedly with President Evans's outcome-based focus. I think we should reorient ourselves to that.

Within our existing framework, I see two opportunities to bolster the credibility of our policy strategy. One is to further define what a balanced approach means as it relates to achieving our dual mandate when the objectives are in conflict. The other is to explore how we

might use forward guidance more effectively to influence expectations and outcomes in anticipation of future encounters with the ELB. Thank you.

CHAIR POWELL. Thank you. Governor Quarles.

MR. QUARLES. Thank you, Mr. Chair. I, too, thought the memos were excellent at framing the discussion. I agree with President George that the background the memos provide is an important outcome of this review. I, too, would like to see the review become a regular feature of the Committee, maybe something like the Bank of Canada does, at some regular periodic cycle.

I think that the regularity of assessing and questioning of one's assumptions and intellectual frameworks is important in any policy setting. And so one of the things that I would want to caution us about as we continue this discussion is that really being open to where that leads also means being open to the fact that it might not lead anywhere. And I think that if we want this to be a regular feature of the Committee, which, again, I do think is just good intellectual hygiene, if we feel ourselves in this process painted into a corner of doing something because we have done so much work on it, future Committees may be reluctant to undertake the process if they don't think that there is, perhaps, anything that really needs to be changed at the time. And I wouldn't want to have that be a disincentive to what is a good regular practice.

So, following the memos in talking about alternative frameworks, I am going to direct my comments primarily toward average inflation targeting, as I think the memos did, particularly when thinking of the costs and benefits relative to our current flexible inflation-targeting framework. The memos list essentially three major benefits of average inflation targeting that build on one another. First, a public understanding that policy rates will be lower for longer during recessions will, in turn, second, deliver greater accommodation from the start, which, in

turn, third, will support inflation relative to the current framework, will do that better than the current framework, and is, therefore, more effective at preventing inflation expectations from slipping.

All of that seems very logical and laudable, but the memos also make it clear that the ability of average inflation targeting to deliver that inflation that's deemed necessary to anchor expectations where we want them is very much constrained by the flatness of the Phillips curve. But that's the problem we are facing with our current framework. A flat Phillips curve is going to make it difficult to target small precision changes in the inflation rate regardless of the particular framework in which we are doing that. And what are the potential costs of average inflation targeting?

Well, because the framework is primarily a structure for communicating our policy, the cost would be if, in adopting a new framework, the public or the markets were to become confused as to what we're doing, or perhaps they would perceive that we are making promises that we're unlikely to be able to keep, and that would damage our credibility. They may not know what it is we're doing. They may have a perfect understanding of what we're doing and believe that it's not actually credible.

The memos focus on one aspect of the broad communications challenges that are associated with AIT. Namely, that's the challenge of adopting a time-inconsistent policy, a policy that is structured to produce benefits before it incurs costs, also known as the Wimp burger phenomenon: "I will gladly pay you Tuesday for a hamburger today." [Laughter]

The memos make it clear that average inflation targeting is likely to be more effective the more credible the commitment. That is to say, depending on how binding the policy prescription or rule is thought to be, it's from knowing that the Committee will follow that rule in the future

that the framework gains its power. So as we consider constraining future Committees in the way that some of these makeup strategies would, it's probably useful to review why we found it difficult to adopt formal constraints on ourselves—for example, through adoption of a formal policy rule, like the Taylor rule, say.

Besides the difficulty of distilling the varied views of a large Committee into a single rule—maps versus flags or “hawks versus doves” or larks like me—another issue of concern associated with formal rules is that they prioritize a certain subset of the data when, rather, the complexity and evolving nature of the economy argues for the consideration of a wide range of indicators and assessing the state of the economy at any particular moment. So although a backward-looking inflation average might make an appealing target now, the memos make it clear that that's not always going to be the case, especially if inflation has been running above target for a time before a recession, such as was the case in 2008.

The world is messy. The data often don't speak for themselves. Sometimes they need a little interpretation. When I arrived at the Board in the fall of 2017, discussions of inflation, which was then running a few tenths below target, inevitably contained a reference. It was a guideline, maybe even a federal rule of some sort, to the sharp fall in cellphone charges that was observed in March 2017.

Every single discussion of inflation said, of course, cellphone charges. I was very relieved when we got to March 2018 [laughter] when that decline finally dropped out of the 12-month window and we could stop nattering on about it every time we talked about inflation. I certainly wouldn't have wanted to have to keep talking about cellphone charges for the next four or eight years as we waited for something similar to drop out of the long-run average.

More fundamentally, I want to touch on some issues that I brought up at the previous meeting that I think are still relevant for the discussion today. First, I find it difficult to interpret model simulations that constrain the Committee's use of balance sheet policies. That's not the world we live in. Model simulations that are based on a binding ELB constraint aren't very informative if they rule out balance sheet policies that the Committee is likely to take and that the market is likely to expect us to take if there were to be a severe downturn.

Second, in the current environment with low r^* and low inflation, it's really unlikely that any change in the framework will keep us off the ELB. The memos give the motivation for the consideration of alternative frameworks as the high probability of returning to the ELB. Well, from the information in the memos—very well done—I seriously doubt that adopting alternative inflation targeting is going to materially decrease the chance of hitting the ELB. The memos certainly don't report those probabilities, so I look at an examination of our toolkit at the ELB as a high priority.

And I think our discussion of tools and policy options available when the short-term policy rate is constrained by the ELB—because it would appear that that's going to be the world we are living in for some period of time, no matter what we do *about* frameworks—should be as robust and prominent as our discussion of alternative frameworks.

To my mind, it really all comes down to this. Brigham Young was a bad speller, and he attributed this fact to the framework of English orthography. What rules there were were illogical. In many cases, there were no rules at all. There were simply irregular practices that were learned by rote, and they served as an obstacle to communication.

And because this is the sort of thing you can do when you are the sole autocrat of a remote desert theocracy in the vastness of the Rocky Mountains [laughter], circumstances that

you might envy, Mr. Chair [laughter], he decreed that, henceforth, communication in the territory of Utah would be in the Deseret alphabet, a set of 38 entirely new symbols, each assigned uniquely to a separate phoneme, created by the most intellectual of his rough-and-ready apostles to perfect communication of the gospel. It was taught in the schools. Newspapers and street signs were printed in it. Sermons and correspondence were written in it. Official documents of the territorial government were transcribed into it. And it was the alphabet of the first complete English Hopi dictionary.

On my desk in Utah, at our house in the foothills of the tallest mountain of the Wasatch Range, I have a copy of the Book of Mormon printed in the Deseret alphabet. I keep it there as a symbol of the limits of logic to perfect human action, because that book is one of the rarest books in North America, one of only a small handful of printed materials in the Deseret alphabet that remain.

Notwithstanding the decree of Brigham Young—which, in his day, was absolute law in an area that stretched from San Bernardino to the top of the Continental Divide—the Deseret alphabet was a complete bust. It turns out that people already knew an alphabet. They did not want to learn a new one, not even one given to them by a prophet or by the Federal Reserve. [Laughter] The new alphabet was hard and alien. Fonts were expensive and bespoke. And whatever the limitations of its grammar and orthography, English, as it was written, was adequately fit for the purpose of building an empire in the Rockies. And it was in sturdy roman characters rather than the Deseret alphabet that we made the desert blossom as a rose.

I worry that we would encounter some of the same problems were we to seek a significant recrafting of our policy framework, and that, even in the best case, the significant transition costs would be simply unnecessary. Brigham Young's problem was not the

framework of English orthography. He just needed to work on his spelling. [Laughter]

Similarly, I believe that our existing framework is entirely adequate for the purpose of formulating and communicating monetary policy. And to the extent that there is room for improvement, we should focus on improving our spelling and not reforming the alphabet. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kashkari, it falls to you to follow. [Laughter]

MR. KASHKARI. I'd like to yield my time. [Laughter] I'll be very brief. Like many of you, I thought the memos highlighted that there's a lot of complexity and probably marginal benefits in going with one of these makeup strategies that Governor Quarles just ended with. I actually think our existing symmetric framework provides us a lot of flexibility to actually achieve a lot of the benefits that these makeup strategies could achieve in theory if we are willing to use that flexibility.

To date, we have not been willing to use the flexibility. I think many of us have treated it like a ceiling. So the first thing I would say is, as we go through this process and we consider refining our strategy statement, it would be great if we all got on the same page on what a symmetric inflation target means. I think that's a useful objective on its own, first of all, because I think there's a wide range of opinions around the table of what that means.

And, second, I hope that wherever we land is a place that embraces more flexibility rather than less flexibility. An example of this would be a forward-looking symmetric inflation objective of 2 percent, which could acknowledge the ELB and could acknowledge that, at the ELB, we'll likely be below 2 percent. So when we're away from the ELB, we might be somewhat above 2 percent, and then that would be consistent with the symmetric inflation target.

I think that that's not exactly where we are today, but I think that's consistent with our broader framework, and I think it's a better place to end up than where we are today.

That's it. Thank you.

CHAIR POWELL. Great, thank you. Governor Brainard.

MS. BRAINARD. Thank you. Well, I'm very happy to have the opportunity to engage in this discussion. I appreciate the Chair's leadership and the roadmap charted by Governor Clarida. It is very important to review and strengthen our framework in light of the key features of the new normal.

In my mind, there are three, maybe three and a half. Inflation is low. Underlying trend inflation is stuck below 2 percent, according to a variety of statistical filtering methods. And, with the experience of inflation undershooting the target for most of the past 10 years, there's a risk that inflation expectations have slipped, as suggested by some survey measures and measures of inflation compensation.

Second, the sensitivity of price inflation to resource utilization is very low. As we've discussed previously, a flat Phillips curve has the important advantage of pulling more sidelined workers back into productive employment, but it also makes it hard to achieve our 2 percent inflation objective on a sustained basis. And it means that the traditional relationship between inflation and unemployment can be a very misleading guide when policy is being set preemptively. And, of course, it raises questions about the balanced approach in our Statement on Longer-Run Goals.

Third, the equilibrium rate is very low. The Committee's median projection has fallen from 4¼ percent to 2½ percent over the past seven years. That means the conventional policy

buffer is now only half of the 450 to 500 basis points in policy rate cuts that the FOMC would typically deliver in the face of recessionary pressures over the past five decades.

That large loss of policy space will tend to increase, as the simulations show, the frequency or length of periods when the policy rate is pinned at the lower bound, unemployment is elevated, and inflation is below target. And, in turn, that experience risks eroding private-sector inflation expectations and further compressing conventional policy space.

The result that I think we are trying to avoid here is a downward spiral whereby conventional policy space gets compressed even further. The lower bound binds even more frequently, and it becomes increasingly challenging to return inflation to target, as we've seen in Japan and more recently are seeing in the euro area. This is particularly concerning if fiscal policy can't be counted on to play its traditional countercyclical role.

Finally, it's also important to keep in mind the potential spillovers for monetary policy settings in other major jurisdictions. The fact that the euro area and Japan are struggling with more extreme versions of this unholy trinity only reinforces the case for strengthening our policy framework here.

So, turning to the rules for consideration today, I want to thank the staff for really excellent memos that roughly quantify the potential advantages of adopting certain forms of makeup strategies and highlight the assumptions on expectations, time consistency, and interest rate sensitivity that are most important in determining the potential gains. The memos suggest that makeup strategies have some advantages over a "let bygones be bygones" approach, while also doing a nice job illustrating that the makeup rules under consideration themselves have some important challenges.

One straightforward conclusion is that there's little to recommend a symmetric approach, as we have a largely one-sided problem that we're trying to address. We have plentiful conventional policy space with which to deal with inflation exceeding our target—in contrast to the discontinuity associated with the ELB that risks weakening inflation expectations from below. So it makes sense to restrict our attention to solutions that reflect that asymmetry.

It's implausible that a future FOMC would remain committed to pushing inflation below 2 percent just on the basis of its past success getting inflation to run above 2 percent for a few years once the post-crisis subpar performance drops out of the makeup window. But even with an asymmetric average-inflation-targeting rule and fairly well aligned expectations, the simulations suggest it would take many years just to get inflation back to target following a lower-bound episode.

As many of you have pointed out, communications during that period would be exceptionally challenging. If the inflation process works as slowly as in exhibits on pages 8 and 10, for about a decade the Committee would be explaining that it is pursuing inflation above 2 percent to make up for the previous stretch of inflation below the target, while actual inflation would continue to come in below 2 percent.

Indeed, if it takes a decade to get inflation back to 2 percent and even longer to implement a makeup overshoot, there could well be a return to the effective lower bound before that initial makeup is achieved, in which case the “makeup” dimension of the AIT policy wouldn't be observable through a full cycle.

On the flip side, if the expansion were to continue long enough for inflation to move above 2 percent, under the stronger versions of the AIT rule the time-consistency problem would

kick in. This illustrates what I view as perhaps the greatest challenge associated with these approaches, which is how we would communicate to the public what we are aiming to achieve.

I have four requests for future work. First, I would like to see how an AIT rule might compare with an inflation-threshold-based policy, both from the perspective of economic models and with regard to the ease of communications and expectation setting. And this is, in particular, in ELB episodes. My reading of the literature is that a framework along the lines of the one outlined by Bernanke, Kiley, and Roberts—using a state-based threshold strategy in which we simply commit to delay liftoff until our 2 percent goal has been achieved on a sustained basis, say, for a year—could improve our performance on our dual-mandate goals while being much simpler to communicate and execute and potentially would not encounter the time-inconsistency problem with some of the AIT rules.

My interest in this approach may simply reflect personal experience, because in 2015 and 2016, I was worried that the Committee jumped the gun, guided by an “old normal” level of the equilibrium rate and Phillips curve relationship that were no longer in evidence. With the benefit of hindsight, delaying liftoff might have led to better inflation performance.

Second—similar, I think, to what Jim Bullard and Charlie Evans and a few others were saying—I believe the problem we’re trying to solve today is not only what to do in future ELB episodes, but also how to move underlying inflation back up to target in the near term after a long period of misses in order to re-anchor expectations and strengthen our buffer.

One approach that I would want to explore and might be much simpler to communicate would simply be to shift up our target range for a limited number of years with a review to follow. So, for instance, we could just target inflation in the range of 2 to 2½ percent over the next five years to make up for the past five years when inflation has been in the range of 1½ to

2 percent, and we could commit to review that performance again after five years. This could be seen as a stronger interpretation of symmetry or a field test of a “soft” form of average inflation targeting. It would help the Committee gently nudge inflation above 2 percent to provide the public some experience of over 2 percent inflation. Then, at the subsequent review, the Committee would have some experience with inflation running a bit above target as a basis for assessing the costs and benefits of possibly moving the inflation target to the top of the new range in a more opportunistic approach.

However we approach it, I think it would be a mistake not to at least give some serious thought to a modest increase in our inflation target to partially regain some of the lost conventional policy space associated with the decline in the real equilibrium rate, which looks to be long lived. The Eberly, Stock, and Wright paper did a nice job illustrating the advantages of starting from a slightly higher level of inflation.

Third, I agree with Eric and others that we need to assess the implications for financial stability as an integral part of this review. The changes to monetary policy we’re contemplating suggest a low-for-long environment as a feature, not a bug, of the “new normal.” It has implications for reach-for-yield behavior as well as the buildup of debt. We had a good conversation last night at the Joint Supervision Committee on why bank capital levels that were calibrated on pre-crisis historical data may not be adequate in today’s circumstances. My own inclination would be to get serious about macroprudential policy rather than overburden our monetary policy, but it’s important to have analysis to make that assessment.

Fourth and finally, it’s critical as part of our framework review to take the communications challenge more seriously than the modeling challenge. I thought it was hugely valuable to engage in our *Fed Listens* discussions around the country and to invite panels

of non-economist experts to the Chicago conference. One of the biggest “takeaways” was that we tend to orient our communications to an exceptionally narrow slice of the American public. Yet the models presented today demonstrate that the efficacy of the approaches hinges importantly on consistent expectations not only among financial market participants, but also among wage and price setters as well as savers and consumers.

Given the centrality of expectations and questions about how they’re formed, it would seem important to use communications research tools, such as surveys and focus groups, no less than econometric modeling. As Rob Kaplan noted, many Americans are unlikely to find it intuitively obvious that inflation below 2 percent is a problem. So we’ll need to put some special effort into our communications. Similar to the Bank of England, we may find it may be beneficial to target different kinds of communications to different audiences. Because the hallmark of *Fed Listens* has been to engage with a much broader set of stakeholders, I would hope that we would similarly seek to ensure that any solution that we adopt seeks to communicate more effectively with that broader set of stakeholders. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Vice Chair Williams.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. A lot has already been said, and I share what many have said—that the briefings and the memos have been very helpful to frame a very good discussion.

I guess I go back to something I learned from President Evans early in my tenure eight years ago, and that is, not to answer the questions in the memo. [Laughter] In your remarks today, and I wholeheartedly agree with President Evans’s remarks that he started this go-round with, but I notice that you didn’t answer the questions either, so I won’t.

So first is, I think, we do want to go back to the very basic issue, and I go back to the great success in central banking of the past 30 or more years in anchoring inflation expectations. This was a huge undertaking. Central banks around the world—including the Federal Reserve, but many others, too—had allowed inflation to run wild and had inflation expectations that had become unmoored, and it was an enormous effort to get low and anchored inflation expectations.

It served us incredibly well, both in terms of stabilizing inflation and also—as we all, or many of us, experienced during the recession and the aftermath of that—that the well-anchored inflation expectations gave us more policy space to respond aggressively with both conventional and unconventional monetary policy tools to address the very high unemployment and the weakness in the economy without concerns of inflation taking off. So, again, getting maintaining anchored inflation expectations, I think, is really important.

I think that the issue, of course, with the lower bound and the very low r^* is that inflation expectations could get anchored at too low a level or actually get into a situation where they keep moving down over time, which is what we've seen, as President Bullard and Governor Brainard and others have mentioned, in examples of Japan and the euro area that have seen a huge downward shift in inflation expectations, which then has a negative effect of reducing policy space to respond to the next recession.

So I think, again, the goal here really is about anchoring inflation expectations, and that brings up a number of—I think, to me—important issues. One is, and I think the memo did a great job—one of the memos covered this well, which is this uncertainty about r^* . We had a good discussion of this in New York.

If you actually told me with certainty that r^* was 0.5 percent, and it would be 0.5 for the rest of our lifetimes, I think that the answer that we could address a reasonably sized or a typical

recession using very aggressive conventional policy actions, unconventional policy actions, and forward guidance is probably the right answer for a number of people, to say we just need to use our tools more aggressively, more effectively. I think that's true, and we could probably get through the situation reasonably well, and that's kind of what some of these simulations were showing.

At the same time, there's a great deal of uncertainty about r^* . So, say, if you asked me 10 years ago what r^* was, I would have told you $2\frac{1}{2}$ percent. And today we're saying it's $\frac{1}{2}$. So say that, in the next recession—which I hope is not for another 10 years—we're actually in a situation in which r^* is not $\frac{1}{2}$ percent but is actually minus $\frac{1}{2}$ or even lower. In that circumstance, using the same simulations, we just don't have nearly as much firepower, either conventionally—and, obviously, we could use unconventional policies, balance sheet policies, too.

So, again, when I think about what the future may hold, this asymmetry regarding the effects of r^* and the uncertainty about r^* tell you that if r^* comes in higher, as Governor Bowman suggested it might, that's good. That would make our lives easier, and it would be better for the economy. But the uncertainty that implies that r^* could be lower is what tells me that those are circumstances where we do need to think seriously about how to create the best framework to maximize the probability of success.

So that gets to a couple of the other issues around this, and one is commitment. People brought up time inconsistency, commitment issues. If you go back to the debate about inflation targeting, this is what the debate was about then. I think, President Bullard, you mentioned that. A lot of people weren't convinced that central banks could get inflation expectations anchored well. So what did it do? What do I think are important components of that? One is to have a

pretty clear objective of what you're trying to achieve. Communicate that well, and also walk the talk in terms of outcomes, as President Evans and others highlighted.

I don't think the commitment issues associated with some of the strategies that we're talking about in the memos are fundamentally that different from these commitment issues that were associated with its having a low inflation target. If we could find ways to agree on a strategy—whether it's a makeup strategy or average inflation target or whatever it is—and we also commit to carry that strategy out in terms of our actions, I think that that's not something that we should see as “Because it's hard, we can't do it.” We should actually take a lesson from history and from central bankers around the world, which is, if you commit to it and you stick to it, then you actually can achieve that and get the benefits from that.

In terms of some of the other issues around this and having a range versus a point target—and President Rosengren gave a good example of that—I do worry about the fundamental asymmetry of the zero lower bound or the effective lower bound, and that is that inflation is more likely to be under the target than above the target, at least under some circumstances. If I can do this from memory, the way that President Rosengren described it was, inflation is, on average, 2 percent over the cycle, and then behind that is a concept that there's a range of inflation that sometimes in a recession it might be below, and then during an extended expansion it might be above. I think that the range supports this notion, but I don't want the range to replace the target, because the target is really what we want to see over the cycle, over the medium term, but the range may help people understand or help ourselves understand that. So I think there's a way to connect these ideas in a constructive way.

The last point I'd like to make is, a lot of the discussion in the memos and in this room focuses on makeup strategies around inflation, and that's understandable, because we've been

reminded many times that we've been missing our inflation target. But if you actually go back to what the makeup strategies were about, they weren't really about inflation. They were about adding monetary stimulus to boost economic growth and to bring the unemployment rate down. And then, of course, the side effect of that would be to bring inflation back up. And I think we're losing that thread a little bit, and I own some of this. And while this talk is about price-level targeting, average inflation targeting, we kind of get caught in that.

But at the end of the day, what we're talking about with strategies is that strategies or approaches are adding more stimulus during the downturn and recovery to add more job growth and bring unemployment down and, through that, to bring inflation back to our target and achieve this well-anchored inflation expectation. So maybe that's one thing about how we talk about it that's leading us a little bit astray, because we're focused so much on inflation that maybe we lose track of—really, it's about boosting demand and boosting the economy during a downturn to achieve our goals.

And how we change that conversation? In my own talking about it, I've started talking about, you're trying to boost expected output and expected inflation, not just one or the other. And, the one thing that I think we also shouldn't give up on, and maybe it's a response to President Kashkari, is, I agree with you completely that we should do everything with our tools, and that will get us a long way, but I think it's even more effective if a strategy overlay that we've all agreed on beforehand explains that we expect inflation to run above target during the latter part of an expansion. We expect that this is what we're trying to achieve, so that when we then use all of our tools, it's not like we're trying to explain it now. It's actually coherent and consistent with the strategy we laid out. I think that's when it works the best, because when the

strategy, the decisions, the statements, the press conferences, all of those are aligned is when we're at our most effective. Thank you.

CHAIR POWELL. Thank you. Let me agree with others in thanking the staff for a really excellent, thought-provoking set of memos and everyone around the table for another terrific discussion. I'll get to the specific questions for the meeting, but I want to begin with a couple of comments on the broader context.

I want to stress that I think the bulk of our work still lies ahead of us on this, and I think it's important for us to continue to exercise some patience in reaching conclusions and taking positions on the issues that we are discussing. And, in that spirit, I want to echo what Governor Clarida said earlier, which is that we're not working to a January conclusion here. We'll continue the process as long as is appropriate until our work is done. Sometime around the middle of next year is a good placeholder for that.

I just think we will make better decisions and get better answers if we give ideas time to breathe, time to be carefully considered and to be weighed against alternative or competing ideas. I would point to, for example, the discussions about shrinking the balance sheet, when we went through a series of meetings, and ideas rose and fell during that process. Things like that will hopefully again happen here.

These are complex, subtle questions. There is no roadmap. If anything, we are creating a roadmap for other central banks to follow. So I, too, want to say I found the July meeting tremendously enlightening, and, like Governor Clarida, I went back and reread the transcript, although I won't tell you I did it in 15 minutes, as he did. [Laughter]

MR. CLARIDA. Speed-reading.

CHAIR POWELL. It took a lot longer than that. [Laughter] Regarding that discussion, many pointed out that our current framework would have allowed the Committee to conduct policy more aggressively, deploying more accommodation earlier. But, of course, in real time, we were in uncharted waters. Like others, we systematically were overly optimistic about the recovery. Many on the Committee were deeply concerned about high inflation coming back, with monetary aggregates soaring, and also about the possible unforeseen consequences of QE.

Those were not problems with the framework. Now, knowing more about the efficacy, costs, and risks of our tools, I believe we would act more aggressively and earlier in the face of a serious downturn without regard to any framework changes. So when the time comes to act, we are likely to run out of room to cut rates very quickly and probably well short of what the economy needs. So, with that, we'll turn to our unconventional tools, including forward guidance and asset purchases, and much will depend on the efficacy of the tools.

Forward guidance was important in easing financial conditions in the post-crisis era precisely because the market priced in a higher rate path than the Committee intended. It seems to me unlikely, though, now, that the market will systematically underpredict accommodation the next time. The stunning decline over the intermeeting period in global long-term rates—although it was quickly reversed, in part—suggests to me that markets may be just as likely to get ahead of the FOMC as fall behind. Thus, our main role may be in clarifying our intentions and then following through.

As for asset purchases, term premiums are already very low—in fact, negative. By the time our policy rate reaches the ELB and the economy has weakened, term premiums would likely be deeply negative already. The incremental efficacy of large-scale asset purchases and

guidance in that setting is not entirely clear, as the recent experience of some foreign central banks may indicate.

The decline in r^* further complicates the problem. We may not be able to identify or create tools that will fully offset that policy loss. And all of that suggests that we need to be scratching and clawing now for every scrap of policy space, because in a serious downturn we are going to need it. It underscores the high stakes associated with this exercise.

Now, I take the point of the makeup strategy to be to defend and strengthen our main tool, which is our policy rate. And that brings me to the three questions. John, like you, I have learned not to make a rookie mistake and answer the questions. But Dave Skidmore alerted me to the difference between answering questions and addressing them [laughter], so I will now address the three questions.

First, as to the costs and benefits of makeup strategies, I see the risks in the current environment as fundamentally asymmetric. We face a high risk of large welfare losses if we get stuck at the ELB for an extended period. A downward slide in inflation expectations would, therefore, entail high costs. The potential costs in the other tail are real, but, in my view, they are more remote and, even if realized, would be more manageable and smaller.

The potential benefit of some form of makeup strategy would be to make it less likely that we'd start down the disinflationary path in the first place. So I think there is a question that underlies all of this, which for me really is whether the United States faces an inflation problem that needs to be addressed in some kind of fundamental way, perhaps through framework changes, perhaps through more aggressive use of our tools.

So if I posit a world of inflation expectations that are safely and securely anchored at 1.8 percent, let's say, with symmetric risks, I would be hard pressed to identify big welfare losses

from that or large gains from nudging the anchor up to 2 percent. All of the arguments about the imprecision with which we measure, let alone manage, inflation would be convincing in that case. The indifference of the public to a couple of tenths of inflation—indeed, their confusion as to why those strange people at the Fed would even care—would be sensible. But, to me, that hypothetical does not capture the situation in which we find ourselves.

Instead, we see a world in which first Japan and now the EU reacted complacently to early signs of low inflation. In fact, the historical record is dotted with dismissive comments by BOJ and ECB policymakers about low inflation. By the time they took the issue seriously, it was too late. Now, we are not the EU, and we're not Japan. While longer-term expectations in the United States seem well anchored somewhere within a few tenths of 2 percent, I think we should view ourselves as now, or soon enough, facing the test that the ECB and the BOJ seem to have failed. We have a number of factors in our favor relative to those jurisdictions. We have a younger, faster-growing population; higher productivity; more flexible labor markets; and, overall, a more dynamic economy. But many of those factors are waning.

I suspect we will eventually find that we are not exempt from the disinflationary forces we see around the world. In fact, in the worst case, we could be one downturn away from seeing further downward pressure on inflation expectations, a road that others have found it hard to exit. Even if we think the reckoning is further off, I think basic risk-management principles argue for doing what we can now to support inflation falling symmetrically around 2 percent and not close to or just below 2 percent. And I sense pretty broad agreement, by the way, on a lot of that.

So I think the memos do a good job of explaining why makeup strategies deserve serious consideration and of describing features and potential tradeoffs in such strategies. The main “takeaway” for me, though, is not that any one particular structure or, perhaps, any of these

complex structures should be the winner, but, really, that there is a reasonable chance that we will be able to identify and implement changes based on the insights behind makeup strategies that lead to improved outcomes.

This brings me to the second question about alternative policies to help the Committee achieve its objectives. Some ideas that appeal to me at this point as worthy of consideration would include a reference in the consensus statement to the effective lower bound as well as to the centrality of inflation expectations and their connection to realized inflation. We might identify a period over which we task ourselves to achieve inflation averaging 2 percent—the business cycle, for example. We might clarify what we mean by maximum employment. And I can imagine, for example, a combination of all of those ideas—a range in which inflation is expected to run over the course of the business cycle, averaging 2 percent or something like that. So I think there is a lot of common ground around the table if you think about it that way.

The question of symmetry in any makeup effort is an interesting one. I believe that low inflation is now and likely to remain the problem of this era. And in such an era, an asymmetric response to low versus high inflation may be necessary in order to achieve broadly symmetric outcomes. In other words, we must respond asymmetrically to achieve symmetry. Thus, I could see pursuing symmetric outcomes through an asymmetric approach, one that makes up for inflation shortfalls but does not promise to deliberately hold inflation below target in a downturn to make up for a period of high inflation that happened in a previous expansion.

Third, and finally, is the question of robustness. As always, new ideas need to be tested by exposure to a broad range of models and assumptions about the economy. At the same time, I think we should focus our attention on the problem we actually face and are likely to continue to

face for the foreseeable future: a “new normal” of low inflation, low growth, and low interest rates.

Just going back to the earlier discussion, the staff—Andrea, I think, pointed out that the FRB/US model has a flat Phillips curve and also, effectively, a flat IS curve, low sensitivity of output to interest rates. The Phillips curve case—I think we’ve talked about it a lot—is quite straightforward. I guess I would like to see more thought given to models that have a more reactive IS curve in a way. Just because I think we know that that’s an FRB/US model feature that we’ve seen in many ways through the years, it just doesn’t react at all to changes in interest rates, or it reacts very little.

So my sense is that there are other models, and I think we use them in one of the memos. I will leave it at that for now, and I look forward to our future discussions. And, again, thank you for a terrific discussion. With that, we move straight into “Financial Developments and Open Market Operations.” And I’ll turn it over to you, Lorie.

MS. LOGAN.³ Thank you. I’ll be referring to the “Material for Briefing on Financial Developments and Open Market Operations.” Global financial markets were quite volatile over the intermeeting period, with market participants reacting to incoming information about U.S.–China trade tensions and the global growth outlook during two distinct periods. In the weeks following the July FOMC meeting, as shown in the left-hand column of panel 1, U.S. yields declined sharply and risk asset prices fell amid a spate of largely negative news and seasonally thinner liquidity. As shown in the next column, these price moves reversed to some degree in September as developments on trade and economic data turned more positive. On net, Treasury yields remained substantially lower, while the S&P 500 index and corporate credit spreads reversed most or all of their earlier losses to end the period little changed.

As outlined in panel 2, I’ll explore some of the drivers behind the large moves in Treasury yields and then contrast them with the more modest response in risk assets. Then I’ll turn to expectations regarding Committee policy.

Trade-related developments were the primary catalyst for cross-asset price action over the period. In addition to the introduction of new tariffs from both the United States and China, the renminbi depreciated sharply, breaking through the

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

psychologically important level of 7 RMB per dollar and leading the Administration to declare China a currency manipulator. The escalating trade tensions in August heightened concerns that the uncertainties regarding trade would persist, raising risks to the global economic outlook. As shown in panel 3, the percent of survey respondents expecting more negative outcomes rose sharply in the September survey, with a large majority expecting the pending tariff hikes to proceed or rise even further. In contrast, in the June and July surveys, most expected trade relations to stabilize or a comprehensive trade deal to be reached, an outcome seen as very unlikely now.

Beyond trade, market participants were also focused in August on increasing risks around a broader slowing in global real growth, especially in light of disappointing data in Europe. Against this backdrop, heightened expectations that the ECB would cut its deposit rate and restart asset purchases drove the yield on 30-year German bunds into negative territory.

During this period, U.S. Treasury yields fell sharply, most notably at long-dated tenors. The 30-year Treasury yield declined around 60 basis points from the July meeting to September 3, an extraordinary move for such a short period of time. As shown in panel 4, respondents to the Desk surveys attribute most of this move to declines in expectations of the real policy rate and the term premium and, to a lesser degree, a change in inflation expectations. This picture is a bit different from some model-based measures, which attributed more of the move to the term premium.

When asked to rate the importance of factors driving the decline in the 30-year yield, the median survey respondent assigned the highest average rating, shown by the red diamonds in panel 5, to changes in, and risks around, the foreign and U.S. growth outlooks. These factors, if seen as long lasting, could be consistent with an expectation for lower real policy rates far into the future. Nonetheless, it's perhaps puzzling that other factors associated with lower real rates are not highly rated, such as a lower expected longer-run r^* or a high frequency of policy rates at the lower bound.

It may be that market participants believe at least part of the growth factors, particularly emanating from abroad, affected U.S. rates through the term premium. Consistent with this story, respondents also give relatively high ratings to factors normally associated with term premiums, such as the relative value of U.S. Treasury securities to foreign bonds and safe-haven flows. Desk contacts widely pointed to the increased amount of global negative-yielding debt as contributing to a downward pressure on U.S. yields. Many suggested that investor aversion to negative rates results in a search for yield that is more significant than in low but positive rate environments. Panel 6 shows this relationship between the market value of global negative-yielding debt and the 30-year Treasury yield, which is shown on an inverted scale, a chart that was circulated widely by market commentators.

Although survey respondents assign secondary importance to changes in expected inflation in explaining the decline in the 30-year yield, they don't discount inflation

entirely. Five-year, five-year-forward measures of U.S. inflation compensation, shown as the dark blue line in panel 7, fell by up to 20 basis points in August and touched fresh lows since 2016. In the euro area, far-forward inflation compensation, shown as the light blue line, is less than 20 basis points above its all-time lows. While the ECB announced a comprehensive package of easing measures at its meeting last week, issuer-limit constraints on the asset purchase program and perceived divisions within the Governing Council fed growing skepticism that the policies would be effective in boosting inflation.

Overall, expectations of easier monetary policy supported demand for risk assets, although several market participants questioned whether there was a disconnect with the sharp decline in yields. However, looking below the surface of the S&P 500 index reveals some trends consistent with the concerns prevalent in rate markets. Panel 8 shows that equity performance for defensive firms—those traditionally less negatively affected by an economic slowdown—outpaced those of cyclical firms in August, continuing the trend seen since May. There was also an outperformance of large firms—those more capable of weathering a downturn—over small firms.

The market tone generally turned more positive in September in response to modestly better news related to a range of ongoing risk factors, including the resumption of U.S.–China trade negotiations and the possibility of a “mini deal.” In equity markets, defensive positioning partly unwound, including a notable hedge fund rotation out of what had been described as a crowded position. U.S. Treasury yields recovered as some better-than-expected economic data releases in the United States and Europe also slightly reduced concerns over global growth. Diminished expectations that the ECB will ease further into negative-rate territory may have contributed to higher Treasury yields. Following this shift in sentiment, the S&P 500 index and corporate credit spreads recovered and are, on net, little changed.

So how have respondents’ U.S. monetary policy outlooks evolved amid these developments? Even after the partial rebound in September, market expectations are that the Committee will ease monetary policy further at this meeting. Regarding panel 9, all respondents from the Desk surveys expect a 25 basis point decrease in the target range. On average, they assign about an 80 percent probability to this outcome, with a 14 percent probability for a 50 basis point cut and a 6 percent probability for no change.

As shown in panel 10, looking beyond September, most survey respondents expect another 25 basis point cut by year-end. However, respondents who expect another cut are really divided on whether this move would occur in October or December.

Further out, while the median of respondents’ modal forecasts for end-2020 point to no rate cuts next year, individual forecasts are much more dispersed, with nearly one-half of respondents expecting at least one additional 25 basis point cut in 2020 and about one-fourth expecting two or more cuts.

The wide range of expectations for monetary policy in 2020 could be a reflection of dispersed views about the global growth outlook and its implications for policy. As shown in panel 11, there is an increasingly wide range of probabilities that survey respondents place on the odds of the U.S. and global economies being in a recession in six months.

Market participants remain attentive to a range of global risk factors that could affect the policy rate path, which are summarized in panel 12. Trade tensions between the United States and China and the related economic effects remain front and center, as does the health of the Chinese economy. Developments in Europe and the outlook for growth and monetary policy—and any limits on its effectiveness—are also a key focus. Investors also remain focused on political tensions, including in Hong Kong and developments related to Brexit. Now, we would also add escalating geopolitical tension in the Middle East to this list following attacks on Saudi oil facilities over the weekend. While oil prices, on net, are higher by around 7 percent, the cross-asset effect has been quite limited. In summary, although markets have calmed in recent weeks after the tumult of August, it feels that risks could quickly escalate again and volatility return.

I'll turn now to money markets and operations, summarized in panel 13 of your third exhibit. Money market conditions were mostly stable over the period, and the reduction in the interest on excess reserves rate (IOER rate) following the July FOMC meeting fully passed through to money market rates. Nonetheless, as I discussed this morning, we observed significant volatility yesterday and this morning as a result of large tax payments and Treasury settlements.

Before yesterday, the effective federal funds rate had averaged 2.13 percent, 3 basis points above IOER, over the intermeeting period, with the spread to IOER slightly narrower than we had expected going into the period, as shown in panel 14. Two factors likely contributed to this. First, as shown in panel 15, government and prime money market funds received large inflows. Much of this new cash was invested into repo, putting downward pressure on money market rates. Second, the increase in Treasury bill issuance after the resolution of the debt ceiling impasse was more gradual than we expected, resulting in less upward pressure on rates.

Despite the softness over most of the period, market participants anticipated increases in the effective federal funds rate relative to the IOER rate in the coming months. As shown in panel 16, reserve levels are projected to decline markedly over the next four months, falling about \$300 billion to below \$1.2 trillion as the Treasury rebuilds the TGA. These declines will be associated with periods of high net Treasury settlements and corporate tax payment flows, particularly in the last two weeks of September and again in the latter half of December. These factors, combined with financial institutions' typical year-end balance sheet management, had led most market participants to predict a widening in the effective federal funds rate and IOER spread.

This morning, however, we saw much larger increases in money market rates, as well as a higher degree of dispersion in traded rates, than anyone had anticipated. The SOFR “printed” at 2.43 percent yesterday, and the 75th and 99th percentiles of SOFR transactions were at 2.55 and 4.60 percent, respectively.

So what happened? It appears that in an environment of uncertainty about potential outflows related to the corporate tax payment date, lenders were not able to increase their repo lending sufficiently to meet the increased dealer demand for funding. Indeed, G-SIBs, which had significant capacity to increase lending into repo markets, did not do so. In addition, some of these banks maintained reserve levels significantly above the lowest comfortable level of reserves that they reported in the survey. Although we have less data on money market mutual funds, we also understand that they held back some liquidity as well in order to cushion against potential outflows.

Highly elevated repo rates passed through to rates in unsecured markets. FHLBs maintained some liquidity in reserve in anticipation of higher advance demand, and they also shifted funds into repo, which was yielding a higher rate. As shown in panel 17 and as noted this morning, the effective federal funds rate “printed” at 2.25 percent, 11 basis points higher than the previous day. Though not shown—the distribution is cut off just to focus on the rate at which the median printed—the trades were very wide and highly skewed to the right.

Amid these pressures, market participants also appeared to expect some lasting elevation in rates. As shown in panel 18, September and October federal funds futures—which settle to a daily average over the calendar month—rose yesterday by roughly 2 basis points, even as later-dated contracts declined. The increases in the front months may reflect expectations for higher average rates for the remainder of September or further bouts of volatility around midmonth or month-end.

Market participants also expect ongoing elevation in repo rates. Futures contracts, presented in panel 19 of your fourth exhibit, suggested the SOFR–effective federal funds rate spread was expected to widen to roughly 9 basis points on average.

This morning, money market rates opened again at high levels. Interdealer trading in repo markets occurred at rates over 8 percent, and federal funds were quoted as high as 5 percent. As we discussed this morning, the Desk announced an overnight repurchase operation at 9:10 of up to \$75 billion. We received \$53 billion in bids and accepted all of the propositions. There were \$41 billion in awards against Treasury security collateral at an average rate of 2.48 percent and \$12 billion in awards against MBS collateral at a rate of 2.80 percent.

The operations were perceived by market participants as successful, and rates fell after the announcement and into the morning, as shown in panel 20. Rates in secured markets were trading around 2½ percent after the operation. The range on the federal funds rate is still wide, and trades are going through between 2 and 2½ percent. We won’t have certainty about where the effective federal funds rate will “print” until

tomorrow, though we'll have a better sense of this when the brokered data come in later this evening.

In going forward, we will monitor and assess how repo rates might evolve later in the year and how banks and other money market participants will be managing their liquidity.

As shown in panel 21, the third Senior Financial Officer Survey, completed in August, indicated that the aggregate estimate of the lowest comfortable level of reserves, or LCLOR, for the banking system declined to about \$800 billion, from \$860 billion in the February Senior Financial Officer Survey. Respondents that reduced their reported LCLORs cited increased efficiency in managing their payment and deposit flows. Nevertheless, as I noted before, holdings of reserve balances remain highly concentrated among a few large banks. How money markets respond to days with high deposit flows or falling reserves will likely depend on how these banks react. The top three reserve holders, all U.S. G-SIBs, maintain \$150 billion in surplus reserves over their respective lowest comfortable level of reserves. Should these banks continue to maintain high balances, particularly on these high payment demand days, other banks may again find they need to bid up rates to attract short-term funding.

In light of market volatility yesterday and this morning, market participants expect that pressures could reemerge and have discussed potential responses that the FOMC could consider. Nearly all expect an additional temporary open market operation tomorrow as well as around peak pressure dates, including September quarter-end. Many market participants now expect a technical adjustment to be implemented at this meeting.

This week's events may also lead some market participants to update their assessments of the long-run level of reserves. In the Desk survey conducted in early September, market participants' estimates of the lowest weekly average level of reserves remain centered close to \$1.2 trillion, as shown in panel 22. Survey respondents have noted that their estimates incorporate a buffer that would absorb variations in reserves due to changes in nonreserve liabilities. Consequently, we interpret the \$1.2 trillion estimate as an average around which reserves may fluctuate rather than a minimum.

Consistent with their projections of reserves, survey respondents' assessments of when the SOMA portfolio will steadily grow again have shifted earlier relative to when respondents were last asked this question in March, as shown in panel 23. The median respondent expects the SOMA portfolio to begin growing sometime in the first quarter of 2020.

Finally, I have three operational updates to note, as outlined in panel 24. First, the Desk continued to reinvest maturing proceeds from MBS above \$20 billion into new MBS. On the basis of current market rates and prepayment forecasts, we expect to

reinvest much larger amounts for a longer period of time compared with the estimates we showed earlier this year.

Second, having concluded the first Treasury reinvestment purchase period last week, we can report that purchases of Treasury securities across maturity sectors have gone smoothly. Market participants have not attributed changes in market prices or liquidity conditions to these purchases.

Third, the Desk completed the annual investment review of the foreign currency reserves held in the SOMA, which I described in a memo sent to the Committee in advance of this meeting. Compared with the prior investment period, there was one recommended risk parameter change—to lower the minimum cash requirement for both the euro and yen portfolios.

With respect to the euro portfolio, based on feedback from the Foreign Currency Subcommittee, the Desk recommends maintaining the conditional value at risk at 3 percent, the same level as last year. And, with respect to the yen portfolio, the Desk recommends maintaining the current strategy by continuing to place proceeds from securities holdings in a deposit account with the Bank of Japan, which is at an above-market interest rate of 0 percent. We expect to begin rebalancing to the new target asset allocation for the euro portfolio over the next few months.

Finally, as summarized in the appendix, the Bank of England drew down on the dollar swap line for the first time since December 2009. The small draw of \$20 million was to accommodate a test by one of its counterparties related to Brexit preparations. Upcoming small-value operations are also summarized in the appendix. Thank you, Mr. Chair. We'd be happy to take any questions.

CHAIR POWELL. Thank you. Any questions for Lorie or Patricia? President Kaplan.

MR. KAPLAN. I guess the obvious question is, I know surveys suggest first quarter. Should we here be debating now or soon deciding to let the balance sheet grow? If our goal is abundant reserves, are we really running an abundant-reserves regime unless we make some adjustment, more than the stop-gap measures?

MS. LOGAN. Our assessment of the volatility that we have seen yesterday and this morning is related to factors that we see as temporary, so we do expect these conditions to soften a bit as the week progresses.

Our view is that we're still learning. We are still learning about how these banks, particularly those that are holding the excess or the surplus reserves, are going to behave in these

different market conditions. So I think the full month of September will provide a lot of insight on how these money markets could evolve, and that it might be opportune to see how things stabilize in October, when reserve levels should be very stable. At that time, it might be a good chance to assess what we have learned through the month of September and study that issue.

CHAIR POWELL. We'll plan on that. President Kashkari.

MR. KASHKARI. Thank you. Lorie or Patricia, can you help me understand what is going on in a bank that would pay 5 percent for federal funds? It seems to me, on the surface, that would be alarming. Why would they do it?

MS. ZOBEL. Some of these banks, particularly on days when they might experience large payment outflows, such as tax dates when they mightn't be able to get funding through other sources, say that they would like to maintain a certain amount of reserves to protect against this deposit or payment flow volatility. And so, on those days, particularly if it's just for one day, they would pay a high rate in order to maintain that liquidity. If the rates were to persist for some time, I think they would rethink that and consider other sources of funding. So some banks got caught short.

MR. KASHKARI. I just think about it in terms of our work on our own liquidity provision, and they would rather pay 5 percent in the federal funds markets than come to the Fed, which I think is remarkable. Thank you.

UNIDENTIFIED SPEAKER. Stigma.

CHAIR POWELL. President Rosengren.

MR. ROSENGREN. It would seem like these factors have become more of an issue around quarter-end as well, and it doesn't seem like corporate payments and end-of-quarter events are all that unexpected. So how much more information do we need to know that we're

not in abundant reserves and the volatility that we are creating—I'm trying to weigh what the benefit is of experimenting and seeing how many times this happens, versus having a bigger balance sheet now so that people are more certain that we are not going to have these kinds of fluctuations. What are the costs that you see of us deciding to expand our balance sheet earlier?

MS. LOGAN. I think some of the costs to consider would include that learning period. It's possible that, after this week, banks may start to make adjustments to their liability structure based on what they have learned, and that we might get a better read on that in October, after going through this. I think the other costs are just associated with the larger policy questions that you discussed about the overall size of the balance sheet and whether you'd like to see if these market participants or these institutions will change their behavior over time.

CHAIR POWELL. Governor Brainard.

MS. BRAINARD. Yes. I guess I had the same reaction. Although I think it's perhaps beneficial to observe the quarter-end, I see no benefit, really, in waiting until January when we know the year-end has even greater potential for that kind of volatility. So I do think if we are going to be doing this in the first quarter, we might as well do it before December.

MR. KAPLAN. I don't want to beat on this too much, but if, from a risk-return point of view—we've been watching this for the past two or three weeks. Back to Eric's point, what's the benefit of waiting until October? What's the potential cost of waiting until October? And should we, in this meeting, be considering—at least, options? Even if we decide to do nothing, I, for one, am not sure I understand why we wouldn't be considering options in this meeting, unless it is just premature. But I just don't understand the cost-benefit from a risk-management point of view.

CHAIR POWELL. President Evans.

MR. EVANS. If I could ask a related question under the assumption that the Committee decides tomorrow to lower the target range for the funds rate—will it be enough, when the IOER is also lower, that you expect we would be equally effective in trading in that range as we are now—that is, no additional shortcomings—or might they pile on top of each other, which would further Rob’s point, I think?

MS. LOGAN. I think considering a technical adjustment may be something that would be useful for the Committee to discuss, and it could be an opportune time to do it at this meeting, given the policy discussion that may be taking place. And that would provide some extra space if you decided to continue to go through September and October, and I think that would be useful.

In terms of addressing this type of event, I’m not sure that just dropping the IOER rate by 5 basis points would address these particular circumstances, because this is really being driven by pressures in the repo market. I think the technical adjustment could be a useful tool, in light of the decline in reserves that we’re seeing over time and the trend. But I’m not sure if that’s what would directly affect the pressures we’ll see at the end of the month.

CHAIR POWELL. Vice Chair Williams.

VICE CHAIR WILLIAMS. I think we should be clear that there are two different things happening over time. First of all, if you look at the funds rate five days ago, it was actually trading relatively soft in the range. And so the Board and the New York Fed have been doing a lot of analysis, looking at the ample-reserves framework and how that’s working out on a day-to-day basis. And what we’ve seen pretty consistently—that is, consistent with what we expected—is that the funds rate to IOER spread has been increasing gradually over time as the amount of reserves has been going down.

You see it in terms of both a time trend and also on a day-to-day or week-to-week basis. That behavior has been pretty much consistent with our models and past experience. So there's not a big surprise that, as reserves have gotten lower, we've seen a big move up in the funds rate or other rates relative to the IOER rate.

I think of this 5 basis point IOER adjustment, if you contemplate that decision, as really being in the context of the question, as reserves have gotten lower, do we want just to have more cushion in the range above the IOER rate, given what's happening in the markets? That's been consistent with the decisions we've made in the past.

The issue of the past few days and looking ahead to September 30 and the end of the year, these are really big spikes around big payments, the way Lorie and Patricia talked about it, that hit the repo markets and then spill into the funds market. So there's, first of all, a different diagnosis of what's happening on those days and, second, a different kind of answer to how to address that. As we've seen today, the intervention was pretty powerful in bringing down repo rates, as you would expect, and we hope in bringing down the funds rate.

As we think about these issues, I do think that we want to separate out, one, what's happening to the funds rate as reserves have come down? How do we keep the funds rate in the range on average? And then, separately perhaps, we think about this issue of, once in a while, maybe once or twice a quarter, doing some intervention to deal with these spikes. But I do think the Committee obviously needs to have the conversation more fully. I think my expectation was, the end of this month would have been a little bit of a test case to understand how these different dimensions play out, but Mother Nature decided to give us a test case yesterday and today. So we're getting a little bit of a preview of that.

CHAIR POWELL. President Bullard.

MR. BULLARD. A separate question. I'm looking at exhibit 2, panel 11, "Probability of U.S. Recession and Global Recession in Six Months." The point is to say, these recession probabilities have gone up. It says that the global recession is the IMF definition. Could you just remind me what the IMF definition is? What are market participants saying here? It does look like the distribution has shifted up toward a higher probability of recession because the symbol for "greater than or equal to 40" has a bigger dot there.

MR. GRUBER. I'm not sure I know that we maintain—and I'm going to show in the international briefing here our own global recession model in which we characterize the global recession as being 55 percent of our trade-weighted foreign GDP being in recession. And so this is a similar definition. It is possible that we based ours on the IMF definition. It would be 55 percent of the global.

MR. BULLARD. Okay. So it's not that a global growth rate falls below some levels?

MR. GRUBER. That's not our definition for our particular model. But I can't really speak to that.

MR. KAMIN. I have to say, I'm a little bit surprised. Maybe Lorie can discuss the survey itself, because it says "IMF definition for global recession." I'm a little surprised that the dealers being surveyed actually have in their heads a definition of an IMF recession. Is there any light you can shed on that?

MS. LOGAN. Patricia's looking at the survey. I'm not sure of the answer to that question. I think we've had it defined that way for a while, and I would agree with you, Steve, that it's not clear to me that the dealers read that when they're thinking about it as well. So they could have different ideas in their own minds when they're filling out the survey of how to interpret that.

My goal in showing this was just to show the wide dispersion of it. While the median has increased, it's just really dispersed and probably related to different expectations regarding the probability of some of these risks becoming reality, as well as different judgments about how to evaluate the implications if those events did occur.

MR. KAMIN. I would just interpret this as the dealers' and market participants' expectation of a global recession, period, until we can get a little bit more information on that.

MS. ZOBEL. We do actually give them the definition in the survey. So if they're wondering or curious what the IMF definition is, we provide it, and it is: "A global recession can be characterized as a period during which there is a decline in annual per capita real GDP backed up by a decline or worsening in one of the following indicators," and it gives some growth indicators. So there you go.

MR. KAMIN. Sounds fairly general.

MR. BULLARD. Per capita GDP.

CHAIR POWELL. Per capita.

MR. BULLARD. Global per capital GDP. Well, that's a stringent definition.

CHAIR POWELL. Further questions for Lorie? [No response] Seeing none, why don't we move ahead to the review of—oh, sorry. We need a vote to ratify the domestic open market operations conducted since the July meeting. Do I have a motion to approve?

VICE CHAIR WILLIAMS. So moved.

CHAIR POWELL. All those in favor? [Chorus of ayes] Thanks very much. So, now, that completed, we can move to the review of the "Economic and Financial Situation." Stacey, would you like to start, please?

MS. TEVLIN.⁴ Sure. My materials are in the packet called “Material for Briefing on the U.S. Outlook.”

Your first panel starts with the positive news from the retail sector. After sizable increases in previous months, the retail sales data that are used to estimate consumer spending flattened out in August, as expected, and the three-month change, shown by the black line, remains at a robust pace. These data, along with the good news we’ve received lately on services spending, point to solid Q3 PCE growth of around 3 percent. Our estimate of the three-month change in retail sales using the First Data card-swipe data the red line, which was below the Census reading earlier in the year, has moved up and is now in line with the Census reading in August. The August and September readings from the Michigan survey’s measure of consumer sentiment, the black line in panel 2, raise some concern. However, the Conference Board’s confidence measure through August—the red line—has not shown a similar decline, nor have two other measures of consumer sentiment—the Bloomberg comfort index and the Rasmussen index, both of which we have through mid-September. So at this point, we are projecting continued strength in the household sector, supported by plentiful jobs and solid income growth.

Of course, the picture for business investment and, relatedly, the manufacturing sector is decidedly less bright. The black line in panel 3 shows manufacturing IP growth, which slowed from a positive 2½ percent in the second half of last year to a negative 2½ percent in the first half of this year. Trade developments appear to have held down manufacturing growth considerably. The red portions of the bars show an estimate of the direct effects of tariffs on manufacturing growth. These estimates are derived from a detailed industry-level assessment by my colleagues Aaron Flaaen and Justin Pierce. Their estimates aim to capture the negative effects on IP due to higher input costs and higher foreign tariffs on our export industries as well as the positive effects from the protection afforded to our import-competing industries by our own higher tariffs. According to their combined estimates, manufacturing production growth was held down about 2 percentage points in the first half of the year by these effects, almost all of the decline this year and about half of the slowdown from last year’s growth. Importantly, this estimate tries to quantify only the *direct* effects of tariffs. The other half of the slowdown since last year likely reflects mainly the weakening global economy and, as Joe will address in his remarks, the imprint of trade uncertainty on business investment. Indeed, a good chunk of the weakness in IP this year has been in industrial equipment, a key part of investment.

After having declined in the second quarter, business investment seems likely to remain weak in the second half. Two main indicators that we use to project near-term equipment spending are shown in panel 4. Both the ISM index and the 12-month change in capital goods orders have moved into negative territory, a bad sign for second-half investment. Before I leave this page, I should note that manufacturing IP

⁴ The materials used by Ms. Tevlin are appended to this transcript (appendix 4).

for August, which was just published this morning, actually moved up 0.5 percent, which puts it on a trajectory for positive growth in Q3.

On the next page, we turn to the outlook for overall real GDP. We estimate that GDP rose at a 2.6 percent pace in the first half and is slowing to a 1.7 percent pace this half, bringing overall growth for the year to 2.1 percent, a weaker projection than in the July Tealbook. Our 2019 projection is also somewhat weaker than the Blue Chip Consensus, as we are expecting a little more step-down in the second half than many other forecasters are. We have not changed our projection since last week in response to either the attacks on Saudi oil infrastructure or the GM strike, because our best guess for now is that both of these would have negligible effects on domestic activity, on net.

Beyond this year we have also taken down our forecast some, as you can see from the four-quarter changes shown in panel 6. As in recent forecasts, we wrestled this round with how to incorporate the recent escalation in trade tensions and global growth concerns into our outlook for economic activity. In the end, we took on board downward revisions from weaker incoming news on net exports, the outlook for foreign growth, the stronger dollar, and analysts' downgraded expectations about long-run future profit growth. But our assumption that trade tensions and uncertainty will not rise further—our now standard assumption—and that the dip in foreign growth will prove transitory limited our downward revision to the *level* of GDP to just $\frac{1}{4}$ percent by the end of the medium term.

This round we also made some modest but noticeable revisions to our aggregate supply assumptions. Although we are always reevaluating our supply-side assumptions, the aftermath of an annual revision to the NIPA is a particularly good time to reassess. This year's revision didn't suggest obvious changes, but we still took the opportunity to take a fresh look and made a few adjustments. For example, as noted in the bullets in panel 7, productivity has been running above our estimate of trend productivity in recent years. This is a surprising pattern in a "hot" labor market, which typically draws in less productive workers, and suggested that perhaps trend productivity—and therefore potential output—is higher than we've been assuming. The absence of significant upward pressure on wages and prices also suggested the economy was perhaps less tight than we'd previously estimated, so we narrowed our output gap, shown in panel 8—over and above the narrowing that our modestly weaker GDP path implied—and we lowered the natural rate of unemployment to 4.4 percent.

The new natural rate is shown by the solid green line in panel 9 on the next page. To be clear, none of the indicators we consult on the natural rate could really distinguish between 4.4 percent and 4.6 percent, but in this projection we are putting a little more weight on measures calling for a less tight economy. Over the medium term, both the output gap and the unemployment rate—the black line in panel 9—are expected to hold roughly steady at current levels as real GDP growth hovers around its rate of potential growth.

Of course, the natural rate that we regularly show is the one that we think is consistent, absent other shocks, with inflation at its underlying trend, or 1.8 percent in our projection. Another interesting concept may be the one we showed in a box in the July Tealbook—that is, the unemployment rate we judge necessary to move inflation up to 2 percent absent other influences, which is shown by the blue line. The System staff are currently working on a memo to clarify and explore various measures of maximum employment, and you should all be receiving that work before the next meeting.

Last week we received the CPI and PPI data for August. Although the core CPI increase was relatively large, based on our translation of the CPI and PPI detail, we now estimate that the change in the core PCE price index in August, the dot in panel 10, will come in lower than previously expected. And, in response to Governor Quarles, I am *not* going to tell you what categories were weak. [Laughter] These data, combined with some downward revisions earlier in the year from the NIPA annual revisions, now suggest that core PCE inflation will end the year at 1.7 percent, the red line in panel 11, rather than 1.9 percent as we had anticipated in July.

Two other measures of inflation that attempt to strip out idiosyncratic movements in inflation are also shown. The Dallas Fed trimmed mean rate continued to run closer to 2 percent, at least through July, while the common component from a factor model lies in between. We will see what those measures make of the August readings received later this month.

As shown by the black line in panel 12, core PCE inflation is expected to step up from 1.7 percent this year to 1.8 percent next year and then hold steady at that level. We think that the contribution of resource utilization to inflation over the medium term—the red portions of the bars—will be mostly offset by the effect of an appreciating dollar, which is captured by the light green portions of the bars. As a result, core inflation is expected to remain at our estimate of its underlying trend, the gray bars. Our inflation outlook has been revised down modestly, based on our assessment that the economy is a bit less tight than we thought in July. Joe will continue our presentation.

MR. GRUBER.⁵ Thank you, Stacey. I will be referring to the “Material for Briefing on the International Outlook.”

After stepping down sharply over the course of 2018, foreign economic growth appears to have stabilized, but at a subdued below-potential pace and lower than our previous forecast. Since July, disappointing data and further increases in uncertainty have led us to project an even weaker recovery and, even then, only under the assumption of more accommodative policies and no further escalation of trade tensions. Our forecast is not out of line with the outside consensus, though it is a bit below the admittedly out-of-date July IMF WEO projection.

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

Your next exhibit provides some regional “color.” As shown in the upper-left corner, the euro area was a big part of the deceleration in global real growth in 2018, although with 2017 growth so far above estimated potential, the black line, some slowdown was expected. Growth looks to have weakened a bit further this year as Germany flirts with recession and the politically challenged Italian economy remains stalled. We expect a modest recovery next year, but only with the support of accommodative policies.

In China, the lower left, growth has also slowed this year, amid heightening concern over the effect of continued deleveraging and increased trade tensions. However, up to now, the step-down has been largely in line with our estimate for the trend decline in potential growth, notwithstanding a bit of a tariff-related shortfall in 2020. Notably, with further trend deceleration expected, China plays no role in our forecasted pickup in total foreign growth next year.

Instead, our forecast for foreign recovery primarily reflects developments in the emerging markets excluding China, where growth in Asia and particularly Latin America has been weak but is expected to revert to potential by the end of 2020. In Asia, there are signs that a downturn in high-tech production that started in the second half of last year is starting to fade. In Latin America, we see growth turning up, but we’ve been disappointed before and we could be again.

On your next slide, while our forecast may be viewed as sluggish but fairly benign, we are acutely aware of the downside risks around our outlook. Besides trade policy, which I’ll turn to shortly, unrest continues in Hong Kong, and another deadline for a Brexit deal is coming up at the end of October. We are assuming that another extension that will “kick the can” into next year, but the politics of this are particularly tumultuous at present.

Also, the bombing of a key Saudi oil facility has rattled global oil markets. The disruption has at least temporarily affected over half of Saudi production, or about 6 percent of global production. The price reaction so far has been relatively contained, and the lack of movement in far-futures prices, the red line on the right, suggests that the market is currently expecting a quick recovery. However, an unexpectedly prolonged outage could significantly boost prices. Even after supplies are restored, an increase in perceived geopolitical risk could have a persistent effect. However, it should also be noted that with the tremendous gain in U.S. production in recent years, shown on the right, Saudi Arabia’s presence in global oil markets, though still large, has diminished.

Even absent these risks, the slowdown in the global economy makes recession more likely. As shown on the next slide, recession-probability models maintained by the Division of International Finance have ticked up, with our model for total foreign growth at its highest level since the China scare from late 2015 to early 2016. The probability of a recession in the euro area, on the right, is even more elevated, at 60 percent, and the model has been flashing at least yellow for over a year now.

The estimated recession probability models place a lot of weight on export orders and industrial production, IP, so the high probabilities are not surprising, given that a particular feature of the recent growth slowdown has been a persistent slump in manufacturing—something that Stacey addressed in the context of the U.S. economy. On the next page, manufacturing PMIs in a large number of countries have slid into contractionary territory, the black line on the left, even as the services sector, the orange line, has held up fairly well. The fallback in global IP, the red line in the middle panel, has coincided with a global investment slump, the blue line, with investment growth now as weak as it has been in the post-crisis period. The panel on the right decomposes global IP growth, with the contribution of capital goods production, the blue bars, turning negative even as consumption goods hold up.

The weakness of global capital spending in part reflects heightened trade policy uncertainty, the topic of your next slide. The chart at the top plots what must by now be a familiar newspaper-based index of trade policy uncertainty. Identified along the x-axis are separate waves of increased uncertainty, with the first wave marking the initial 2018 increases in tariffs on steel and aluminum and a slice of imports from China and the second wave capturing further increases in China tariffs in May and June of this year. Since your July meeting, a third wave of trade tensions erupted as China retaliated to earlier U.S. tariffs, prompting the Administration to announce a schedule of tariff hikes that would essentially cover all imports from China by December.

The bottom panels highlight analysis done by colleagues in the International Finance Division that has attracted a significant amount of attention in the media. Their work suggests that elevated trade policy uncertainty has had a meaningful effect on foreign and U.S. growth. The charts at the bottom update the publicly released results, which included the effects of the first two waves of uncertainty, summed in the blue line, with the effect of the third wave of uncertainty since July, included in the black line. As you can see, this third wave both deepens and prolongs the drag on global growth such that the negative effect does not start to fade until the beginning of next year. Of course, in the past couple of weeks or so, there's been a little movement toward a U.S.–China deal, and a significant agreement could lead these uncertainty effects to wane faster than shown here. But that is certainly more of a hope than an expectation at this point, as evidenced by the survey results that Lorie referred to.

On the next page, in addition to the negative drag coming from trade policy uncertainty, the direct negative effects of the tariffs, as discussed by Stacey in regard to IP, have been growing as the trade war escalates. As shown on line 4 of the table, we estimate that the direct effects of the implemented tariffs will lower U.S. GDP about 0.3 percentage point over the next two years mostly as higher prices depress consumption and investment. The drag would increase by an additional tenth if all the pending tariffs were also to go into effect.

One way to think about the negative drag from tariffs on U.S. growth is to view them as equivalent to a tax increase. As the figure on the right shows, the recent

hikes have increased customs-reported tariff revenue to about 0.3 percent of GDP, a tax that would increase to about 0.7 percent of GDP if all of the proposed tariffs on China were to be put in place, surpassing the incidence of tariffs during the Smoot–Hawley era. For context, at that point, the increase in annual tariff revenue would amount to about \$100 billion per year, or more than one-third of the estimated \$270 billion average annual tax cut in 2019 and 2020 coming from the TCJA.

On the next page, with slowing growth, heightened trade policy uncertainty, downside risks mounting, and little sign of any inflation pressure, we expect foreign monetary policy to remain accommodative for quite some time. With euro-area inflation, the green line on the left, running just above 1 percent, the ECB cut its policy rate, the green line in the middle, a further 10 basis points to negative $\frac{1}{2}$ percent and announced an open-ended resumption of its QE program, buying 20 billion euros in bonds per month. Notably, the ECB statement included forward guidance that rates will remain at their present or lower levels until the inflation outlook robustly converges to target within the projection period, similar to the Bank of Japan’s standing pledge to hold interest rates near zero until it judges that price stability is in sight. Insofar as we don’t see euro-area inflation getting near 2 percent for some time, this implies a prolonged period of negative policy rates.

Weak foreign economic growth and expectations for continued accommodative monetary policy abroad have contributed to a stronger dollar. With the staff forecast calling for less FOMC policy easing than markets are expecting, our forecast is of further dollar appreciation.

On the next page, the strengthening of the dollar not just since July, but over the past year and a half, as well as the downturn in foreign growth and the trade war with China, have all weighed on U.S. exports. As shown on the top, exports have declined over the past year, a rarity outside recessions, but similar to what we saw in 2015 and 2016 when the dollar played an even bigger role.

The bottom-left panel decomposes export growth by the determinants of our empirical forecasting model. As shown by the black line, exports fell almost 6 percent at an annual rate in the second quarter, held back by slower foreign growth, the green bars; increasing drag from the dollar, the blue bar; and retaliatory tariffs, the gold bar; as well as disruptions in the production and export of Boeing 737’s, the purple bar. The effect of trade tensions has been most apparent in exports to China, shown on the bottom right. Our assumption that Boeing will resume exporting next quarter and that there will be no further retaliatory tariffs underlies our forecast for a recovery in export growth. At that, I’ll hand it over to Jonathan.

MR. GOLDBERG.⁶ Thank you. I will be referring to the packet labeled “Material for Briefing on Summary of Economic Projections.” To summarize: Your projections show little change in your outlook for economic growth, unemployment, and inflation. However, almost all of you assessed that a lower path of the federal

⁶ The materials used by Mr. Goldberg are appended to this transcript (appendix 6).

funds rate would likely be appropriate to support your economic outlook, with the median assessment revised down by 50 basis points for 2019 and 25 basis points for 2020 and 2021, relative to the June SEP. The projections for the additional year this round show that a vast majority of you project that the unemployment rate and the federal funds rate in 2022 will be below your estimates of their longer-run levels. Almost all of you project that core inflation will be at or modestly above 2 percent in 2022. A solid majority of you continued to view the risks to your outlook for economic activity as adversely skewed, with about one-third of you also judging inflation risks as weighted to the downside.

I will now discuss the projections in greater detail. Regarding exhibit 1, the median projection of real GDP growth was unchanged or slightly higher for each year in the forecast period, with many of you modestly increasing your projection for this year. The median projection of the unemployment rate in 2019 was modestly higher. While several of you lowered slightly your projections of the unemployment rate in 2020, 2021, and in the longer run, the medians of these projections were unchanged. The median projections of headline and core inflation were also unchanged for each year included in the June SEP.

For 2022, all of you who submitted longer-run projections expected real GDP growth at or slightly below your longer-run estimates. Almost all of you projected the unemployment rate in 2022 below its longer-run level, with some of you projecting a gap of 50 basis points or more. Some of you projected total inflation modestly above 2 percent in 2022, while most of you expected total inflation equal to 2 percent. The range of inflation projections for 2022 was 1.8 to 2.2 percent.

Exhibit 2 reports your assessments of the appropriate path of the federal funds rate. As indicated by the red lines in the top panel, the median of your projections for 2019 is 1.88 percent, 50 basis points below the June SEP and consistent with the Committee's reduction in July of the target range for the federal funds rate and one further 25 basis point reduction this year. Seven of you assessed that the most likely appropriate federal funds rate at the end of 2019 is 1.63 percent, consistent with the July reduction in the target range and two additional 25 basis point reductions this year, while five of you assessed that the most likely appropriate rate at year-end is 2.13 percent, consistent with no further change this year to the target range. The median assessment for 2020 is 25 basis points below the June SEP and is consistent with no change in the target range in 2020 from the 2019 median. The median rises to 2.38 percent by 2022, only a bit below the longer-run median of 2.5 percent. The range of your projections for the federal funds rate has shifted down and also narrowed somewhat for each year included in the June SEP. Muted inflation pressures, slower global growth, and weak business fixed investment were cited as reasons for downward revisions, as were trade tensions and risk-management considerations.

The green diamonds in exhibit 2 show the median prescription for the federal funds rate based on the Taylor (1993) rule, taking as inputs your individual projections for inflation, the unemployment gap, and the longer-run federal funds

rate. Across the forecast horizon, the Taylor (1993) rule prescribes a path of the federal funds rate that is notably higher than the vast majority of you anticipate. Most of you did not comment on how your policy rate path differs from simple rule prescriptions. But your narratives suggest that this gap partly reflects the same factors that led you to revise lower your anticipated policy rate path, including concerns about inflation expectations and persistently low realized inflation, as well as downside risks related to trade policy, foreign growth, and Brexit.

Exhibit 3 presents your judgments about the uncertainty and risks surrounding your projections. As shown in the left panels, most of you continue to view the uncertainty about GDP growth and inflation as broadly similar to the average over the past 20 years, while your views on uncertainty about the unemployment rate remain roughly split between those who see similar levels of uncertainty and those who see higher uncertainty. As illustrated in the right panels, most of you continue to judge the risks to the outlook for GDP growth as being weighted to the downside and for the unemployment rate as weighted to the upside. Most of you—four more than in the June SEP—judge the risks to the inflation outlook as broadly balanced, while none of you assessed risks to inflation as weighted to the upside. In your narratives, some of you mentioned trade tensions, softer domestic business investment, and developments abroad as sources of uncertainty or adverse risks to the outlook for growth and unemployment. These factors, as well as concerns about undesirably low inflation expectations, were seen as sources of downside risk to inflation, while strong consumer spending and a more accommodative path for the federal funds rate were seen as making risks to the outlook more broadly balanced. The adverse effects of trade tensions on aggregate demand were cited as a downside risk to inflation, but the possibility that higher tariffs could lead to significant aggregate price pressure was also seen as a source of upside risk to inflation.

I will end my briefing here. We would welcome any questions that you might have.

CHAIR POWELL. Thank you. Questions for our briefers? President Kashkari.

MR. KASHKARI. Thank you. Stacey, you didn't mention it in your briefing, but in the Tealbook, obviously, you covered the labor market, and I think the Tealbook is forecasting job growth of 120,000 jobs per month in the second half of this year. With the revisions of the payroll numbers, it seems like the labor market has taken a pretty dramatic slowdown relative to a year or two years ago. I'm curious about your take on it.

MS. TEVLIN. I agree that the payroll numbers are definitely slower than they were a year ago, and if you took into account the benchmark revisions that we think will probably

exacerbate that, once those come in in February, I think that is a sign of payroll slowing more than we thought. I don't know if I would call it dramatic. These are still payroll gains that are above what we would consider a replacement rate, and they have been consistent, with a flat unemployment rate—

MR. KASHKARI. But marginally above.

MS. TEVLIN. —at a very low level. So I still think it's consistent with a solid labor market, but you're right. They definitely go in the direction of slowing payrolls and slower than we had expected.

MR. KASHKARI. Thank you.

CHAIR POWELL. President Daly.

MS. DALY. Keeping on the labor market for a moment—President Evans mentioned this morning about our *Fed Listens* event and how it might gather some information for inflation, and I'm wondering whether you lowered your u^* from 4.6 to 4.4 percent, and you said it's observationally equivalent, almost, but choose among those in the models. But have you all thought about doing a systematic review of the input from the *Fed Listens* events? Because I think we're collecting some pretty good information, and employers are going out and casting a much wider net on who they would bring into their employment. And with the productivity beating your trend, it would suggest they're not bringing in less productive workers. They're just bringing in workers they're less familiar with. And so it might mean in that model, if you think about that, that would mean that u^* , the frictions, are lower than we might expect.

I know you haven't done it yet, but it's just something to think about, because we have a paper being written about we learned from *Fed Listens*, I think, and there's been a lot of

anecdotal information. If we sourced it in, you might judgmentally adjust down your u^* . It's just a thought. I don't know if you've ever considered it.

MS. TEVLIN. I hadn't actually thought about that before, but it seems certainly reasonable. If we're gathering all of this information, we should take it onboard and think about what the implications might be.

CHAIR POWELL. Governor Quarles.

MR. QUARLES. Thanks, Mr. Chair. A narrow-ish question for Joe. The jump in GDP growth in Latin America was pretty striking. What would the drivers of that be, that we would expect the trend to turn around, and so materially, in the course of a year?

MR. KAMIN. That's the prospective growth in our forecast.

MR. QUARLES. Yes, exactly, the prospective growth.

MR. GRUBER. It's an important part, basically, of the pickup in foreign growth, and one that we've been kind of cagey about. I mean [laughter], we've seen really weak growth in Mexico—Q4, Q1, very weak. I mean, rates that we just don't think are necessarily indicative of the true growth capacity of their economy—below 1 percent.

And so we are expecting some of it just to rebound to what we think might be a more normal growth rate. Part of that probably has to do with policy uncertainty regarding the new government in Mexico, and as that fades and people get used to it, it's possible that that could move up.

Brazil has been another case in which it has been particularly weak. The second-quarter data were actually stronger. So there are some signs, perhaps, that some of that recovery might be in train. But a lot of it is just kind of crossing our fingers and hoping that a recovery is in train.

MR. QUARLES. Okay. [Laughter]

CHAIR POWELL. Vice Chair Williams.

VICE CHAIR WILLIAMS. I really like the new openness. [Laughter] I hear President Rosengren, I believe, referred to the framework discussion as “beguiling.” I’m hearing the forecast is “cagey.” It’s good. [Laughter] This is better.

I have a question. Back to the foreign outlook and looking at page 1, “Foreign Growth Remains Subdued.” One way to look at this—I mean, you mentioned that growth has been slow, but it’s going to improve, and you downgraded the forecast a little bit on foreign GDP. But then I’m looking at the alternative scenarios, and I’m struck by the first one, which is “No-Deal Brexit.” So the current baseline—and I’m just reading from this—in the outlook is “that negotiations between the United Kingdom and the European Union will extend beyond the current deadline of October 31 and result in an orderly Brexit sometime in 2020.” So that’s the baseline.

Then I go to the one on “Escalation of Trade Tensions,” and it says that our current baseline is that the CFRs already in place will happen, but none of the announced tariffs will actually happen. So I guess my question is, in the baseline that you have here, it basically assumes a lot of good news in the way that Brexit goes very smoothly. It assumes that the tariffs that have been announced don’t get put in place.

And, obviously, there are other risks if you go through the global outlook that you could be talking about. I guess if you were to think about, instead of the “everything goes completely well” modal forecast and were to ask the question “What’s your mean forecast?” or taking into account these risks and probabilities around them—I mean, how should I read this chart? Would

you say that if you were to draw the distribution of outcomes, they're mostly to the downside, say, perhaps to the solid line? Or—I don't want to lead—

MR. ROSENGREN. Leading the way. [Laughter]

VICE CHAIR WILLIAMS. So I'll leave it at that.

MR. GRUBER. So the alternative simulations here are serving the useful purpose, I think, of bookending and providing some information on real risks to the forecast. At the same time, personally, and I don't know if I can speak for everyone in the division or at the Board, but I think that the assumptions that we've made are fairly reasonable, right?

We have, for Brexit—just starting with Brexit—an assumption that there is no “hard” Brexit at the end of October and other things just draw out and persist for a while before they come up with some relative solution is a reasonable forecast, and it does result in very low U.K. growth.

So we have a very weak European—I mean, that's spilling over into our European forecast, too. So what's built into this is continued uncertainty that is holding down growth in Europe through this entire period. I think that's a pretty reasonable outlook for the way things might actually go.

On the trade tensions, it's hard to say. I think that there has been some progress. I think there's some realization that further escalations at this point could be damaging for the U.S. economy. That might constrain the policy a bit. And so I think that it's reasonable to assume that things don't get much worse but don't get much better. But, clearly, there's a lot of downside risk there, and that's why we have no idea.

VICE CHAIR WILLIAMS. I'm trying to contrast maybe what we heard from the primary dealer survey that Lorie talked about, which sounded more like a base case is

everything—maybe it won't get much worse by the things that have already happened or been announced or are in place.

MR. GRUBER. In our forecast, just to be clear, we haven't actually put in the October 15 or December 15 hikes, which, from the direct effects from the table in the briefing would take another 0.1 off U.S. real GDP growth, basically, and also lower our estimates for China a bit, too. I'm comfortable with that assumption at this point, but, you know, the risks are pretty high.

VICE CHAIR WILLIAMS. Thank you.

MR. KAMIN. I would underscore a couple of points that Joe made. The first one is, we have a very subdued forecast. As you can see, on page 1 you have the black line, which is our forecast below our estimate of potential, the red line, all the way to the end of 2020. So, ordinarily, you have a recession or you have a slowdown, and you might expect a bounceback where growth would actually be above potential for some time. We do not have that until 2021 in the forecast. So we're predicting a pretty subdued recovery. Oh, and actually, that goes especially toward our "cagey" Latin America forecast.

And then the second point I would make is that Brazil had been in the deepest recession in its postwar history a few years ago and has yet to achieve sustained growth. And this is an economy with vast potential—and, as I say, and always will be. [Laughter]

So I'm just saying, it's reaching close to 3 percent over the next year. You know, it's hardly the stuff of fantasy. Mexico, I would say, is even worse. It has been underperforming, in terms of per capita income growth and productivity growth, for the past decade and a half. And this year, a negative first quarter, a flat second quarter—so, again, a prediction that it would start getting up into the 2's is hardly a wildly optimistic outlook.

The second point I would make is that, basically, the global economy and trade were in very much a similar place in 2015 and 2016. And they bounced back, and we had a very strong 2017.

CHAIR POWELL. President Bullard.

MR. BULLARD. Thank you, Mr. Chair. I am looking at Stacey Tevlin's presentation, page 1, figure 2, "Measures of Consumer Sentiment." We've got four different measures here. They track each other very closely from 2010 to 2017, then they spread out. What are the differences? I mean, this is quite concerning if you went with the low one versus the high one. So what are the differences between these, and how much signal should I take from one versus the other?

MS. TEVLIN. We usually just show you Michigan and the Conference Board. And those are ones with long series that do a decent job of helping to explain consumption, and very often they move together. In this particular episode, they are not moving as much together, and so I added a couple more on there just to—and also ones that go through mid-September to try to add a little bit more information on which one you should take signal from. Generally, the Michigan survey we think fits a little bit better in explaining consumption, but, really, it's hard to distinguish between them because they usually move so closely together.

I would interpret this as, I'm a little concerned about that Michigan number, but the fact that all three of the other ones have stayed up gives me some comfort. And so we took down consumption growth just a little bit in our projection in response to Michigan, but if the other sentiment surveys followed it down, we would certainly be revising.

MR. BULLARD. Growing dispersion in measures of consumer sentiment—maybe it's just that the situation is more uncertain than it used to be, something like that.

MS. TEVLIN. Yes. That could be part of it. I haven't looked back at other episodes when these measures were moving differently, so I don't know for sure.

MR. BULLARD. Well, if you look at something like 2014 where they're all on top of each other, then you feel pretty good that you've got the right idea about consumer sentiment, because you measure it four different ways and it comes out the same.

MS. TEVLIN. I guess it depends on which ones they move toward. If they all move down toward Michigan, I'd be less comfortable.

MR. BULLARD. Okay. Thank you.

CHAIR POWELL. President Evans.

MR. EVANS. Thank you, Mr. Chair. Regarding the international outlook, the policy rates of foreign central banks—and I'm reminded, taking on board that we had an important discussion this morning about financial instability risks and low interest rates, I'm noticing that the ECB has had negative interest rates for a very long period of time. It's less a question than perhaps a request. Maybe we could learn a little bit from a discussion about how, in those central banks, they are asking—wondering about financial instability risk. Is it the nature of their banking system, capital markets that are definitely different, so that maybe it's not as much a concern? Maybe it's more of a concern.

In Germany, of course, the bund is negative, and so I just wonder if we can take out the signal from some of that and then understand how the United States is like that or not, and that—unless you have—well, any insights now would be welcome.

MR. KAMIN. Yes, sure. That's a topic we are very focused on. About a year and a half ago, we participated in a BIS project looking at the effect of low-for-long interest rates on financial stability around the world, but with a focus on advanced economies, particularly Japan

and Europe. Broadly speaking, we actually did not find a great deal of evidence of two things that we were looking for.

One concern was that prolonged low interest rates would be demonstrably hurting the profitability of banks and rendering them weaker in response to future shocks. We did find evidence that low rates diminished net interest margins, but it looked like, in a lot of countries, banks were able to offset that by basically goosing their fee income and other activities. That said, in some markets, particularly ones that were very retail oriented with negative rates, which is to say Europe and Japan, we did find some evidence that the low rates were hurting profitability.

On the issue of risk-taking, again, we found relatively limited evidence of that. So if you look at both Japan and the euro area over the past half-decade or so, there really has not been a particularly large pickup in bank lending that would be evidence of a lot of exuberance. But there have been some pockets of increased lending and leverage. So, for example, in France, corporates have increased their leverage to an extent such that France increased its countercyclical capital buffer. There have been some indications of increased housing prices in Germany and particularly Sweden, and also Switzerland—not in the euro area, but a similar situation. So there have been pockets of increased exuberance and risk-taking, but not in a very generalized extent. So it looks like, unless you have the combination of low rates plus, basically, more solid growth, maybe you don't get that effect. But that's something we're definitely on the alert for.

MR. EVANS. I don't know if there's something in the *Financial Stability Report* or reports that we get that might pick up on that on a routine basis. You know, quarterly, we have

this discussion about financial stability, the QS and others, and I don't know if there is a way to fold in updates on what types of factors and discussion—

MR. KAMIN. We review financial stabilities in 13 different economies twice a year as part of our exercise for this international financial stability matrix. And we usually report that to you, and it's in the QS process that we circulate to you. So we'll make sure that you take note of it.

MS. WILSON. I would just add that the low interest rates and their effect on financial stability was actually a focus of our QS this time. So we can send you that.

MR. EVANS. So do we combine that with some setting for—I guess everybody has the same regulatory environment, so we wouldn't necessarily think about heterogeneity there or not, I don't know. Anyway, it seemed particularly relevant, given the discussion.

MR. KAMIN. Well, we're working on this. We're actually planning to have that process contribute a little bit more than we have to the financial stability review that we publish, and we'll be happy to report results to the FOMC.

CHAIR POWELL. Further questions for our briefers? [No response] If not, let's take our coffee break, and let's be back at 3:30, please.

[Coffee break]

CHAIR POWELL. Okay. Welcome back, everyone—we're fully caffeinated now. We'll begin the economic go-round with President Rosengren.

MR. ROSENGREN. Thank you very much, Mr. Chair. Economic fundamentals have changed very little since the previous FOMC meeting or, for that matter, since the June FOMC meeting. If the only information you had was undated Greensheets distributed at the June

meeting alongside those distributed at the September meeting, it would be hard to know which month you were looking at.

Labor markets were tight in June, with the unemployment rate at 3.7 percent. Labor markets remain tight now, with the unemployment rate at 3.7 percent. Core CPI inflation was 2.1 percent in June. With the release last week, it is now 2.4 percent, noticeably higher. The S&P 500 index was trading at 2,900 before the June meeting and is now trading roughly 2 percent higher.

The similarity in estimates of major variables to those in June extends to the Tealbook forecast. In June, real GDP growth for 2019 was expected to be 2 percent. In the September Tealbook, the corresponding forecast is 2.1 percent.

The unemployment rate at the end of 2019 was forecast to be 3.7 percent. It is now the same, 3.7 percent. Core PCE inflation was expected to be 1.8 percent at the end of 2019. It is now forecast to be the same, 1.8 percent. Similarly, forecasts for these variables for 2020 are all within 0.1 percent of where they were in the June Tealbook. This is not an idiosyncratic feature of the Tealbook forecast. The Blue Chip September forecast for the year has also changed relatively little from the July forecast. My own forecast has also changed very little.

So what has changed? The potential for higher tariffs on China have become a reality, at least for the September 1 increase. When talking to my contacts about tariffs, they made two comments. Two large retailers, one focused on home goods and the other on apparel, both of whom are subject to significant tariffs on the goods they sell, did not report undue concerns.

Of course, no one wants to be subject to a tax increase, and they are no different. However, they both highlighted that, given the devaluation of the Chinese currency, the movement of production primarily to Vietnam, and more price pressures on distributors, the

price changes are likely to be modest and unlikely to significantly reduce consumer demand for their products.

The second comment that I have commonly heard from contacts is that uncertainty is actually down. In the spring, they were navigating what they thought would be temporary tariffs that would be removed as they became politically unpalatable. They are now assuming that tariffs are permanent, so they are now rapidly shifting the production of low-cost items from China to foreign competitors. They can accomplish this shift relatively quickly, they assert, because they had already started the process in response to rising labor costs in China.

The transition costs seem manageable to these firms, because most of their suppliers are paying the costs of moving to countries not subject to tariffs. Although Southeast Asia benefits, China is clearly worse off. They also highlighted the fact that demand for products seemed quite strong, consistent with the strength we have observed in consumer expenditures. What makes them nervous, however, is the discussion of a recession in the press.

A second change from the previous meeting is the 10-year Treasury rate. When it was speculated that Europeans would push their 10-year rates further down, this depressed U.S. rates. As Europeans have recently made clear that they were not going to push long-term yields to be ever more negative, our rates have moved up from their lows. Rather than a signal of domestic weakness, I view much of the movement in longer-term Treasury rates as reflective of weakness abroad and the rather drastic actions taken, particularly in Europe, to push long-term yields to very negative levels.

A third change over the course of this year has been a modest deterioration in the outlook for our key trading partners, only part of which is a result of increasing trade barriers. It is important, in my view, to take a reckoning of the negative shocks that have emerged since we

have changed policy course at the beginning of this year and match those with the policy actions taken since that time.

A combination of trade barriers and weaker foreign real growth have likely knocked several tenths of a percentage point off current and expected real GDP growth. If we had been growing at the rate of potential growth and if we had been at full employment, such a development would normally call for a response of about the same magnitude in cuts to the federal funds rate. Yet since the beginning of the year, we have removed the expectation of two to three rate increases and added, likely as of tomorrow, two cuts, with the prospect of more to come. This reaction seems disproportionate to the effect of the shocks we have seen thus far and to the possible effect on the economy should additional trade barriers be raised. I agree with the Tealbook forecast, which factors in all of these shocks and, at the current level of the federal funds rate, already expects no meaningful progress in closing the output gap.

Monetary policy accommodation does have effects, including less desirable effects—and this relates to President Evans's comment at the end of the previous session. As expected, the reduction and expected further cuts in our rates have helped propel stock prices to near all-time highs. Particularly affected have been stocks related to commercial real estate, which have benefited from a benign economic environment and an accommodative monetary policy.

The corporate bond market has also been on fire as firms rush to take advantage of the fire-sale prices on debt. One large banker—not in my District—has said that his bank is encouraging firms with high stock yields to fund stock buybacks with debt. Because lower rates encourage risk-taking, our current actions, and likely future actions, are the driving force behind the marketing of the risk-taking channel.

Not surprisingly, leverage is increasing. Data produced by S&P Global tracks debt multiples of highly leveraged loans. For 2019, the average multiple on leveraged loans is 5.4, much higher than the 4.9 value reached at the previous peak before the most recent recession. Similarly, the average cash flow multiples of highly leveraged loans are at their lowest level since 2007. And the value of leveraged loan transactions with EBITDA adjustments for leveraged loans is much higher than in 2007.

Clearly, there are risks to the forecast. However, reacting to risks not currently reflected in economic fundamentals has the potential to boost asset prices and increase the leverage of firms and households. This will likely exacerbate the next downturn, whenever it does occur. With very little change in the forecast, it appears that both mine and the majority of the Committee's views have not changed much—a topic that I will return to tomorrow. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Governor Clarida.

MR. CLARIDA. Thank you, Chair Powell. I want to begin by posing a provocative question in the interest of encouraging conversation and discussion, perhaps. Why exactly do we have an outlook go-round at FOMC meetings? After all, most of the policy rules that we consult and that we publish in our policy report and that the staff uses to conduct alternative scenarios are static rules that use only inputs of currently available data and do not incorporate any forecast information whatsoever.

Forecasting is hard. Forecasts are often wrong. So why do we discuss the outlook at these meetings, or, certainly, why do we do it on Tuesday? We could vote on Tuesday and discuss the outlook tomorrow. The answer I would give to my own question is that we have an

outlook go-round at these meetings because monetary policy operates with lags. Certainly, Friedman called them long and variable.

Any policy decision that we may reach tomorrow will have exactly zero effect on Q3 GDP or September 2019 employment and inflation. However, operating subject to those long and variable lags, any policy decision we make tomorrow will begin to affect employment and inflation sometime next year.

Given this reality, common sense suggests and academic models confirm that good monetary policy should be forward looking. And, indeed, in some simple DSGE models you can write optimal monetary policy as essentially a forward-looking policy rule based on expected inflation. And, indeed, President Bullard 20 years ago showed that well-formulated forward policy rules have a number of desirable macroeconomic properties.

Having confronted and, I think, prevailed over the rather feeble straw man that I introduced with my opening question, let me now turn to the data and the outlook. And I agree with President Rosengren that the U.S. economy remains in a very good place, with low unemployment and inflation below but projected to revert toward our 2 percent objective. Wages are rising broadly in line with productivity and underlying inflation. I note that recently the BLS has projected an increase in trimmed productivity growth over the next 10 years to 1.6 percent relative to the past 10 years.

Labor force participation is up—obviously, a welcome development. Prime-age participation has rebounded but still remains below levels that prevailed in the previous expansion. The labor market is robust, but there is no evidence that rising wages are a source of cost-pushed pressure on price inflation. Indeed, if anything, the revised national income data show a noteworthy and, to me, welcome increase in labor share of national income in recent

years. This is similar to past cycles when wage increases are absorbed by margin compression and are noninflationary.

The supply side of the economy continues to surprise on the upside. Not surprisingly in view of the strong labor market, household incomes are strong, and we're all aware that the consumer is the engine of growth in the economy.

Now, that said, the staff and I agree with the projection, which, under current policy, projects growth will slow to 1.8 percent in the second half of the year. And this is really driven by a decline in business investment, in part due to falling profits and a decline in our exports due to slowing global real growth. Of course, the bright spot, residential investment, is projected to pick up, given a pretty significant decline in mortgage rates.

So this is some of the good news in the data and in the staff projections, but, in my remaining comments, I would like to focus on what concerns me in the Tealbook's projection, and that is the projection for PCE inflation. The staff projects that core PCE inflation will rise only to 1.8 percent by the end of this year, and that both headline and core will remain at 1.8 percent through the end of our 2022 forecast horizon. So this is the baseline projection under roughly current policy: that we should not expect to hit our 2 percent inflation objective over the forecast horizon, let alone keep it there on a sustained basis.

I'd also point out a recent survey conducted by a Fed watcher, Julia Coronado—some of you get her stuff. And, before every FOMC meeting, they survey about 120 market participants, and one of the questions they ask in there I found striking. They asked the question, over the next two years, what is the likelihood that we will see at least one six-month period with core PCE inflation at 2 percent? And the answer was 30 percent. So if you define that as success,

essentially, we've got a 70 percent chance of not getting there in expectation, according to the people who were surveyed.

Now, again, this is the baseline case, not the downside risk. But, in particular, I think if you look at the downside risk, I would argue that they are to the downside on inflation, and it comes from this issue of u^* and the output gap. The staff in its baseline assumes a u^* of 4.4 percent, and the unemployment rate remaining at roughly the current level for the next three years. In their model, that generates excess demand, but yet it doesn't push inflation above underlying. Why? Because import inflation is a drag, through a stronger dollar and global deflationary pressures. And so even with the assumed excess demand, we're basically getting to 1.8 percent under the baseline and staying there. Obviously, we have different views, and I respect those views about the priority, but, to me, I think it is important that, under our projection, we should be thinking of getting toward 2 percent.

Now, a little comment because I think it will come up in the context of the framework review. The staff's baseline, that PCE inflation remains below 2 percent, is internally consistent, because it relies on a basic policy rule that assumes that u^* will remain at 4.4 percent throughout the forecast horizon. So it's the usual tradeoff: We don't like falling short of our inflation objective, but we don't like it when too many people are working either, even if there's no inflation.

But I think this scenario assumes, contrary to historical experience on the FOMC, that over the next several years, if we keep seeing no upward pressure on inflation, then what we'll do is, we'll revise down our estimate of u^* as we have done repeatedly over the past several years. And, indeed, in my own mind, that's the way I think about the way we're trading off.

All of us, to some extent, are Bayesians. As we go through a period in which we don't see inflation, we have some combination of adjusting our thoughts on the economy and adjusting policy, and that's why u^* is coming down. And I think that's a very, very sensible way to think about our process. But, in particular, what it does tell me is, I think the risks to this baseline outlook are on the downside.

So, in conclusion, in my remarks today I've made no mention of trade policy uncertainty, breakeven inflation, the Michigan survey—which did “print” at an all-time low, but I won't mention that [laughter]—or the inverted yield curve. I have argued that monetary policy should be forward looking and have relied solely on the staff's baseline modal projection. To me, such a baseline indicates that our current policy stance is too tight and inconsistent with our price stability mandate. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I continue to view the U.S. economy as slowing, with considerable downside risk and little inflation pressure. I see U.S. consumption, growth, and labor markets as still performing well, but I also see these as likely to be backward-looking indicators in the current environment. Anecdotal information for domestically-oriented companies and businesses is consistent with continued strong performance in these markets. The U.S. manufacturing sector is contracting based on current data. This could easily get worse before it gets better. In my view, it may well not bounce back, as suggested in the Tealbook.

I see the newly announced strike at General Motors as ominous in this regard. Previous strikes there have shaved a few tenths off U.S. real GDP growth. Of course, everything depends on how long the strike goes. From a policymaking point of view, we should probably assume

that manufacturing will not improve and make policy decisions accordingly instead of assuming that all will be well.

Global manufacturing appears to be contracting as well, and it has its own set of downside risks. A District contact operating in these markets suggested to me that business has been declining over the past five months. In addition, there's considerable pessimism about 2020.

Both U.S. and global business investment are being chilled by the expanding trade war. Let me reiterate my take on the trade war. I think we are witnessing a breakdown in the consensus on trade liberalization in the United States that has dominated Washington and global politics for 75 years. Without U.S. leadership, both tariff and nontariff barriers will likely rise and remain at higher levels than they would otherwise. The retreat from free-trade principles in the United States is, arguably, bipartisan. I see no other global force for trade liberalization. Most countries that could play this role are more mercantilist than the United States, so I see this as a very risky situation for the United States. We depend on global trade. It's probably going to be a very long and protracted trade war. I see little prospect for meaningful resolution in the near term. I see our trading partners potentially pulling back from potential resolution.

I think China, in particular, will likely try to wait out the current Administration. I think this should be our working assumption—that there's going to be no resolution in the near term. Also, I think the issues, especially with respect to China, are far too deep to resolve quickly if you want to resolve them in a meaningful way. So I see a protracted trade war on the horizon that will be an ongoing feature of the global economy.

Over the weekend we had the beginnings of what looks like a possible global oil shock, with an attack on Saudi facilities. This attack was different, I think, from what we've seen

historically. We have drones carrying out the attack. You have the ability to escape particular blame or easily place blame, unlike with incoming tanks or something like that—instead, you can send the drones in. I think the message is quite clear that this infrastructure is vulnerable not just in Saudi Arabia, but also elsewhere, and the technology to carry out attacks has changed, so the attacks cannot be ruled out. And future escalation might even be considered likely at this juncture.

Again, from a policymaking perspective, I think our working assumption should be that there will likely be further disruption to global oil markets, and this will probably chill global business conditions further than they have already been chilled. I interpret intermeeting bond market volatility as pricing in some of this downside risk, and the Lorie Logan exhibit 1, panel 3, seemed to confirm at least some of this with respect to the trade war. Whereas previously resolution was expected, it's now not expected, and I think that drove a lot of the pricing in bond markets over the intermeeting period.

Despite some recovery, yields are generally down since our July meeting. The signal seems clear to me at least. Markets see less inflation and less growth over the forecast horizon than the FOMC. Markets are pricing in a higher risk of recession than we are. I think we should take these market signals quite seriously. The yield curve has become more substantially inverted based on the 10 year–3 month spread at times during the intermeeting period. The current U.S. policy rate is higher than most yields anywhere in the G-7 out to 10 years. I find that a very ominous feature of our current policy. The 10 year–2 year Treasury yield spread is flat, and that suggests to me that we may just be able to finesse our way out of this, as long as we follow through on expected rate cuts and possibly return the yield curve to a more normal,

upward-sloping shape. I'm not sure if the dot plot will send that signal. I think that's a consideration for tomorrow's discussion.

In general, I'm not comfortable with the current yield curve. I think it's indicating that this Committee is currently more "hawkish" than necessary. I think it's sending a bearish signal about the prospects for the U.S. economy. I'm not at all convinced by attempts to brush off this signal, given how strong it's been during the postwar era. And I don't see a good reason for us to try to brush it off in this environment, as we're not trying to fight against particularly high inflation at this juncture.

Inflation expectations, as measured by a straight read of the TIPS yield, are exceptionally low. The TIPS five-year breakeven adjusted to go from CPI inflation to PCE inflation suggests that markets think that PCE inflation will be only about 1¼ percent over the next five years, well below our 2 percent inflation target on our preferred measure. I continue to regard it as dangerous to try to decompose TIPS yields using affine term structure models that are known to explain very little and are known also to be excessively sensitive to underlying assumptions. These models will nearly always tell us that movements in TIPS yields are merely noise—which is the same as saying it's due to term premiums, because these models embed a prior that inflation expectations cannot move very rapidly.

A better interpretation, in my view—at least, from a policymaking perspective—is to throw out these empirical models and instead recognize that the TIPS markets reflect the actions of actual investors, taking into account all available information and attempting to predict actual inflation outcomes over various horizons. Their verdict is that the FOMC is likely to miss its inflation target substantially to the downside over the next five years.

We need to get to a policy that inspires more confidence in medium-term inflation outcomes and, in fact, tends toward inflation outcomes on a preferred measure that are higher than the inflation target to make up for past misses on the low side. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Daly.

MS. DALY. Thank you, Mr. Chair. In many ways, little has changed since we last met. This is something others have said. The underlying forces pushing on the economy are positive or negative, depending on where you sit. On the positive side, consumer spending remains strong, spurred by solid gains in employment and income. And this is confirmed by my contacts in the retail sector who remain cautiously upbeat, executing on growth plans while ensuring they are well prepared should a downturn occur.

Other than retail and other consumer-facing businesses, firms are less sanguine. Trade uncertainty and global developments have translated into less demand and lower confidence. My contacts tell me that higher tariffs, slower global growth, and dollar appreciation have directly affected their business investment, and further softness is expected. Manufacturing firms have been particularly hard hit. One contact noted that he has moved his plan B from his shelf to his desk, feeling more concerned that a material slowdown is ahead, and others in the business-facing sector share his unease.

When I weigh these two forces, the positives and the negatives, I am reminded that, while consumers are two-thirds of the economy, their prospects depend materially on the outlook for other businesses. In this sense, the decline in business investment and sentiment is more worrisome than its simple weight in the economy. And, in fact, the slowdown in job growth may be a first signal that these businesses are starting to affect the broader economy. As a consequence, my outlook—about the same as it was last time—is conditioned on additional

accommodation relative to where it was in June, our previous SEP. I will discuss this in more detail tomorrow.

Now, as usual in an SEP round, we took another careful look at the longer-run variables used to calibrate policy. So, starting with r^* —I knew you’d like that, Vice Chair—I have kept my estimate of the long-run value at $\frac{1}{2}$ percent. However, in light of the paper by Alan Taylor and Òscar Jordà presented at the Jackson Hole Symposium last month, I am attuned to the fact that global factors can influence our neutral rate. Worsening foreign real GDP growth is leading to inflows into long-term U.S. Treasury securities, lowering their yields, and putting downward pressure on r^* . Indeed, the Christensen-Rudebusch term structure model that we maintain in San Francisco shows r^* has fallen by a couple of tenths since the middle of the year and is currently below 0.5 percent. Now, some of this may be due to temporary “search for yield,” as Lorie mentioned. But I remain open to the possibility that r^* may be lower than I have penciled in currently, at least in the medium term.

Regarding g^* , a recent symposium on growth that President Barkin and I cohosted in San Francisco provided few reasons to be more optimistic that growth can exceed 2 percent in the coming years. Of course, I’m open to President Barkin having a more bullish recollection. [Laughter] We heard from a range of prominent micro- and macroeconomic experts, such as Susan Athey, Chad Jones, Peter Klenow, Nick Bloom, and others, as well as from several industry leaders. The discussion highlighted a variety of headwinds to productivity growth. One notable factor is the waning contribution coming from rising educational attainment, and this is something that others have mentioned previously. A second factor is limited public investment in basic research, even as it is becoming harder and harder to find good ideas. A third factor—and we spent a lot of time on this—is that higher industry concentration may also be having an

effect. For instance, the winners of the information-technology race—the leaders, as they are called—can charge large markups and extract very large rents, and, arguably, they then have less incentive than they once did to invest in new path-breaking innovation. The followers, those who came later, also face less incentive to innovate, because they have no realistic chance to take over the leaders. The key “takeaway” is that rapid growth in information technology over the past few decades may have led to entrenched positions for industry leaders that, for now, can translate into slower productivity growth than we would see otherwise.

So, last but not least, let me turn to u^* . And here I have revised down my estimate to 4 percent. The discussion at our joint Chicago and San Francisco Board of Directors meeting last week confirmed for me that the sustainable unemployment rate has fallen significantly over the past few years not just because inflation has been low, but because these other things that we are hearing in the *Fed Listens* events and these anecdotal reports are helping me understand that.

As President Evans can attest, directors from both Districts emphasize that employers are casting a wider net than they once did, broadening the recruiting to include traditionally marginalized groups. Employers are also expanding training and provision of nonwage benefits, such as transportation to worksites. In fact, one company is driving into the inner city to pick up workers and drive them back to plants in more remote locations just to get workers in place to do production. These measures are helping sustain employment growth amid a very tight labor market without spurring above-trend aggregate nominal wage growth.

Now, in terms of price inflation, my lower u^* estimate helps reconcile very low actual or measured unemployment with muted inflation pressures. Core PCE inflation remains soft, with core PCE prices rising only 1.6 percent in July. I expect inflation to increase subtly over time to reach target only in 2021. That said, I am a little concerned that inflation expectations are

starting to work against us. Since our July meeting, market participants have been pricing in substantially less compensation for future inflation. This could reflect a growing recognition among market participants that,, due to our proximity to the effective lower bound, monetary policy will have less ability to offset the effect of future negative shocks. As noted in the framework memos, this creates a deflationary bias in expectation. But lower compensation for future inflation might also reflect the fact that actual inflation has consistently been below target for the past seven years, causing market participants to infer that we are okay with, or at least not very worried about, inflation close to but not sustainably at 2 percent. In other words, the perceived π^* may be less than 2 percent.

Ultimately, the issue we are facing is a very practical one. Whether market participants believe we are constrained in our ability to hit 2 percent or believe that we are content with 1.7 percent or 1.8 percent inflation, the outcome is the same. By lowering nominal rates, every one-tenth decline in inflation expectation is a loss of needed policy space—a topic I will return to tomorrow. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Mester.

MS. MESTER. Thank you, Mr. Chair. There has been little change in the Fourth District economic conditions since our previous meeting. The Cleveland Fed staff diffusion index of business conditions was zero in July, indicating stable economic activity. Contacts in the manufacturing and freight sectors continue to point to rising tariffs and softer global demand as weighing on activities since early summer. While many firms said uncertainty about trade policy was generating caution, many also remain optimistic about current and future business conditions. Almost no contacts expect a recession this year or next or expect major changes in

their profitability. Firms outside the manufacturing sector have not changed their capital spending or hiring plans.

Some retailers are concerned about an expansion of tariffs on consumer goods, but most expect consumer spending confidence to remain solid. As one director said, “Uncertainty is the issue. Demand is strong.” District labor market conditions remain strong. The unemployment rate has remained at 4 percent in July, 1 percentage point below the Cleveland staff’s estimate of its longer-run normal level and near its lowest level seen over the past 40 years.

Year-over-year growth in payroll employment in the District has slowed since the start of the year to a bit below $\frac{1}{2}$ percent in July, which is the Cleveland staff’s estimate of its longer-run trend. District contacts suggest that the slowdown in employment growth is related to limited labor supply rather than lower demand for workers. A Cleveland Fed director associated with a labor and workforce development agency reported results of his firm’s quarterly employer survey, in which 9 out of 10 respondents reported trouble hiring workers and 65 percent said they plan to continue to hire. Some firms were reluctant to raise wages, on account of their limited pricing power, and others thought the wages they are offering are commensurate with the skill sets available.

Even so, there were unprecedented spikes in average and median wages paid across respondents in the survey. The tightness in the labor market is negatively affecting activity. One director from a community bank noted that several commercial clients continued to turn down projects because they can’t find the needed workers. Another director reported that increases in wages for lower-wage workers are putting upward pressure on wages across the skill spectrum as firms try to maintain their wage structures.

Now, while wage pressures remain elevated, price pressures of District firms continue to moderate, partly reflecting lower steel, copper, and shipping costs. About one-fifth of District firms reported increasing their own prices over the intermeeting period, but that's the lowest level since mid-2017 and down significantly from levels seen in the second half of last year.

Regarding the national economy, on the whole, incoming data over the intermeeting period have come in largely as expected, and I have made little change to my forecast. Although the attack on the Saudi Arabian oil fields adds to the risk of a more significant slowdown, at this point, growth in the United States appears to be slowing toward trend growth, which I estimate to be about 2 percent.

In my view, the most likely outcome continues to be that, over the forecast horizon, output growth and employment growth will slow toward trend. The unemployment rate will remain at or below 4 percent, which is below my estimate of its longer-run level of 4 to 4½ percent, and inflation will gradually rise to 2 percent. Although business investment, manufacturing, and exports are soft, the softness is offset by strong growth in consumer spending, which is supported by the strength in labor markets and solid consumer sentiment.

Payroll job growth has slowed from last year, but the job gains have averaged 156,000 over the past three months, which is well above trend. The unemployment rate continues to run at 3.7 percent, near a 50-year low, and the participation rate has remained in the narrow range that has prevailed for several years despite a downward trend driven by demographics. Growth in average hourly earnings has remained stable at a level higher than observed a few years ago, and small businesses continue to find the job market tight. In August, the share of National Federation of Independent Business survey respondents reporting the quality of labor as their

largest concern and the share reporting few or no qualified applications for job openings reached new highs for this expansion.

Housing market activity appears to be stabilizing after several quarters of decline, with refinancing activity up, reflecting the decline in mortgage rates driven by lower 10-year Treasury yields. Indeed, on net, financial conditions are accommodative. The Chicago Fed's National Financial Conditions Index indicates that financial conditions are easier than for most of the 2015 to 2017 period.

Sovereign bond yields here and abroad have declined since our July meeting, which suggests that bond investors are less sanguine about the economy. In contrast, corporate credit spreads in the United States have increased relatively little and remain at historically narrow levels, and equity prices are near record highs. Now, we have seen some fairly significant increases in long-term bond yields over the past couple of weeks, which continued after the ECB announced its easing package and suggests there isn't an easy interpretation of what's driving these movements in yield.

Inflation is running below our 2 percent target, but incoming information is consistent with inflation gradually firming after low readings early in the year that reflected transitory idiosyncratic factors. While headline PCE inflation has been held down by energy prices, the annualized three-month percent change in core PCE prices was above 2 percent in both June and July. In July, the Cleveland Fed staff's median PCE inflation measure remained at 2.6 percent, and the Dallas Fed's trimmed mean PCE inflation measure remained at 2 percent. And, as President Rosengren indicated in a recent speech, in the past when the core and trimmed mean PCE inflation measures have diverged, core PCE inflation has tended to move toward the trimmed mean.

The cyclical component of core PCE inflation constructed by the Cleveland Fed staff based on finely disaggregated data, which I reported on at our previous meeting, has been stable over the past couple of months. It's at its highest level in the post-crisis period and near its pre-recession level. And in August, the Cleveland Fed's median and trimmed-mean CPI inflation measures were little changed, with both rates above 2 percent. I take all of this as positive evidence in suggesting that inflation should continue to firm.

The only caveat to this is the mixed readings that we have had on longer-run inflation expectations since our July meeting. Although long-run PCE inflation as given in the Philadelphia Fed Survey of Professional Forecasters remains steady at 2 percent, readings on consumer expectations in the New York Fed and Michigan surveys edged down after having moved up at the time of our July meeting. And the Cleveland Fed's five-year, five-year-forward measure, which combines both market and survey data, also edged down after being little changed from May to July. We're going to have to wait and see if these latest movements reflect the typical volatility of these measures or whether this softening continues. But if there is a sustained pullback in Saudi Arabian oil production as a result of the attacks, higher energy prices could put upward pressure on inflation expectations. Again, we're going to have to wait and see how this evolves.

Now, to achieve the outcomes in my modal forecast, my federal funds rate path is relatively flat, with the funds rate at its current level over the remainder of this year and incorporating only a few 25 basis point increases over the forecast horizon. This is slightly more shallow than I had in my June SEP submission, reflecting both July's cut in rates and the downward revision I made to my estimate of the longer-run federal funds rate, which I moved from 3 percent to $2\frac{3}{4}$ percent.

A variety of simple monetary policy rules, including those available on the Cleveland Fed website, would suggest a steeper policy rate path would be appropriate. I penciled in a shallower path, because I view that as consistent with a balanced approach to our dual-mandate goals and also considering the risks of financial stability, which I think we need to take into account when setting policy in this environment.

This is a policy strategy in which, so long as output is growing at its trend rate, the labor market remains solid, and inflation expectations remain reasonably well anchored, we wouldn't take deliberate action to inflate the economy with another rate cut. And that's based on the current level of interest rates and also the current and expected path of inflation. We basically would allow inflation to move up gradually, as it's expected to do, even though it would take a bit longer to get there. But the strategy also doesn't take deliberate action to curtail an inflation overshoot so long as inflation doesn't rise too far above 2 percent. So, again, this is consistent with a symmetric approach to our inflation goal.

I think this continued patience on inflation, which is basically an opportunistic reflation strategy, does recognize there is risk to financial stability posed by the current high levels of corporate debt, leveraged lending, and commercial real estate valuations. And, in an environment of low global interest rates, monetary policy actions that would encourage additional reach-for-yield behavior might offer some near-term benefit, but it would be at the cost of weakening the economy's foundation over the medium term.

Now, I have been discussing my modal outlook, but, of course, there are some salient risks, which I view as weighted to the downside for growth. The ongoing uncertainty caused by trade policy tariffs has certainly weighed on business sentiment, investment, and manufacturing activity in the United States and contributed to slower growth abroad. Other risks include Brexit,

the potential for a disruptive resolution to the protests in Hong Kong, and the possibility of a sustained pullback in Saudi Arabian oil production, which also poses an upside risk to the inflation forecast. If the weakness in business spending begins to affect hiring and then, in turn, consumption, we could find ourselves in a weak growth scenario in which economic growth slows well below trend, the unemployment rate rises, and inflation expectations and inflation remain low for a sustained period.

It's not entirely clear to me what's driving the behavior of longer-term Treasury yields. Demand for safe assets is likely one factor. But low yields also suggest that bond investors are placing a high likelihood on this weak-growth scenario. And, should such a scenario begin to emerge, the short- and medium-term equilibrium interest rate would move down, and the federal funds rate would need to move down as well in order to sustain the expansion and foster achievement of our longer-run goals of maximum employment and price stability.

There are some upside risks to my forecast as well. Many businesses are telling us that it's the uncertainty that's weighing on activity and not weak demand. A quicker and more positive resolution to some of these uncertainties should support growth and is an upside risk to my forecast. Consumer spending, which has held up very well despite the uncertainties, may be indicating there is additional positive underlying momentum in the economy. And during the 2015–16 period, there was a slowdown in global demand, a sharp decline in oil prices, and sizable appreciation of the dollar, which drove a significant pullback in business investment and manufacturing activity, but the overall U.S. economy showed considerable resilience. I kept this experience in mind as I put together my outlook for the economy and monetary policy. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Harker.

MR. HARKER. Thank you, Mr. Chair. Regarding the forecast, I once again find the overall profile of the staff's forecast in the Tealbook to closely align with my own. I see growth that's slightly higher than trend growth in the near term and reverting to trend-like growth of almost 2 percent further out in the forecast horizon. I also anticipate that inflation will return to target sometime in 2021, and the recent signs of some firming, especially in core CPI, are informing my view that inflation is slowly returning to target. That said, the deterioration in market-based measures of longer-run expected inflation, as well as the consistent undershooting of our target, lead me to acknowledge that there are significant downside risks to my modal projection. I also continue to anticipate that the unemployment rate will remain below its natural rate.

The view that the economy is likely to experience trend-like growth is supported by data in the Third District as well as from conversations with many of my contacts. Unemployment in the District is at historic lows, and wages are growing moderately. However, the strength in employment growth has waned, with weakness showing up in manufacturing and education. On a brighter note, we continue to see gains in labor force participation. So, like the nation, economic growth is largely due to the consumer who's benefiting from accommodative financial conditions, gains in wealth, steady employment prospects, and solid gains to personal income. Our nonmanufacturing survey with a reading above-average reflects that strength in consumer spending.

Now, with respect to manufacturing in our region, the sector is performing quite a bit better than indicated in other regional surveys and better than the nation. Our current manufacturing index remained in positive territory in both August and September and showed strength in both orders and shipments. Of note was the bounceback in current employment from

its unusually low reading in August. Additionally, manufacturers in the region remained optimistic, with indexes for future employment and capital expenditures well above nonrecessionary averages.

One likely reason for the divergence in our survey from others is that manufacturers in our region are much less exposed to trade shocks than in other areas of the country. In particular, if you take Pennsylvania, our main trading partner is Canada and not China, so we're seeing a very different dynamic in the Third District. Even so, we're hearing more concerns over the trade war, and many manufacturers with foreign supply chains are indicating that they are diversifying those lines or planning to do so in the near future. Take a recent report from the CEO of a major supply chain inspection company with over 6,000 clients worldwide. This firm provides services to businesses that are analyzing additions or changes to their supply chain manufacturing partners. The report indicated falling China-based inspections by U.S. companies—actually, a 13 percent drop in China-based inspections, as you would expect as people start to move out of China or not invest in China—and, as others have noted, significant increases in inspections in Vietnam, Cambodia, and India of 21 percent, 15 percent, and 25 percent, respectively.

These increases are consistent with many reports from contacts and the media, but what surprised me is the fact that Mexico's inspection rate has jumped a staggering 119 percent during the first six months of this year. It appears that neither China nor the United States will be winners in this trade war, but that countries in Southeast Asia and especially Mexico will be the beneficiaries.

So back to the Third District. Weakness continues in residential real estate, and the decline in mortgage rates has yet to have any noticeable effect on our housing markets. In fact, real estate sales have been softening of late.

To summarize, the District economy is growing modestly. The growth is almost entirely driven by the consumer, which is in line with what we're seeing nationally. The most recent data continues to indicate that the recovery still has room to run, and my forecast continues to project trendlike growth and a return of inflation to target. What this means for policy I will discuss tomorrow. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chair. Although I heard some positive reports, on balance, my contacts seem more downbeat than last round. Consumer-facing businesses still report strong sales, though some expected growth will slow next year. Manufacturing is clearly a different story, with many firms indicating that orders have fallen this year. Repeatedly, we heard how trade policy has raised uncertainty. On-again, off-again brinkmanship is adversely affecting many businesses, and a number are putting plans to expand operations on hold. Add in a weak global growth outlook, and it is easy to understand the many reports of dormant cap-ex. The recent incident in Saudi Arabia could boost uncertainty further.

The labor market remains healthy, with continuing commentary about worker shortages. That said, some firms reported scaling back hiring plans, and a few mentioned they have made staffing cuts. These firms primarily were in manufacturing. My contact with the broadest view on the labor market, who runs a major temp help services group, characterized labor demand as a little softer but not unwinding. Nothing notable was mentioned about wage or price pressure. Firms are certainly not talking about widespread wage increases to address worker shortages. Of

course, the other labor market news is the strike at General Motors. Before the walkout, our auto industry contacts had put a high probability on a strike but expected that any work stoppage would be short lived. We'll have to see.

Separately, despite the downbeat tone of our nonfinancial contacts, these contacts aren't expecting that a downward economic spiral is near. The same can't be said for our financial market contacts, who found 101 ways to tell us that investors expect a recession. [Laughter] They typically acknowledged that this view isn't supported by the U.S. macrodata but then continued to highlight downside risks—in particular worldwide deglobalization trends and the so-called Japanification of Europe. I would note that these finance-contact calls took place in early September. Maybe they're feeling better now.

Regarding the national outlook, my growth and inflation forecasts have not changed much from my June SEP submission. To get to that point, I had to balance the more downbeat business and global elements with the continued positive momentum in consumer spending we've been seeing. I also had to write down a somewhat more accommodative monetary policy path than I had in June. My forecast of economic activity is broadly in line with the Tealbook. I have real GDP expanding a little over 2 percent in the second half of this year and then growing at a rate that is essentially indistinguishable from potential over the remainder of the forecast period. Not many external observers are likely to jump and cheer at 2 percent growth in 2020, but we all recognize that that kind of growth is just a baseline feature of the current environment.

I expect the unemployment rate will hover near its current level throughout the projection period, which is about $\frac{1}{2}$ percentage point below my admittedly highly uncertain estimate of its natural rate.

For inflation, the data have come in roughly as I expected. I do share Governor Clarida's, President Daly's, and President Bullard's concern about inflation not confidently getting to 2 percent. So my policy assumption tries to achieve that. I continue to project that core inflation will move up to target in 2020 and will overshoot by two-tenths of a percentage point in 2021 and 2022. This trajectory is an explicit design feature of my forecast, as it has been for some time. Such an overshoot is necessary to boost inflation expectations to be symmetric around 2 percent and, thus, deliver our inflation goal. As I've said before, I see this kind of modest overshoot as being consistent with our current monetary policy framework.

To generate my forecast, I have a policy rate path that includes one rate cut for the remainder of 2019. That presumably would be tomorrow. I assume rates hold steady for a while and then envision one 25-basis-point increase by the end of 2021 and another in 2022. Relative to my June submission, this path is "lower for longer." Given where inflation pressures are today, I believe this accommodative path and a strongly communicated commitment to our symmetric 2 percent target likely will be needed to sustainably achieve our inflation mandate within the current forecast window. I'll discuss my policy rationale more tomorrow. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Barkin.

MR. BARKIN. I would agree with those who have said, "We know the economic situation pretty well as it sits today." The data over the past few months have been quite consistent. Consumer spending is strong and showing no sign of weakness, with the recent auto sales report particularly heartening. The labor market remains tight by nearly all measures, with the recent slowing of job growth signaling only a return to trend. Business investment has been softer, but, remember, last year's strength gave us some tough comps. Manufacturing is weak, as

are international economies and U.S. companies with heavy international exposure. Residential investment is starting to rebound.

Inflation seems to be firming. The Tealbook forecasts about a 2 percent increase in core PCE prices in the second half of the year, and core PCE inflation has increased at a 2.3 percent annual rate over the past four months. I would note that we have to hit only 1.4 percent for the next two months to meet Julia Coronado's survey—and I like that bet a lot, Rich.

Risks are clearly elevated versus our previous meeting. Increased China tariffs and Chinese retaliation went from a threat to a reality. Oil supply may be being disrupted. Brexit looks increasingly messy. The bond markets moved meaningfully, with the effect not yet clear on business and consumer confidence. The U.S. political situation looks increasingly contentious. I will note, one risk reduction is the valuation of WeWork, which has more than halved since President Rosengren made the case for shorting it at our July meeting. [Laughter]

MR. CLARIDA. Where's our macroprudential policy? [Laughter]

MR. BARKIN. Over the past few weeks, we have held roughly a dozen business roundtables in our District, particularly in the smaller towns. We ask participants about their companies, and the overwhelming response we get is that their business is good, with more people saying "great" than "iffy" or "weak." We ask about their investment posture going forward, and most folks say they are maintaining investment, with more of them doubling down than cutting back. I share that just to emphasize that today's economy is still fundamentally healthy, at least as perceived by our District's business leaders.

Small town businesses refocused my attention on the tightness of the labor market despite data showing that that's where labor force participation is lowest. In every discussion, people raised the issue of unfilled open positions. So I want to come back to a debate we've been

having about the cost of low unemployment rates in a “hot” economy. For sure, inflation and asset bubbles remain risks. But I think there’s a third significant risk which I’ll call “labor oversubstitution,” and that risk creates longer-term effects we should consider.

I see a number of businesses that don’t believe they can increase prices, given competitive pressures and anchored expectations, and, consequently, they feel limited in their potential to pay much higher wages. Short term, they create backlogs in response to which they can run at lower quality or live with stockouts. We hear this especially today from contacts in the construction sector because of a shortage of skilled trades. Each of us knows how hard it is to find a good plumber who will show up on time.

As an aside, these quality declines would be consistent with the cyclical undermeasurement of price inflation. If firms persist in this belief, the relative scarcity of labor and the low cost of capital may be encouraging excessive substitution of capital for labor, especially low skilled labor, as that is where substitutability comes most easily. I’m hearing that in my contact discussions. I hear of firms reluctantly implementing technologies that replace labor, like scanners in rural grocery stores. I hear of firms switching to mergers and acquisitions rather than using traditional growth channels because low-cost debt makes acquisition accretive, and they believe they can’t hire for growth. As supply chains reconfigure, I hear of firms choosing not to onshore, because they don’t believe labor will be available. I hear of firms financing buybacks through low-cost leverage, taking away future resiliency. And I would just note that this labor oversubstitution is raising the risk to the least skilled, and I’d urge us to monitor it closely. Thank you.

CHAIR POWELL. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. Since the July FOMC meeting, we've seen an escalation of trade tensions, and concerns about the global outlook have increased. These forces are weighing on business investment, manufacturing production, and exports. Financial markets have been volatile, and Treasury yields have fallen at the long end. Most recently, geostrategic tensions have risen. By contrast, domestic economic data have come in close to expectations, reflecting continued strong consumer spending, and the labor market has continued to tighten from a strong position, although at a slower pace.

Recent revisions to historical GDP and payroll employment data suggest there was materially less momentum in the economy coming into this year than previously shown. The revised data show no acceleration in economic growth in 2018 over 2017 and only a modest acceleration in payroll growth, contrary to our earlier estimates. It's difficult to tell with precision how much of that slower-growth trajectory and the revised data reflect a smaller boost to demand from tax cuts than previously expected. Larger offsets from trade uncertainty, weak global growth, and noise in the data may also be contributors. But whatever the cause, the revised data show considerably less momentum and validate the Committee's revisions in the path of the federal funds rate and balance sheet policy, although these likely would have come sooner if the revised data had been available contemporaneously. With these revisions, it appears the U.S. economy is decelerating gradually from its above-trend pace. According to the BLS's preliminary estimate of the benchmark level of payroll employment in March, payrolls have likely increased at an average monthly pace of about 190,000 last year, close to the 180,000 monthly gains seen in 2017. So, excluding the small increase in temporary hires for the Census in August, payrolls over the past three months are estimated to have increased at an average pace

of about 150,000 per month, slower than the downwardly revised estimate for last year although still higher than the replacement rate.

Meanwhile, the unemployment rate has stabilized around a historically low 3.7 percent over the past year, while the labor force participation rate of prime-age individuals, and especially of prime-age women, moved up last month, continuing its upward trajectory. And the unemployment rate of African Americans fell to the lowest rate on record. Similarly, wages have continued to grow at a moderate pace. In terms of indicators that I track for signs of a shift in the outlook, weekly initial claims for unemployment insurance remain at historically low levels, and the latest report contained a reassuring improvement in the workweek, which ticks back up to 34.4 hours after having declined in previous months.

Consumer spending has remained strong despite some slowing in retail sales in August and appeared consistent with PCE growth at an annual rate of about 3 percent in the current quarter, similar to the first half. In addition, there are signs that activity in the housing sector is starting to rebound, consistent with the decline in mortgage rates since last year. In contrast, business investment has been weak and on track for an outright contraction in the second half, although the jump in oil prices may provide some support to investment in drilling and mining.

Manufacturing production fell in July after declining at an annual rate of 2½ percent in the first half, and exports have also been disappointing, posting a decline in the first half against the backdrop of trade conflict, weak foreign growth, and a strong dollar.

In speaking with fiscal and monetary officials of other major economies, I found that a common theme is difficulty in discerning whether the weakness in factory output and in exports will remain restricted to the global integrated supply chains in the manufacturing sector, or

whether it is an early harbinger of a broader slowing that could spread to services and consumers.

Financial markets have shown considerable volatility in reaction to shifting news about trade conflict and global growth, although, on net, financial conditions uniformly have remained at highly accommodative levels in terms of aggregate indexes. Equity prices were volatile but have moved sideways, on net, over the period, with defensive sectors gaining as cyclical sectors with China exposure showed declines. The most pronounced moves have been at the long end of the yield curve. The 10-year Treasury yield has declined 21 basis points, on net, since we met in July but, within that period, had declined close to 60 basis points. It's hard to tell how much of those earlier large moves reflect fundamentals, such as flight-to-safety flows and expectations of monetary accommodation in the face of weaker global growth and trade conflicts.

Technical factors were prominently cited in my discussions with market participants, similar to the New York Fed's survey. The demand for long-dated Treasury securities on the part of both U.S. and foreign investors, notably pension funds and insurers, was reportedly very strong in the face of expected increases in the share of negative-yielding debt globally. Some of this reflects the fact that many of these investors are forced buyers of the long end, and foreign investors appear to be surprisingly willing to add long-duration Treasury exposure without hedging the FX risk, given the yield differential relative to negative-yielding instruments, such as bunds and JGBs.

On net, the reduction in Treasury yields has led to more-accommodative financing conditions despite the dollar strengthening somewhat. Yields on investment-grade debt have fallen largely in line with Treasury yields, while yields on speculative-grade debt have fallen

less. But in absolute terms, their yields have declined roughly 50 basis points since earlier in the year.

On the international front, indicators of economic activity in the third quarter have been generally disappointing. In China, industrial production and retail sales disappointed in July and August, which came on the heels of a marked slowdown in second-quarter GDP growth. In the euro area, second-quarter GDP growth slowed to 0.8 percent, reflecting a slump in net exports and continuing weakness in manufacturing. And in Germany, output contracted in the second quarter and could contract again in the current quarter. So, in contrast to the stability of the modal outlook, I think the balance of risks has worsened notably in the intermeeting period. Last month, the spread between 10- and 2-year Treasury yields turned negative for the first time since 2007.

Recession probabilities implied by a variety of models that use term spreads increased modestly since our July meeting. Although, as others have noted, extracting the right signal from the yield curve of the odds of recession is quite difficult at present, given the unusual levels of term premiums, I do take some negative signal from the pronounced changes in the curve we've seen over recent quarters. In terms of those downside risks, first and most prominent is that business investment appears increasingly paralyzed in the face of the neverending stream of surprises on possible additional tariffs, creating what is now looking like fundamental uncertainty about the rules governing international transactions, with important implications for global supply chains.

A second important risk is that, even without any further deterioration in trade tensions, the ongoing slowdown in business investment, manufacturing, and exports could tip into a

broad and more severe slowdown than is generally anticipated if firms' pull back spreads from investment to hiring, affecting consumers who have remained quite resilient.

A third substantial risk is a possibility of a much sharper slowdown in foreign growth triggered possibly by geopolitical developments, including a "hard" Brexit, which would be an important hit not only to the United Kingdom, but also to important European trade partners, such as Germany.

The recent disruption to the oil supply in Saudi Arabia and the attendant increase in oil prices is likely to have mixed effects on the U.S. economy, imposing some tax on consumers in the form of higher prices at the pump while creating more favorable conditions for shale producers. And while some of our significant trading partners, such as Canada, could likewise benefit from the windfall to producers, others who are net importers are likely to see further weakening in consumer sentiment and purchasing power from an already weak place.

Finally, with respect to inflation, the latest reading suggests that core PCE prices rose about 1.6 percent over the 12 months ending in July, and monthly readings on core inflation from April to July were higher than in the first quarter, consistent with our earlier assessment that much of the weakness seen early in the year was transitory. Nonetheless, inflation continues to fall short of our 2 percent objective. In looking ahead, even with the expected boost to inflation from increased tariffs, the staff projects that core inflation will move up to only 1.7 percent by the end of the year.

Meanwhile, market-based measures of inflation compensation have declined since our previous meeting, along with the latest reading of the Federal Reserve Bank of New York Survey of Consumer Expectations and the preliminary September reading of the Michigan survey. The deterioration of the balance of risks suggests to me that a further small adjustment to the policy

stance is appropriate, and we'll have the opportunity to discuss that tomorrow. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Mr. Chairman. Let me just say a brief word, as many of you have commented on the Saudi situation. This is based on discussions with our contacts and the work of our team in Dallas. Obviously, it goes without saying that 5 million barrels a day is an enormous outage. Five percent of the world's output is substantial. Having said that, we are pretty well convinced, and our contacts are convinced, that Saudi is going to do everything they can to get this 5 million barrels a day of production back online. The thing that they have not been particularly transparent about is exactly the extent of the damage and what exactly was damaged, and that's why the world is very uncertain about how long it will take.

If we had to guess, our base case is, if you look out three months from now—not a month from now, but three months from now—our best sense is, most likely, they will have restored most of the outage. But you will probably have embedded in the global oil price \$5 to \$7 just because a greater cognizance now sort of woke people up. There is greater security and geopolitical risk in the price of oil, and we should probably get used to that just being embedded.

For those who are hopeful this might increase U.S. production, we are a little bit skeptical on that so far. And, just to remind you of the context, U.S. production growth in 2018 was 1.8 million barrels. This year it's 1 million barrels. We think next year it will be ½ million barrels. The reason for the substantial decline is, in light of capital discipline and a little bit more sluggish oil price, shale firms are not spending as much money on cap-ex, and they are just simply completing these so-called DUCs, drilled but uncompleted wells.

We think, based on discussion with our contacts, they would need to see more evidence of persistence in this elevated oil price for them to say, “We want to gear up cap-ex.” And the reason they are hesitant is, they are under such pressure by capital providers because their stocks have underperformed. So we think it’s too soon to say.

In terms of U.S. real GDP effect, the good news is, the U.S. economy is structurally much less sensitive to the price of oil than it was even 10 or 15 years ago. And, obviously, because we produce more ourselves, we’re more balanced between the cap-ex effect and the consumer effect. So, I guess, net-net of this, if our best guess—and unless there is some escalation, then you can forget everything I just said. If there is an escalation and you see much higher prices of oil, we’ve got a different situation. But our best guess is, as we look out three months from now, you just have a somewhat higher price of oil and a similar situation as we’ve got right now. This is unlikely, though, to create great strain globally, but it probably isn’t going to be a boon to the U.S. energy industry either unless something new happens that hasn’t already happened. So that’s our comment. We’ll keep you updated on that.

Regarding our own real GDP forecast in Dallas, it’s very similar to the Tealbook—a little bit more than 2 percent growth, supported by a strong consumer but reflective of weakness in manufacturing and weak business investment. And this translates, as the Tealbook points out, into a deceleration into the second half of the year to stand at 1.7 percent.

The Texas story I won’t go into. It’s very similar—strong first half growth, weaker second half growth. But that’s not surprising, given that trade plays a big role in the Texas economy, and certainly the trade uncertainty plays a key role in cap-ex also. We do note one thing in our surveys which struck me. To our special question about being able to pass on cost

increases in the form of prices, a much higher percentage of the firms reported an inability to pass on cost increases in terms of price increases—a noticeable jump this month.

So what we're debating and we are all talking about here is the deceleration in global growth and weakness in manufacturing, which is only 11 percent of the U.S. economy, and we know that. Will that intensify primarily because of heightened trade uncertainty? And will this weakness seep into other aspects of the U.S. economy—which, right now, are strong—which will cause growth to be weaker than we're currently forecasting?

We're heartened by the strong consumer. But we view it as more of a coincident indicator, and the consumer is underpinned by a strong jobs market. And the question we're asking is, does the weakness in manufacturing and global growth ultimately cause businesses to retrench sufficiently that, over the next several months, we start to see weakness in the job market, and this one term will start to dim consumer confidence and lead to a weakening in consumer spending? That's what we're watching. We don't pretend to know the answer to that, but that's what we're concerned about.

In that regard, I will comment on one last thing, which is the yield curve. One of the things we think has been helpful to the U.S. economy this year has been the enormous rally along the entire Treasury yield curve. We think this has provided a substantial stimulus to U.S. businesses and the economy generally, in the form of lower costs of credit. And we believe the U.S. economy is right now reaping some of the benefits of that easing. The question we are debating related to the yield curve is, given that the easing has already occurred in the form of the yield curve coming down, what's the harm in allowing the federal funds rate to stay above most of the Treasury yield curve?

For that, my team and I have gone back and looked, as some of you have commented on, at every inversion we can detect in the postwar period, particularly in the past 50 years. And the only comment I will make in taking an unscientific look, the only thing I would observe is, even though every case is different, I don't see a single example in which, once this has occurred, the Treasury curve has moved up fully to meet the federal funds rate. In every case I have looked at, it's always been the case that the federal funds rate has eventually had to move down. And I say "eventually," and I'm particularly thinking about 2006—it took a while for that to happen. And the reason—now going back and looking, I can see why it takes a while. 2006 is a good example. Strong current conditions entice observers to dismiss the inversion.

So, given I'm not smart enough to know how the future is going to turn out, my team and I have come to a few conclusions about what we do have conviction. First of all, having looked back over the previous periods, I think it's a mistake to rely heavily on the thought that this time is different. Second, I am convinced that if the federal funds rate stays above the curve for long enough so the financial intermediaries cannot borrow short and lend long and make a sufficient spread, this is eventually going to cause a tightening of financial conditions.

That does not mean that easy financial conditions won't persist for some number of months. I think they will. But it's my judgment that financial conditions will eventually tighten. And talking extensively, for example, to banks and other institutions in our District, I can see they are already starting to move, on the margin, more money into the federal funds rate, and they're raising the bar for lending. We'll see if that continues.

Others, and I have joined them, have flagged the worry about excesses in balances in the economy due to low rates, particularly the growth in the level of corporate debt. I'm very sympathetic to that concern. However, I believe that the dramatic move down in 5- and 10-year

rates has already occurred and has already created the incentives for borrowing to finance mergers and share repurchases. Basically, for lack of a better term, the horse has already left the barn on that. In fact, I believe that a setting of the federal funds rate that's too tight may actually depress the longer end of the curve and increase the incentives for corporate borrowing. In other words, if we have too tight a setting for the federal funds rate, I believe that has a negative effect on the level of the 10-year rate. And I think recent corporate bond issuance, which has been substantial, has been a case in point of that. I think getting the yield curve on a proper slope will do more, I'm hopeful, to ultimately reduce the incentives for excessive borrowing. But I don't think at this stage that the federal funds rate being above the curve or lowering it is going to do much to increase incentives for borrowing. I think it may work in the opposite direction. We can discuss that more, and I'm sure we will over dinner.

Lastly, I believe an upwardly sloping curve is not going to happen by the FOMC doing nothing. If anything, doing nothing, I think, may further invert the curve, which will create greater impediments to borrowing short and lending long and ultimately lead to a tightening in financial conditions. I believe it's going to take action by us to adjust the policy rate. I believe this action may seem incongruous with current, relatively decent GDP growth in loose financial conditions, but I believe this action is essential to a forward-looking risk-management approach, which acknowledges that clear skies right now is not a great forward indicator of conditions 12 to 18 months from now. I believe the yield curve is one forward indicator in the context of weak global growth and manufacturing weakness, which we should be taking into account as a factor in our decisionmaking at the FOMC. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. Governor—a two-hander from President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. President Kaplan, I just wanted to follow up on the oil comments. You said that we are taking 5 percent of global oil production off the market. You also said that you didn't think the United States would be the marginal producer. So where is the 5 percent going to come from, according to your analysis, over the next 90 days?

MR. KAPLAN. According to what our contacts are observing, first of all, the Saudis have some amount in reserve. Second, they are saying publicly that they think they can get most of this restored in the next 30 days. Until they do, though, I'm very confident you're not going to see the shortfall made up by the United States. Even if people pushed the button today, most of our contacts tell us it would take a good six to eight weeks to be able to ramp up production more. So we're just going to have to weather this situation heavily based on observing what OPEC and Saudi do to rectify this, at least for the next 30 days.

CHAIR POWELL. Thank you. Governor Bowman.

MS. BOWMAN. Thank you, Mr. Chairman. I'll echo what many others have noted before me—that the data have continued to indicate that the economy remains strong. On labor, the employment reports released since July suggest that we have continued strength in the labor market. The unemployment rate has maintained historic low levels. The increases in payroll so far this year are slower than last year, but the pace of job creation remains healthy and sufficient to accommodate the growing labor force. There are other positive signs in the employment data: The unemployment rate for African Americans moved below the low levels recorded before the past recession, and, in fact, the level in August was the lowest on record. We saw further increases in entry to the labor force, and the labor force participation rate for individuals aged 25 to 54 is now well above its levels before the previous recession. In addition, the share of workers employed part time but preferring to work full time is trending down.

In contrast with previous years, the healthy demand for labor appears to be feeding through to higher wages. Anecdotally, I have heard reports from several firms in different sectors and regions that they are expanding bonuses, vacation time, flexible schedules, and other benefits in an effort to attract, retain, and hire new workers. Yet we've not seen those higher labor costs feeding through to consumer price inflation as they typically have in the past. The changing relationship between labor market tightness and price inflation continues to be one area that we continue to watch. The strong labor market is also driving wage gains that are supporting consumer spending growth. And, other than the recent drop in the Michigan survey measure of consumer sentiment, at this point, there is little to suggest that the recent economic uncertainties are having a material effect on consumer attitudes. In all, I remain optimistic that consumption growth will continue to rise at a healthy pace with a strong labor market.

Recently, there has been further downgrading in the outlook for business investment, with the weakness centered on manufacturing firms, especially those with higher export shares. Readings on business optimism both here and abroad have continued to deteriorate, and in the agriculture sector, the outlook remains guarded. There is still some uncertainty about the effects unusually wet weather and late planting will have on crop production this year. Earlier in the year, reduced crop yield expectations pushed up prices for some farm commodities, but more recently we have seen renewed downward pressure on prices from global oversupply, weak export demand, and reports of better-than-expected crop yields.

As I have noted during previous meetings, agricultural producers are already facing intense financial pressures, given the increase in carryover debt from preceding years and higher input costs. But this carryover debt has continued to rise for many borrowers, and many producers have been forced to restructure short-term debt on long-term, multiyear repayment

terms because of cash flow shortages. The sole bright spot is the USDA payments, allowing some of them to continue to make their loan payments. Even though recent reports on agricultural trade appear to be more supportive, conditions in the ag sector will remain challenging, and a longer-term concern is that opportunities to continue exporting farm products to China have likely diminished, given the emergence of trade replacement routes.

On the price side of our dual mandate, the incoming information is consistent with staff expectations that weak inflation readings early in the year were transitory and inflation would pick up in the second half. The staff's current estimate of the 12-month change in the core PCE price index in August is now 1.7 percent and is expected to hold through the end of the year. Given earlier declines in energy prices, headline inflation is tracking slightly lower, though recent events may affect this.

Despite the recent volatility in financial markets and the uncertainty surrounding trade, my outlook for the domestic economy has not changed since our July meeting. We're essentially meeting our goals of maximum employment and price stability, and this has continued with support from monetary policy accommodation and our consistent message that we'll take the necessary steps to sustain the expansion. The underlying risks to the outlook have continued to evolve, and, most notably, the outlook for global economic growth appears more fragile than before. We continue to monitor changes in trade policy, which seem likely to continue. China's economic performance has also deteriorated, further complicating the outlook. And, finally, there are still major risks surrounding developments in the United Kingdom and the likelihood of a "no-deal" Brexit. And although the effect of these headwinds has been modest to this point, they will continue to factor into my outlook for U.S. economic performance. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. The 10th District economy continues to expand at a moderate pace, and our business contacts remain generally optimistic about the outlook. However, a clear dichotomy has emerged between the region's manufacturing and service sectors. According to our surveys, manufacturing activity has contracted in each of the past two months while service-sector activity continues to expand. District employment growth in recent months was mostly due to increases in service sectors. Our manufacturing contacts, including those in the aircraft sector, report that they are maintaining current staffing levels but eliminating overtime. Tight labor market conditions continue to support real wage increases in consumer spending. Most contacts expect to see similar or higher wage increases in 2020 relative to increases observed in 2019.

Business contacts continue to highlight weaker global demand and tariffs as concerns. District exports to China are down 20 percent from a year earlier. With regard to trade policy, our contacts expect trade tensions to persist over the next 6 to 24 months and expect negative effects from the September round of U.S. tariffs on Chinese imports. Recent reports that soybeans and pork would be exempt from the step-up in tariffs offer little relief to the ag sector in the District, where the outlook remains subdued. Crop prices declined notably in the third quarter based on production estimates, and, as Governor Bowman noted, government payments are expected to offer notable but temporary support to farm finances.

Finally, oil and gas drilling activity in the region continues to soften, as oil prices moved lower and remain well below average prices needed to substantially increase activity as reported in our energy survey. The outlook for this sector is subdued, as growth in petroleum

consumption is slowing globally, with noted additional downside risks to oil markets and oil-producing regions if China's economy slows further.

For the national economy, my outlook is relatively unchanged from our July meeting: Incoming data suggest that the economy is expanding at a moderate pace. While the historical revisions released in August seem consistent with the view that growth momentum has slowed over the past year, the most recent data continue to indicate that the economy has been growing at an above-trend rate in recent years. My SEP submission calls for growth to stabilize near trend heading into next year and the unemployment rate to remain relatively stable over the next couple of years. Solid growth in household spending continues to be the primary driver of overall growth in the economy. Stronger-than-expected spending on durable goods in July, together with the solid figure on auto sales in August, point to a resilient consumer that remains willing to spend on big-ticket items despite the ongoing trade situation. Additionally, the personal savings rate remains stable at a relatively high level and is supportive of consumption growth.

Tight labor markets continue to underpin consumption growth and bolster my outlook for consumption. The latest reading from the NFIB survey suggests finding qualified workers is becoming increasingly difficult. The percent of respondents citing finding qualified workers as their number one problem hit a 46-year record high in July. As labor markets have tightened, the momentum in job gains has slowed. Although the economy added, on average, 150,000 jobs per month over the past six months, which is still comfortably above the threshold needed to keep up with population growth, I anticipate some deceleration in payrolls during the second half of this year. This outcome is consistent with my modal outlook, which calls for employment growth to slow to levels more consistent with the pace of labor force growth by the end of 2020.

While consumption and employment remain bright spots in the economy, business investment has weakened alongside deterioration in manufacturing activity and bears close watching as a harbinger of future economic activity. The ISM manufacturing index fell below 50 last month, driven largely by the decline in the new export orders subcomponent. A weak global growth outlook, combined with trade policy uncertainty and tariffs, will weigh on domestic manufacturing and remain a headwind to equipment investment.

Given these global dynamics, my outlook calls for inflation to remain low and stable, although I see some potential that the latest round of tariffs could generate temporary inflationary pressure. Since the first round of tariffs went into effect last year, goods prices and the PCE price index have continued to fall as the dollar has appreciated. However, this latest round of tariffs is larger in dollar terms and affects goods for which it may be more difficult for households to find substitutes. That has the potential to push inflation higher, albeit temporarily.

While my modal outlook calls for growth to stabilize near trend heading into next year, risks around the outlook for real activity and inflation remain tilted to the downside. These risks include the pending sales tax increase in Japan, the disorderly Brexit, further slowdown in China or the euro area, and ongoing trade tensions and tariffs. I continue to monitor the data carefully for signs that these risks either materialize or sufficiently affect business and consumer confidence so as to undermine the expansion and the Committee's objectives. Thank you.

CHAIR POWELL. Thank you. President Bostic.

MR. BOSTIC. Thank you, Mr. Chair. My outlook is largely unchanged relative to our July meeting, and my baseline economic projections remain largely intact, little changed from our June SEP submission. The incoming data continue to point toward an economy that is currently achieving our dual mandate, and that solid performance is largely reflected in reports

from my District. Sentiment from Sixth District businesses has remained largely positive on balance. Contacts continue to report that activity is on track to meet—or, in some cases, exceed—targets that were expected at the outset of the year. This is particularly true for contacts in or connected to the domestic retail sector. According to a contact representing one of the largest outdoor advertising companies in North America, demand is “on fire,” especially in the Southeast.

In our discussions with contacts, we take special care to ask about firms’ internal data analytics and assessments of what they have found to be leading indicators of business activity. Whether driven by hard data or sentiment and experience, we are hearing very few reports of any expectations regarding a material near-term downshift in household spending. That view is predicated on continued solid employment performance and ongoing gains in household income. In this regard, I have yet to detect anywhere some signs that hiring is beginning to deteriorate. Most firms continue to note tight conditions across most labor market segments.

I’ll recount one notable anecdote. An employment screening company based in Alabama relayed that their largest account, a national casual dining chain, has removed nearly every hurdle to employment beyond filling out an application. [Laughter] In particular, this chain has recently moved to an “apply and start the same day” model [laughter] for many of its positions, and this does not appear to be an isolated phenomenon. The same employment screening company also noted that in the trucking and transportation industry, firms are increasingly running just the required motor vehicle record check rather than a more thorough criminal background check.

More generally, employers making adjustments to hiring practices, compensation schemes, and working conditions to cope with challenges in attracting and retaining workers in

the current environment remains a persistent theme. Consistent with aggregate data, annual wage increases for District firms remain in the 3 to 4 percent range, and, perhaps in part due to growing momentum across industries to increase minimum hourly wages to \$15 per hour, there has been a more pronounced pickup in wage growth for lower-skilled positions.

Regarding inflation, trimmed mean measures of underlying inflation—whether they are PCE or CPI based—have been trending very close to target for some time now. Even through the first three months of the year when core PCE inflation had softened, the trimmed mean inflation measures held up near target, which I saw as a signal that the weakness in the core was likely transitory and driven by idiosyncratic factors. Indeed, the latest data reinforce that position. Translating August's CPI and PPI component data into a PCE basis suggests that core PCE prices will increase at an annualized rate of around 2 percent, bringing its annualized growth rate over the past five months to 2.2 percent. So I think Julia's test is in trouble. It does not look to me that inflation is currently muted relative to our objective. In light of relatively tight labor market conditions, coupled with an expectation that inflation expectations will remain anchored at mandate-consistent levels, I continue to expect that underlying inflation will remain at 2 percent. In this regard, my reading of the situation mirrors that expressed today by Presidents Mester and Barkin, among others.

One decidedly negative aspect of the current economic picture is businesses' apparent lack of appetite for capital investment. Although it is evident, *a priori*, that slowing global conditions, trade tensions, and increasing tariffs are contributing factors to the slowdown in capital spending, there are some potentially mitigating factors to consider. First, as noted by the staff today, the drag from Boeing's suspension of the 737 Max shipments appears to be a significant factor pulling down equipment spending. Excluding aircraft, equipment spending

expanded 3 percent over the first half of the year instead of the 0.3 percent as indicated by overall equipment spending in the category.

Second, if we assume that the 2018 tax reform had an effect on capital spending at all, that effect likely manifested itself in firms pulling forward spending into 2018 that otherwise would have occurred this year. So the benchmark baseline is a more difficult level.

And, third, while trade policy tensions and tariffs are providing a drag, it is one that I would still characterize as modest. Our survey data suggest that tariffs have subtracted about 3.2 percent from private-sector investment spending over the first half of the year, and if this drag persisted for the entire year, it would amount to just \$90 billion off a nominal \$2.9 trillion of private-sector investment spending. More broadly, with regard to tariffs, most survey respondents and contacts indicated that trade policy has not directly resulted in forecast revisions or a significant downshift in 2019 activity.

Let me close by making a final point. While businesses still appear to be forging ahead on current investment projects and hiring plans, I do get the sense that many of my contacts are preparing for the proverbial shoe to drop. Myriad uncertainties, ranging from escalating trade conflicts to a disorderly Brexit to volatility in financial markets to the unfair prospects of what the upcoming election cycle will bring, are weighing on the collective psyche of firms in my District.

This cycle, there were an increasing number of reports of firms engaging in contingency planning and attempting to gird themselves against these downside risks. Along lines very similar to what President Daly reported, plan B's are getting much closer to companies' desks and activation. This is especially true with regard to escalating trade tensions, where firms are spending a substantial amount of resources on tariff mitigation, including contingency planning,

supply chain reconfiguration, onshoring of some operations, stockpiling inventories, and frontlining activity. The downside of this redistribution of activity is that it employs resources that could have otherwise been engaged in productive activities. But contingency planning arguably leads firms to becoming more resilient if any of these uncertainties become a reality.

To sum up, I've left my baseline projections intact and continue to see economic performance as hitting our mandates. I do see the risks as modestly tilted toward the downside in the face of a multitude of uncertainties. I leave for tomorrow an explanation of how this modest tilt informs my view of the appropriate stance of policy, so stay tuned. Thank you, Mr. Chair.

CHAIR POWELL. A two-hander. Vice Chair Williams.

VICE CHAIR WILLIAMS. I've got to ask Stacey, because there's been a lot of discussion about how to read the inflation data. What you said and what you presented was that when converting the August CPI and PPI data into August PCE that you're expecting PCE inflation to actually be lower than you had previously—

MS. TEVLIN. Right. Well, the change would be 1.7 percent. That's what we—

VICE CHAIR WILLIAMS. Right. So it's actually—

MS. TEVLIN. A downward revision.

VICE CHAIR WILLIAMS. A downward revision, in terms of both that month and also your view on the 12-month change for December. Okay. It seems to me that the change in the information is actually a little bit lower inflation, not higher inflation, from a 12-month picture.

MS. TEVLIN. It sounded like Atlanta had a different translation, and that maybe we could talk a little bit—

MR. BOSTIC. Yes. I think it's unclear what the right answer is, and we should confirm what our methodologies are and come to an agreement on what the appropriate outcome is.

VICE CHAIR WILLIAMS. I just wanted to make sure I understood that we were talking about the same thing.

MR. BOSTIC. Yes.

VICE CHAIR WILLIAMS. Okay.

CHAIR POWELL. Thank you. Governor Quarles.

MR. QUARLES. Thank you, Mr. Chair. Like President Bostic and, I think, most of my compatriots of the “map tribe” [laughter]—Vice Chair Williams is wondering where the flags are—my near-term outlook remains about unchanged since the SEP in June. I will note, as an aside, that at the break, a colleague, who shall be nameless, pulled me aside to observe that, given the discussion of Latin America, it appeared that a consequence of my long period of work with Joe Gruber seemed to be that my indefatigable and unreasoning optimism seemed to be rubbing off on Joe—a development that this person viewed with some alarm. [Laughter] In any event, I continue to see reasonably robust growth this year—only a gradual deceleration going forward. I am encouraged by the continued strength of consumption and a labor market that, while easing up a bit, remains very solid. I continue to expect inflation to slowly pick up over the next few years. It’s not going to deviate meaningfully from target.

All that said, I do see, like, I think, everyone here, an increasingly fragile outlook. Risks and uncertainty seem especially elevated surrounding both trade policy and geopolitical developments—this weekend’s disruptions to oil supplies. More fundamentally, I also see reasons to temper my optimism regarding the long-term outlook. In particular, I have been discouraged by the weakness of business fixed investment. As I’ve said in previous meetings, my relatively robust outlook for potential growth reflected a basic belief that the investment slump that had characterized 2015 and 2016 had been broken, that tax cuts and wise regulatory

changes would revitalize capital accumulation and growth. And in 2017 and 2018, I was encouraged as investment did, in fact, pick up. But the recent data suggest that this momentum has stalled, although I am very interested in the comments that President Bostic made about how one might look at that. Nonetheless, I think the *prima facie* interpretation of the data is that investment is slowing not just in the United States, but globally. And, with a weaker pace of capital accumulation, I have nudged down—it pains me to say it—both my estimates for potential growth and the longer-run interest rate. Not as low as some.

VICE CHAIRMAN WILLIAMS. Would you repeat that, just for— [Laughter]

MR. QUARLES. Though I remain on the high side of the Committee, I am not quite as high as I had been. [Laughter] I do think that a significant portion of the falloff in investment is related to increased uncertainty about the direction of U.S. trade policy. As Joe discussed in the international briefing, trade policy uncertainty is elevated. That is likely to be weighing significantly, I think, on growth and investment, which is consistent with the anecdotal reports from many Districts. When you look through the quantification, it seems as though the tariffs have worked to buffer and mitigate the boost that might have been expected from the tax cuts in 2017—almost quantitatively exactly. Although the staff forecast is conditioned on no further tariff increases, like President Bullard, even I think that that will prove to be endearingly optimistic. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chairman. And thank you, Governor Quarles, for taking it easy on me. Although I know you've brought props now—you're just upping your game. [Laughter]

Starting with the Ninth District economy, I would characterize it as stable. Our contacts report more chatter about recession but see little evidence of one in their own businesses: Most businesses report continuing plans to hire. There are continued complaints about skilled labor shortages but with no evidence of faster wage growth. I came across one company that said they had 75 open positions, and I said, “Well, if you’re not going to pay more, why stop at 75? Why not make it 500?” It’s like fishing with empty bait on your line—just put out more postings. Residential construction is strong, but the slowdown in manufacturing is becoming more widespread, and the agricultural sector continues to be weak.

Regarding the national economy, as others have noted, core inflation remains below target, with 12-month core PCE inflation at 1.6 percent. You know, it is very tempting for me to look at many different measures, but I try to force myself to be consistent and look at the same measure, and I am focused on 12-month core PCE inflation. Market-based inflation expectations have slipped notably since July. The straight five-year, five-year from the TIPS is down about 20 basis points. Market-based probabilities, based on option prices that we compute in Minneapolis, indicate the risk of inflation falling below 1 percent is about 10 times larger than the risk of inflation exceeding 3 percent. So I think the skew is clearly to the downside. And, as others have noted, the Tealbook now forecasts core PCE inflation at 1.8 percent over the entire forecast horizon, and this forecast is predicated on no recession. Obviously, with our discussions about frameworks, if there were a downturn and we did hit the lower bound on the policy rate, we would expect inflation to fall lower from there.

With respect to the real side of the economy, as others have said, we continue to see a mix of strong consumption growth and very weak investment. The weak investment is driven by declining export demand and, in part, rising uncertainty over tariffs and the general outlook.

Manufacturing PMIs declined below 50. Weak investment is especially striking in the context of very low borrowing costs. Firms are either highly uncertain or just plain pessimistic about the outlook.

Now, weak investment has been hard to reconcile with the strong payroll growth. But as we talked about earlier, it seems like the payroll growth has not been as strong as we thought it was. Preliminary estimates suggested that job gains have been running about 40,000 per month lower than we thought, which, to me, is a big adjustment. And payroll growth appears to be slowing. After the annual revisions, job gains average around 190,000 in 2018 and 150,000 more recently, and the Tealbook is forecasting only 120,000 for the later half of this year. That, to me, is a notable slowdown. I know the ranges of estimates, what we need to keep up with population growth, is between 80,000 and 120,000 a month.

So, at the high end, if the staff is right, the basic labor market is not going to be tightening at the end of this year. It is just going to be treading water—which, to me, is a notable deceleration from a few years ago. And this slowdown, in my mind, does not seem to be because we have reached maximum employment. I would expect wage growth to be picking up, and we are not seeing wage growth picking up. To me, it more likely reflects an underlying slowing of economic activity that is consistent with the slow business investment. You know, businesses are nervous, and they are going to be nervous about investing and nervous about hiring. Those two stories, at least, seem to hang together. So it seems like momentum has slowed in the U.S. economy.

For the global economy, as others have noted, risks to the outlook from weak global growth and trade uncertainty are high and rising. The Tealbook has revised down the foreign economic outlook yet again. Chinese exports and imports have declined year on year. The

German and U.K. economies shrank in Q2, with little progress on Brexit. Foreign central banks are loosening monetary policy, and the OECD composite leading indicators continue to decline. The uncertainty around trade frictions remains the largest domestic risk to the outlook, and sharp declines in long-term rates since July mean the yield curve is now flashing more red than yellow. I share my colleagues' concerns about the yield curve. I said publicly that I think this time is different—they're the most dangerous words in economics. I continue to believe that.

In terms of the current policy stance, is it expansionary or contractionary? Obviously, there is great uncertainty around both the current and long-run neutral interest rates. But if we just look at where yields are pricing today, with the five-year TIPS currently yielding less than 25 basis points, if we assume a 25 basis point neutral real rate and inflation of 1.6 percent, which indicates a neutral nominal rate of 1.85 percent, compared with the effective federal funds rate of 2.1 percent—or a little higher than that today, I guess—that tells me that policy is a little bit contractionary today. Another way to look at that is, look at the slope of the yield curve. The fact that it's inverted out to five years yields the same conclusion. Monetary policy is likely somewhat contractionary, and I don't think the economic fundamentals warrant contractionary policy. So, in sum, inflation remains below target. It seems likely to remain below target for the foreseeable future. The global economy is weak, with a lot of downside risk. Current policy seems to be mildly contractionary, and I don't think that's appropriate. Thank you.

CHAIR POWELL. Thank you. Vice Chair Williams.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. The economic expansion is showing signs of slowing in the face of intensifying global headwinds. Real GDP growth has shifted down to about its trend rate, and job growth, although still solid, is clearly decelerating as well. And I would like to echo the remarks of President Kashkari about how much it is slowing toward

trend, given the revisions to past data and what we've seen recently. The song remains the same. Faltering global growth, accompanied by trade and geopolitical uncertainties, increasingly weigh on manufacturing, investment, and exports, while consumer spending continues to be buoyant. The strength of consumer spending has caused me to dig into that a little bit deeper, and I think one piece of information that is relevant here is, there seems to be a surge in spending on home furnishings and home improvement in the Hudson Valley of New York. [Laughter] I'm concerned that this might just be that this surge is temporary, but my interlocutor in the District says, "No, this is going to go on for a long time." [Laughter]

Inflationary pressures remain muted despite the various crosscurrents and dramatic swings in news headlines and markets. My projection, like many others, has not changed much from the one that I submitted in June. For the record, I am SEP participant number three. So this unchanged economic outlook obscures a darkening of the economic landscape that did lead me to write down a somewhat more accommodative path for policy. Business fixed investment and exports are in decline. Manufacturing production has been contracting through most of the year, and the latest ISM manufacturing index indicates that conditions are unlikely to improve over the near term. In fact, seen through the lens of the New York Fed's nowcast, the negative surprises in the ISM manufacturing index for July and August translate into a sizable drag on third-quarter GDP growth. The nowcast currently stands at 1.6 percent. Together, these developments suggest that slowing global growth and uncertainties related to trade and geopolitical risks are already taking a toll on the sectors of the domestic economy that were most exposed in international trade. And the question going forward is, how will the divergence between robust consumption and a strong service sector on the one hand and weak investment in manufacturing on the other be resolved?

The good outcome in which these uncertainties are resolved in a relatively benign manner seems increasingly unlikely, whether from Brexit, trade policy tensions, unrest in Hong Kong, the debt crisis in Argentina, or the recent attacks on Saudi Arabia. In fact, you know you are in trouble when the one sliver of good news comes from Italian politics.

The developments in financial markets reinforce this view. Even with last week's rebound, Treasury yields have fallen quite a bit, leading to a further flattening of the yield curve—a pattern that has occurred for sovereign yields in many economies. Financial market contacts point to downside risks to global growth, escalating trade policy tensions, and disappointing global data as the primary drivers behind the declines. In this regard, the memo on the out-of-sample recession forecasting performance of various yield curve models is sobering. And I would point to page 8 of the memo, which looks at the recession probabilities of some of the best forecasting models. So this is the probability of the U.S. economy transitioning to a recession over the next 12 months. The probabilities based on these models generally range from 60 to 80 percent.

Now, like Presidents Kaplan and Kashkari, I agree with what they said. We all can come up with numerous reasonable reasons to dismiss these warnings in the hope that this time is different—I think you both said something to that effect—but it would be imprudent to totally disregard the signal that markets are sending of the potential for a recession.

Regarding inflation, recent data have been broadly in line with my expectations, and that's good news relative to the disappointing data that we saw in previous months. But I expect core PCE inflation to come in only around 1.7 percent for the year as a whole—consistent with the Tealbook or the latest forecast from Board staff—and then to rise to our objective over the next two years.

The one ongoing concern is the decline in a number of measures of inflation expectations. The staff revisited the question of whether inflation expectations remain anchored and what conditions would cause them to become unmoored, and they were using data from the New York Fed's Survey of Consumer Expectations, the SCE. The good news is, the medium-run inflation expectations appear to have become better anchored in recent years. This is seen in a trend decline in the cross-sectional dispersion of three-year-ahead inflation expectations, along with a narrowing of uncertainty about future inflation that's reported in the survey. A more cautionary tale from this analysis is that the anchoring of long-run inflation expectations may be vulnerable to a persistent decline in inflation.

In July we fielded a special module of the SCE in order to elicit the sensitivity of participants' longer-run inflation expectations to different situations. In particular, participants were asked how they would modify their five-year-ahead expectations of inflation based on the following statement: What if, in each of the past three years, inflation had been lower or higher than it actually was by 1 percent per year? Now, a clear pattern emerged. First, about 40 percent of the respondents did not change their longer-run inflation expectations at all. So we've got 40 percent of people convinced of the rock-solid anchor. That's progress. But for the other 60 percent, there's still some work to be done. When asked about three years of 1 percentage point lower inflation in the past, respondents lowered their inflation expectations 0.4 percentage point, on average, overall. That's quite a sizable change in your long-run view of the inflation forecast based on three years of data.

Interestingly, the response to higher past inflation was less than half as large in magnitude, suggesting a sizable asymmetry in the sensitivity of longer-run inflation expectations today. And we found corresponding results when we asked if inflation were persistently lower

or higher for a whole decade. So my “takeaway” from this evidence is, we cannot take well-anchored inflation expectations as a given. FOMCs over the past 40 years have worked tirelessly to anchor expectations, which has contributed to better economic outcomes, especially during downturns. Sustained deviations from our inflation goal risk undoing that important accomplishment to the detriment of our long-run economic health. Thank you.

CHAIR POWELL. Thank you. Thanks for a great round of comments. A whole lot has happened since we last met. Trade tensions have repeatedly boiled over only to return to a simmer. Geopolitical tensions have risen and fallen around Brexit, Hong Kong, Argentina, and Italy and have now flared in the Mideast. Markets have swung from complacency to panic and back.

A lot has happened, but how much has really changed? Our challenge, as always, is to look through the volatility to identify and react to underlying trends and forces that are likely to affect our ability to achieve our dual mandate. While trade and geopolitical drama have been grabbing the headlines and moving financial markets, the hard macrodata have shown a less dramatic, but probably more consequential, erosion in the global outlook and, as I will discuss, some reason for concern in the United States.

Global growth has continued to weaken, especially in Europe and China. Data revisions here in the United States reveal that growth of GDP and payroll employment was slower than had been reported in real time. In the United States, consumer spending is keeping the economy moving forward despite growing weakness in manufacturing, cap-ex, and exports; and inflation remains stubbornly below target.

And while the labor market is clearly still in a strong position, I admit to being concerned about recent developments. If you take onboard the 500,000 job downward adjustment in

payroll employment, as Governor Brainard did, you get 191,000 jobs per month in 2018, down from 223,000, which is still a solid performance. More concerning, though, if you back out that adjustment for the first quarter of this year and then assume a 15,000 per month carry-forward adjustment, you get payrolls this year down close to 130,000.

Job creation has slowed more than expected, and I guess it's still a bit above breakeven levels. And we've, of course, been expecting a decline to trend, as eventually must happen, I just wasn't expecting it to arrive so suddenly after years of defying predictions. Moreover, most of our wage and compensation measures show a bit slower growth this year than last year. Job openings have moved off their highs.

In sum, the labor market has not been as strong as was thought, and, for the first time in many years, there's decent evidence that it's no longer tightening. Now, this has happened before: We've had job growth, I guess, in the first half of 2016 that dropped quite low—150,000 or in that range. And I understand it can also be about supply, because you've had an awful lot of job creation for a long time. I guess I would just say that it's a moment that calls for vigilance. None of this is probably surprising in the 11th year of an expansion, but it just, to me, calls for heightened vigilance.

With regard to inflation, core PCE inflation has come in slightly softer than expected, with a 1.7 percent baseline for this year, as Stacey just discussed, down from 1.9 percent. As wage growth weakens, upward pressure on inflation will also weaken, and inflation expectations remain low. The staff's downward revision to their estimate of the natural rate of unemployment and upward revision to structural productivity makes sense to me, though I believe that the natural rate is even lower. Most of us have revised down our estimates of u^* in recent months, and that could help account for the evidence we're seeing of weaker upward pressure on wages

and prices. And in the staff baseline, we don't see inflation getting up to 2 percent at any time during the forecast through 2022.

None of that is to deny that the economy is still in a good place. There's no question about that. But the margins to absorb demand or supply shocks or a tightening of financial conditions have narrowed. We now see an economy growing at about its trend rate. The labor market may no longer be tightening. The forecast suggests that the odds that we never really reach symmetric 2 percent inflation during this cycle are increasing, and it would take no more than a modest further weakening in the jobs market to slow the main—perhaps only—engine that sustains this expansion, which is consumer spending. Moreover, that's the baseline.

Downside risks abound. Global growth could continue to weaken. The trade working parties appear to be trying to put together some sort of interim agreement that would address concerns, lower temperatures, and leave other concerns to continued negotiation. I personally think such an agreement might do a good deal to calm worries and improve sentiment around the world, but we don't know whether that's coming or not. If they do reach an agreement, we don't know whether it will meet approval at the highest levels. If not, the process could easily swing back to recriminations and belligerence, and if that happens, I suspect it would be a significant blow to confidence and, ultimately, to the economy. In the meantime, I would say that trade policy uncertainty is weighing on the economic outlook.

Much of the volatility in the financial markets seems to relate to developments regarding trade and global growth, and I'm not taking much signal from the round-trip behavior of long-term sovereign yields except to note that portions of the yield curve remain inverted. And however much weight each of us individually might put on an inverted yield curve, I would guess that we could agree—I would certainly agree that it's not a comfortable place to stay for an

extended period. When I put all that together, the inflation and employment outlooks have slipped a bit since July. Downside global risks have increased a bit. I see the case for moving at this meeting as solid and as having strengthened since July.

Looking ahead, and absent major changes in the outlook, I have written down another rate cut by the end of the year—although I don't have a strong conviction on that at all—and I see a flat path from there forward through 2020. I realize that rate cuts, like any policy action or inaction, come with risks. Persistently lower rates could increase financial stability vulnerabilities. To me, given the low leverage, low funding risk, and low maturity transformation in the financial system, I don't at this time consider these risks to be large enough to preclude easing. The possibility of higher inflation, of course, is actually more of a benefit than a risk, as it would mean a faster return of inflation to target.

Finally, there is significant uncertainty about where the neutral rate is right now. Many of us have marked down our estimates this year, and policy is probably less accommodative than we had thought. In light of the asymmetric risks associated with the proximity of the effective lower bound, risk-management concerns, to me, suggest acting as though r^* is at the lower end of the range of plausible values.

As for communications tomorrow, if the policy decision goes as seems likely, I plan to emphasize in the press conference that the Committee is effecting an adjustment of policy to a somewhat more accommodative stance. I will say that we are not on a preset course. I will say that if the economy turns down sharply, we would, of course, respond aggressively, but that is not what we see or intend, based on the current situation. I look forward to hearing your views on policy tomorrow. Thank you. And with that, I propose we turn to Thomas Laubach for the policy briefing.

MR. LAUBACH.⁷ Thank you, Mr. Chairman. Fortunately, a lot of the things that I am going to mention in my briefing have already shown up in one way or another during your go-round, so I hope it will be relatively easy.

I will be referring to the handout “Material for the Briefing on Monetary Policy Alternatives.” As Stacey discussed in her briefing, the spending and labor market data we received over the intermeeting period have been consistent with an outlook in which real GDP growth slows to its estimated trend rate of around 1¾ percent, while payroll gains move down over time to a pace closer in line with unchanged resource utilization. As shown in the upper-left panel, the continued strength of the expansion rests increasingly on household spending. All three draft alternatives note that business fixed investment and exports have weakened. The four-quarter growth rates, the black and blue lines, peaked about a year ago and have declined substantially since. As a result, overall growth in real GDP has slowed considerably from a year earlier. Similarly, the unemployment rate, the black line in the panel to the right, has flattened out over the past year, and the three-month moving average of payroll gains, the solid green line, has stepped down notably since the start of the year.

The deceleration to date is broadly in line with your own expectations: Your median projection of 2019 real GDP growth has been steady since March at a little above 2 percent, and you expect the unemployment rate to flatten out near its current level. But there are a number of risks that, if realized, might cause a sharper deceleration, and both the staff and most of you see risks to the outlook for economic activity as tilted to the downside. In addition, although most of you project core inflation to edge up to 1.9 percent or higher by the end of next year, presumably a weaker labor market would jeopardize this outlook. A key question for your policy decision and communications tomorrow is, therefore, which path for policy would best sustain the expansion so that inflation returns to 2 percent and the job market remains strong? And in light of the downside risks that many of you have discussed, the answer will likely involve a degree of risk-management considerations.

A while ago, the staff reported on work suggesting that nonfinancial data help predict business cycle turning points over horizons of a few months, but that at a 12-month horizon, financial variables such as yield curve spreads and the excess bond premium—a measure of the willingness of investors to bear credit risk—had greater predictive power. Recent staff analysis by Tyler Pike and Francisco Vazquez-Grande has revisited the predictive performance of a number of recession models, focusing on the real-time tradeoff between obtaining a higher signal when a recession is, in fact, coming but keeping low the rate of false positives. As it turns out, a model that uses both a yield spread and the excess bond premium is among the best-performing models on this criterion and outperforms a model that uses only a yield spread. The middle-left panel shows the excess bond premium as well as the long-term spread, defined as the spread between the 10-year and 3-month Treasury yield. As you know, the yield spread has been in negative territory for most of the time since late May and took a rather dramatic round trip over the intermeeting period. By contrast, the

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

excess bond premium—which tends to increase before the onset of recessions—has remained low.

The middle-right panel shows the probability of the economy being in recession sometime over the next 12 months based on either a model that uses information only from the long-term spread, the blue line, or from the long-term spread and the excess bond premium, the red line. I should note that models replacing the long-term spread with the near-term forward spread, popularized by our Board colleagues Eric Engstrom and Steve Sharpe, do, if anything, marginally better. If these series look somewhat more jagged than you are used to seeing, this is because they are out-of-sample estimates: At each point in time, the model is estimated based only on data up to that point, and it does not use information from later historical observations. The latest probability estimates are based on the yield spread as of last Friday and on the excess bond premium, which we can calculate monthly, as of August. The yield spread-only model indicates a probability of recession over the next 12 months that is quite elevated, about 60 percent. By contrast, adding information from the excess bond premium reduces the odds of recession to about one-third, though these odds are notably higher than earlier in the year.

The lower-left panel provides another perspective on why the yield spread, taken in isolation, may currently overstate the likelihood of recession. For each of the three most recent yield curve inversions, the light blue bars show the cumulative change in the 10-year yield over the 12 months before the first time of inversion, the what I will call “blue bars,” for lack of a more refined vocabulary, show the change in the 3-month yield over the same 12 months, and the navy bars the change in the yield spread, which is the difference between the first two bars. As shown by the blue bars, the previous two inversions were preceded by larger increases in the 3-month yield, suggesting that more monetary tightening was winding its way through the economy around the time when the inversion occurred. This contrasts with the current inversion, which was largely set in train by a decline in the long end of the yield curve. The work by Eric Engstrom and Steve Sharpe suggests that the long-horizon forward rates embedded in long-term yields have less predictive power for business cycle turning points than the near-term forward rates. Hence, as far as recession signals are concerned, one could argue that not all inversions are created equal.

As discussed in the lower right, the alternatives in front of you balance, in different ways, the still solid growth and strong labor market, on the one hand, and an incrementally weaker foreign outlook, muted inflation pressures, and elevated risks of a sharper slowing of the economy, on the other. Alternative B views another modest adjustment to the funds rate as appropriate to balance the risks around a continued positive outlook for growth and a return of inflation to 2 percent. It notes the remaining uncertainties and preserves a posture of watchful waiting. At the same time, by retaining the “contemplates” language and, more generally, by making few changes to the July statement, alternative B does not convey a sense of heightened concern about rising recession risks.

Alternative C expresses fewer concerns about low inflation and risks to real activity by omitting the references to global developments and muted inflation pressures and consequently views that maintaining the current target range is leaving the positive outlook intact. That said, alternative C likewise notes the remaining uncertainties and retains the “monitoring” and “act as appropriate” language. Alternative A, by contrast, reduces the target range 50 basis points to mitigate the risk that inflation may fail to reach 2 percent on a sustained basis. Alternative A also signals in subtle ways a greater readiness to take further action by dropping the “contemplates” language and conveying greater concern about downside risks.

Thank you, Mr. Chair. That completes my prepared remarks. The July statement and the draft alternatives and implementation notes are shown on pages 2 to 11 of the handout. I will be happy to take any questions.

CHAIR POWELL. Thanks very much. Questions for Thomas? President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I am looking at the middle panel, right side. I just want to make sure I have the message correct here: The blue line uses just the spread variable, and the red line uses the spread variable plus the excess bond premium. You said that the red line is better than the blue line—is this correct?

MR. LAUBACH. Correct.

MR. BULLARD. But I’m following this picture, and it surely doesn’t look like it. I mean, there are false positives from the red line, including at the end of the 2007–09 recession, where it predicts that you’ll stay in recession, which isn’t what happened. And you get the false positive in 2004 and possibly the false positive in 2016, whereas the blue line correctly presages the recession and is about at the level today that it would be before a recession.

MR. LAUBACH. One thing that works against the blue line is that it was declining pretty rapidly ahead of the onset of the 2008 recession. So, by this criterion that, you know—

MR. BULLARD. But the goal is to be high 12 months ahead, right?

MR. LAUBACH. That’s right.

MR. BULLARD. Okay.

MR. LAUBACH. But it fails to signal that toward the end of the recession, the economy will still be in recession, whereas the blue line sends a signal that there is going to be no more recession. So that's basically how the criterion works.

MR. BULLARD. That would be whether you want the criterion to be "I want to signal the onset of a recession" or "I want to signal the continuation of the recession."

MR. LAUBACH. Yes, the criterion is whether you are in recession any time during the next 12 months. And it's right that if you switch that criterion, if you only ask "in 12 months" and not "what happens in between today and the next 12 months," that can change the results. I don't have results right now on that. But, in general, in the earlier work that I referred to that we sent to you in early 2016, that, too, suggested that if you ask the question "in 12 months," for example, by Bayesian selection criteria, you also end up with the yield spread and EBP as doing very well.

CHAIR POWELL. President Rosengren.

MR. ROSENGREN. If you look back at the previous periods, frequently, the yield curve inversion was, the short rate was going up rapidly because monetary policy was tightening, not that the long rate was coming down. Do you think that these results would hold up if you conditioned for the stance of monetary policy? If you looked at r minus r^* , right now we already have, arguably, an accommodative monetary policy, while in almost each of the previous examples, it was a period where we were trying to slow down inflation, so r minus r^* was actually quite positive. Do you think these results adequately condition for the stance of monetary policy? And do you think the stance of monetary policy at this time is similar to those other instances?

MR. LAUBACH. That is what the lower-left panel is trying to get a little bit at, in an admittedly very simplistic way. Because that does suggest that there was a larger increase in the 3-month yield ahead over the 12 months prior to the inversion than in the most recent episode where the increase in the 3-month yield was actually relatively small. So that's giving you the direction. Now, I confess, although I think r^* estimates are obviously crucial [laughter], one would have to be pretty cautious about not using too much ex post information in computing the real rate gaps. You would really want to do that very cleanly in a way such that you don't endow your r^* estimates with knowledge of what comes later. But I think one can do that, and I haven't done that yet.

MR. KAPLAN. Can I just comment on that?

CHAIR POWELL. President Kaplan.

MR. KAPLAN. Because we're struggling—we've been talking about this same thing. And we didn't have this study, but—and the thing that complicated this whole situation about, did it come from the front end or from the back end, is the fiscal stimulus, meaning, as we look back, I guess our thesis would be that the fiscal stimulus that passed in the fall of '17 in our estimation—and I was guilty of this too—caused me to be more optimistic about the neutral rate. It caused me to be more aggressive about the stance of policy.

As we look back on past inversions, I struggle to find a situation where you had a temporary—I don't know, how would you call it—temporary fiscal stimulus that has waned now into '19. And maybe the thesis is—and it's hard to find a similar situation—maybe we overtightened, influenced by that fiscal stimulus.

Now the Treasury yield curve has moved down much like it was before the fiscal stimulus, similar to '16. And that's why you've heard me say as we look at the setting of the

federal funds rate, I think '16 for us may be a more relevant year to look at than '17 and '18, because you had this fiscal stimulus that has since waned. I don't know if that's a valid argument, but that's the way we've been thinking about it to try to fit this together. It's the fiscal stimulus, I think, that complicated our job in '17 and certainly in '18.

CHAIR POWELL. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chairman. On the same topic, on the same chart—the bottom left, the yield curve inversions—I'm just curious. Why did you look at a 12-month horizon? Because when I think about the flattening of the yield curve of the past few years, there has actually been a lot of tightening, and a lot of the flattening has taken place concurrent with the tightening of the Committee. It's true that in the past 12 months there hasn't been much tightening, but if you pick this window over the past three years, the bars might look very different. I'm just curious, is there a science behind why you picked a 12-month window for the snapshot?

MR. LAUBACH. I confess, there wasn't very much science behind that. It was because I was working essentially off this problem that we try to solve in the middle-right panel—namely, to try to predict over the next 12 months—

MR. KASHKARI. I see.

MR. LAUBACH. —so that was what was drawing me to what was in greater proximity.

MR. KASHKARI. But then, I guess—because one of the points that I've heard Eric make, and he made it just now, is, a lot of the flattening is on the back end. I don't think that's correct. I think a lot of the flattening has actually been on the front end, as the Committee has raised rates over the past three years. It's true that in the past few months, the big change has been on the back end. But, in my view, a lot of the flattening has already come in because of us.

CHAIR POWELL. Further questions or comments? [No response] Seeing none, thanks very much. A reception will begin immediately downstairs. We start tomorrow morning at 9:00. Thank you.

[Meeting recessed]

September 18 Session

CHAIR POWELL. Good morning, everyone. Let's go right into the policy go-round, beginning with Governor Clarida. Sorry—Governor Brainard.

MS. BRAINARD. Can we just get an update on the repo operations this morning?

CHAIR POWELL. I'm sorry. I apologize. Yes.

MS. BRAINARD. We haven't heard much about this. It seems pretty important.

CHAIR POWELL. I apologize. That was what I meant to do. Over to you, Lorie.

MS. LOGAN.⁸ Thank you, Mr. Chair. I'll be referring to the "Material for Briefing on Morning Briefing, September 18, 2019."

This morning, the effective federal funds rate—which reflects Tuesday's activity in the federal funds market—"printed" at 2.3 percent, above the top of the target range. The SOFR "printed" at 5.25 percent, as shown in panel 1.

Similarly to Monday, the distribution of trades in both the federal funds market and repo markets was widely dispersed and had a notable right tail. The 75th and 99th percentiles of trades underlying the effective federal funds rate were 2.5 percent and 4 percent, respectively, according to preliminary data that we're showing here. The 75th and 99th percentiles of activity underlying the SOFR were 5.85 percent and 9 percent. These distributions can be seen in panels 2 and 3.

Most repo is traded early in the morning, so much of yesterday's SOFR activity reflected trading conditions before our operation. Federal funds volumes occur more evenly throughout the day, and therefore our operations had more influence on that rate. Rates in the Eurodollar market, which reflect some trades even later in the day, suggested softer conditions in the afternoon, and the 1st percentile of Eurodollar data suggested there was some unsecured trading below 2 percent late in the day.

The announcement at 4 p.m. yesterday that the Desk would undertake another temporary open market operation this morning appeared to ease conditions further. The average spread between the SOFR and the effective federal funds rate, an indication of secured funding pressures implied by futures over the month of September, narrowed discretely by 4 basis points following the announcement.

Today, money market conditions eased somewhat, although money market rates continue to remain elevated. Federal funds are currently trading at roughly between 2.25 and 2.5 percent, and interdealer general collateral repo rates are trading around 3 percent. Our contacts are reporting better liquidity and higher trading volumes this

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

morning in the federal funds market, which has historically coincided with softening in the effective federal funds rate.

In accordance with the FOMC Directive, the Desk performed a repo operation again this morning, as announced. The temporary open market operation had the same parameters as yesterday's operation but occurred much earlier, at 8:15, and closed at 8:30 this morning.

Primary dealers placed \$81 billion of propositions, and \$75 billion of propositions were awarded. \$52 billion in Treasury collateral was accepted at a weighted-average rate of 2.25 percent, so that weighted-average rate was within the target range. These operation rates are considerably lower than yesterday's rates—which may be another positive sign.

We'll continue to monitor conditions in money markets today. The Desk will conduct additional open market operations as needed to help maintain the federal funds rate within the target range. Although we expect conditions to soften as the payment shocks related to the tax date subside, it may take a couple of days for that to occur. Our expectation is that funding conditions may become strained again as September quarter-end approaches, and it seems possible that we would have to conduct temporary open market operations around this date as well.

In this context, the staff assesses that a 5 basis point technical adjustment to interest on required reserves and interest on excess reserves may be appropriate at this time. If the Board were to take this action, it would bring the IOER rate to 20 basis points below the top of the target range and 5 basis points above the bottom of the range.

Since Monday, market expectations of a technical adjustment at this meeting have increased, though some dispersion in views remains among market participants on the likelihood of this option versus other policy options, such as temporary open market operations or permanent open market operations, to begin to grow the portfolio in line with Federal Reserve liabilities. Some view a technical adjustment as a complement to the open market operations that we've been doing.

I would note that the immediate effect from a technical adjustment may be relatively small, given the volatile trading conditions and short-term money market rates that we've seen this week. Nevertheless, as with the previous technical adjustments, it would further support trading in the federal funds market within the target range by providing more space for the effective federal funds rate to trade above the IOER rate but still within the range as reserves continue to decline in coming weeks.

I should also note that a technical adjustment would reduce the spread between the IOER rate and the overnight RRP offering rate to 5 basis points. The Committee could consider today where to set the overnight RRP offer rate relative to the federal funds target range in order to mitigate the potential for substantial usage in the

facility. For example, in reducing the IOER rate by 5 basis points, the Committee could today reduce the overnight RRP offer rate such that a 10 basis point spread is maintained below the Board's intended setting of the IOER rate. In view of the firm level of repo and other money market trading, we do not anticipate that the narrower spread would notably increase usage in the facility at this time. However, doing so may lower the risk that rates will fall such that incentives shift and unsecured volumes decline. Doing so may also simplify today's communications.

Thank you, Mr. Chair. That concludes our prepared remarks, and I'd be happy to take any questions.

CHAIR POWELL. Thanks, Lorie. Any questions or comments? Governor Brainard.

MS. BRAINARD. I think the fact of tax payments and Treasury security issuance—these were things that we knew or that were knowable. To what do you attribute the turmoil in this market? Why have the moves been so outsized, and why didn't we have a better sense of it coming into this moment?

MS. LOGAN. I think we did expect rates to firm with the payments, much like we saw in April when we had those tax payments, but we certainly didn't expect them to trade like this. And our expectations were similar to those of market participants.

I think the key issue is the distribution of reserves, as we've talked about. What we saw yesterday was that some of the institutions that do have excess reserves above what they've reported as their minimum comfortable levels didn't increase their lending in repo even at these higher rates. So it's possible that they're just going to be more conservative on particular days than what they report to us about their behavior. And that distribution of activity turned out to be quite disruptive in money markets.

Additionally, as you know, the Treasury is issuing significantly more debt, and the liquidity that may be required for that debt to be distributed on the settlement dates may be higher. We were seeing small stresses of these payment flow days and the settlement dates a year ago or two years ago, so it's possible that the additional liquidity that was in the system then

was providing just enough liquidity for these distributional issues. But it's also possible that these conditions have changed and it's not related to the overall level of reserves—it's just related to the size of the settlement that we're seeing in the Treasury securities market. And I think we're just going to have to see how conditions evolve in the next few days, as well as how conditions evolve in the latter part of September, to get a better read on which one of those stories is more applicable.

CHAIR POWELL. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. Lorie, could you just give us a sense of, if we had a repo facility to complement the reverse repo facility, would that solve this problem, or would we still have the same kind of volatility?

MS. LOGAN. I think we learned yesterday from the operation that we did that the counterparties that we have do intermediate. Some of the counterparties that we saw come to the operation most likely did not need the liquidity themselves—they onlent that liquidity. I suspect that if there had been a repo facility, that would have provided a lot of comfort at that rate, and that we would have seen the usage come and some of that liquidity would have been redistributed into the system. Whether it would have prevented the full volatility, I can't say. I don't think we know. But I do think that the liquidity that we did provide through this type of operation was very supportive to the market.

CHAIR POWELL. President Kaplan.

MR. KAPLAN. I'll defer. I see John has got his hand up, but I'll defer to John and others. But I would just say, from a 100,000-foot point of view, I would rather the Fed be seen as not reacting to this but making arrangements that preempt this volatility to the extent we can,

because I think it may prove to be, if it continues, a distraction and maybe even undermine our credibility.

I don't want to throw out a solution. Jim just threw out one about a standing repo facility. Maybe there are others that are more appropriate. I don't want to prejudge matters. It may mean, over the horizon or even now, that our balance sheet, I think it's sort of suggesting to me, is too small. And, certainly, market commentators have suggested that. But I think, from a stance point of view, this is an area in which, unless there's some cost to doing it, I'd rather be preemptive: preempt this volatility, rather than react to it.

CHAIR POWELL. Vice Chair Williams.

VICE CHAIR WILLIAMS. Yes. I think that's a really good way to frame the issue. I mean, getting back to President Bullard's questioning, this question—If we had a standing facility in place, how would that change market dynamics?—is one that, obviously, we're thinking through. But also, we're learning from the experience of doing these temporary open market operations. The first one kind of came in, in reaction, but the one that we did today was announced the day before. Basically, it was fully subscribed at \$75 billion.

Over the next few days, I think we're going to get a little bit better view of—with the Fed in there, basically doing something that's kind of like a standing facility—how we're performing; we're going to learn about two things that are important. One is, how do the repo rates behave under these circumstances? You know, there's this huge distribution of repo rates and funds rates. So we talk a lot about the median or the weighted average of things, but there's just a lot of—as you see in these pictures, a distribution. So we're going to learn about that.

We're also going to learn about how that passes through to the funds rate itself. I do think that, over the next few days and in just two weeks, we're going to get more information

about the market dynamics not only in terms of how it comes out of the shock, but also in terms of how our facilities—and, assuming we do change the rate on interest on reserves, how that affects things. But with that information and with that analysis, I do think that we will need to come back next month to, really, these basic questions. The really basic question is, what's the right level of reserves to successfully implement an ample-reserves regime in the way that the Committee decided? And then, what are the actions that we, as a Committee, need to take in terms of organically growing our balance sheet, as we talked about, or getting to this right point?

There has been a lot of market commentary—that is, for people who've been saying that we shrunk the balance sheet too much, they're saying, "Told you so." For sure, that's out there. But I think we in the Fed have also been studying this very carefully. I think it would serve us well in the longer term to double down on the analysis and the market outreach, understanding what's going on out there and then having a very informed discussion about, I think, the last stage of the normalization—which is really, what's the right level of reserves, and how do we grow that?

We are learning. As these events have unfolded, I think market participants were completely caught off-guard. We have been learning through that. So I think, at least from my perspective, this is going to be a relatively short period of intense study, assessment, and evaluation that should lead the Committee to figure out what are the last stages of the normalization.

If anything, from my perspective—and others have different views on this, I'm sure—I think we want to get to the right level of reserves, consistent with the framework that we all agreed on, rather than setting up a system where we think that we're going to be having these

facilities, whether temporary open market operations or a standing facility, being the main tools to keep the rates low. So that's my personal view on that.

CHAIR POWELL. Governor Brainard.

MS. BRAINARD. Yes. I think that the framework that President Kaplan set out is a useful one. While I support the technical fix today, I'd much rather be in a framework that looks structurally sound. And in that regard, I'm just wondering whether having some emphasis on the message, "we're looking at sort of resuming organic growth of the balance sheet soon," in the press conference today—how you think that might affect market perceptions and whether that would be a stabilizing force.

MS. LOGAN. My own perception on the basis of the commentary is that there will be some expectation that the Committee is closely monitoring the situation, has taken note, and may be seeing some signs that suggest that that level is getting closer. I think that's the expectation that I've heard regarding the press conference today.

CHAIR POWELL. Yes. Let me just say—this is really echoing what has already been said—we've adopted an abundant-reserves system, and we've said that means that we use our administered rates, and that will minimize this kind of thing, in terms of using open market operations, temporary open market operations, or, for that matter, a standing repo facility. Really, the tool here is to have the level of reserves right, so that we don't have to do that. That's sort of the definition of what an abundant-reserves regime is.

I don't plan to be shy about noting today that we're learning about what the appropriate level of reserves is, and it may be lower than—we've done all of this work. I'll talk about all of the work we've done—the surveys of market participants and such—and then say, "But we'll be very carefully monitoring this situation and developments as we go forward, and we have a clear

sense of where we want to get.” And I’ll also talk about, it may well mean that the balance sheet needs to begin to grow sooner than we had thought. I’m planning to be very candid about that.

But the thing is, I think we have to go through this and probably go through what we learn at the end of September. If that means we need to start increasing the balance sheet, that’s what we’re going to do, because this is the regime we’ve said we were going to have, and we’re going to use it. We’re not going to be sitting here doing months and months of temporary open market operations. That’s not the regime we said we were going to adopt. President Kashkari.

MR. KASHKARI. I have a quick question. I’m curious: How do you “size” the \$75 billion? And does the fact that it was fully subscribed mean that it was not big enough?

MS. ZOBEL. There were \$80 billion of propositions today, so I would say it was roughly in the range. I think yesterday we were thinking about what the day-over-day changes were in typical repo volumes, and we were sizing it that way. It was a learning exercise. We took rough metrics of what we know—how the repo market trades and behaves—and we “sized” the operation that way. I think we came in a little bit later in the trading session yesterday, so it was undersubscribed even though rates were elevated yesterday. This morning, coming in early in the trading session and seeing those results, I think we got it about the right level.

MR. KASHKARI. And is the expectation that you’ll need to do this again tomorrow?

MS. ZOBEL. I think we’re going to see how conditions evolve today and make that decision. I don’t think we’ve had the benefit of seeing how repo markets are trading after the operation.

MS. LOGAN. Once we make that assessment in the next couple of hours, we would plan to announce today just to confirm to the market so they know first thing, coming in, that we would be there.

CHAIR POWELL. President Evans.

MR. EVANS. Thank you. A question, I think, in line with all of the good commentary here—the way to sort of craft it is, do we think that this is a normal-sized incident that we might be dealing with, almost like a cost of doing business for us as we probe for what the efficient level of the size of the balance sheet is? Or is it outsized relative to what we might experience? I think that might be a kind of question that you might get as you do the “We’re studying this—we’re looking at this.” And it’s like, “Well, was this a big one, or was this a small one?”

MS. ZOBEL. I think market participants, as Vice Chair Williams said, got caught off-guard yesterday. So I would presume that, in some sense, they’re going to learn a little bit about how to approach these dates. Nonetheless, I think we will be assessing this as we go forward, seeing what the underlying causes were, and bringing an assessment back to you about where this fits into what we might expect going forward. I think the tax payment dates are frequent—and quarter-ends and the types of circumstances under which we see these pressures. So whereas yesterday’s move was probably greater than one might expect, because people were a little bit caught off-guard and maybe a little bit—

MR. EVANS. Rusty.

MS. ZOBEL. —trading at higher rates, I think we probably would expect some pressure on those dates, and it’s just the degree. This degree, I’m not sure.

MR. EVANS. I think the way John and the Chair described it, about how we’re going to be studying this and probing, is exactly right. It’s just the way that the questions might come about, that’s all. Thank you.

CHAIR POWELL. But, to be clear, the overall message is that this is not going to be a regular part of our world. This is something that happens as we’re feeling for the level of

reserves. So if it's happening frequently, that means that we don't have the level of reserves right—ultimately, it will mean that. But we have to analyze the situation and not overreact today. President George.

MS. GEORGE. On that point about the communication around this, I think this is the right approach—the studying and the learning. I think, in the context of some of the concerns about where the economy is, what the risks are to the economy, and the actions we're taking, to me, that just puts a different context around—I wouldn't want to be overly confident and say, “Yes, we've got this all figured out.” On the other hand, I think the message will be harder. If we were in normal times—if this had been last year—we probably could have said, “Yes, we've got a lot of learning we can bump around.” And you understand this better than I do, but I think, in the context of watching how the media are circling today on the question, “What does it mean?” and saying, “They haven't done this since the crisis”—

CHAIR POWELL. We're sort of reacting in real time here, but what I wrote down this morning to say about that is, this is an important matter about market functioning. But this is really us using our tools to foster federal funds trading within the range that the Committee has set, and it doesn't have implications for the broader economy. This is not something that will affect our performance in pursuing the dual mandate. So I'll try not to downplay the market participants' concern, but say that, for the broader audience, this is not really about the stance of monetary policy—the journalists are trying to make that connection. Really, there is no connection. We're trying to find the right way to say that. President Mester.

MS. MESTER. I guess I agree with what's been said, but I think we have to think about, what if we have to keep going into the market every day, right? Because we want to get to the quarter-end to do it. So it may be more difficult to kind of have the waiting game. I think we

have to think a little further out about how to frame this, just because we don't know whether we're going to be going in every day until the end of the month. And I guess I have some concern that we'll lose the narrative and someone else will take over the narrative for us, like this morning: They were talking about how we can't keep the funds rate in the target, and I worry a little bit about that.

CHAIR POWELL. Well, we will keep at it. We can't promise we'll do it every day, but we will use our tools if we have to in order to keep the funds rate in the target. I mean, restarting the balance sheet is not something that will solve this problem right away. It doesn't move that quickly. The level of purchases is just not big enough—it would take some time. I think the message today is going to be one that preserves a lot of flexibility, doesn't overpromise, calmly states that we're looking carefully at this, and tries to give that sense.

VICE CHAIR WILLIAMS. Can I come back to the IOER?

CHAIR POWELL. Please—yes.

VICE CHAIR WILLIAMS. There are multiple issues that we're trying to resolve here. I completely agree with President Mester. We need to be multitasking as we assess and evaluate those decision-tree kinds of elements that we need to be thinking through on these issues.

You know, abstracting for the moment, taking a deep, cleansing breath, if I can, over the past few days, and thinking about the underlying dynamic, we've seen, as the amount of reserves has come down, the funds rate trades a little bit higher relative to the IOER rate. That's been consistent with our analysis and our models, as I think I said yesterday. I do think that, given that that dynamic is going to be likely to evolve through the rest of the year, based on our own forecast, giving that little bit of extra room and having the IOER rate a little lower in the range will give us—it's a little bit of a preemptive action. I don't think we necessarily need to do it

immediately, based on where the funds rate was trading last week, but it does provide us with some more cushion. We're going to, I think, need it anyway because I think the funds rate will be trending up relative to the IOER rate later in this year, depending on other factors. So I feel, from a risk-management point of view—and also saying we're on the job—that having the interest on reserves rates lower in the range is helpful.

I also think that there are advantages to lowering the overnight reverse repo rate kind of in parallel. The concern we have is—and we talked about this, I think, in May when we did the previous technical adjustment, right?—as the IOER and ON RRP rates get closer and closer, that could potentially lead market participants to move away from holding reserves into holding balances in the ON RRP facility, which is kind of a big shift over there. That's a risk that we've discussed, which I think would have negative implications for much trading that goes on in Eurodollars and federal funds. So I think there is some advantage in lowering the overnight reverse repo rate.

I also think it's a little bit easier story to tell if we just say we're doing a technical adjustment, moving these two administered rates lower in order to foster conditions that keep the funds rate in the target range. It isn't a strategy designed or a move designed to deal with the spikes as much but just to get the underlying conditions right. So I think there are some benefits to that.

I also think, as I think Lorie said, these are complementary tools that address different aspects of the firming that we're seeing in the funds rate. Again, I would just say, these are interventions to raise the probability that we keep the funds rate well within the range over the next few months. I do think these bigger issues that many have already brought up—about the right level of reserves and the growth in reserves over time—are the ones that we're really going

to tackle this longer-run issue. But to get to the long run, we need to get through the short run. So having things positioned as well as possible, I think, will manage some of those risks then.

CHAIR POWELL. Okay. Thank you very much. If there are no further comments or questions, why don't we move, then, now to our policy go-round, beginning with Governor Clarida.

MR. CLARIDA. Thank you, Chair Powell. I support alternative B as written and the policy decision to lower the federal funds rate target range by 25 basis points as well as the decision to lower the IOER rate and the reverse repurchase rate.

I note that in this statement, we continue to acknowledge that "measures of inflation compensation remain low" and continue in the statement to state that "survey-based measures" are little changed." This is technically correct, but it does obscure the fact that both of these indicators are at historically low levels. If these measures of expected inflation were consistent with our target before the crisis, then they're not consistent with our target now.

I also support in the statement the reference to the empirical fact that exports have weakened on a year-over-year basis. They are contracting, and, in fact, as the chart in the pack showed yesterday, it's actually unusual outside recessions to have contraction in demand originating from abroad.

We also recently received data that the ISM index, a venerable indicator of the economy going back 50-plus years, has now fallen below 50—obviously not indicative of anything in itself, but noted here at least. Of course, the U.S. consumer remains the engine of growth in the economy, but the slowdown in global growth and trade, as well as pervasive global disinflationary pressures, are beginning to affect the trajectory of U.S. activity. And, as I noted yesterday, one of the reasons why the staff projection is for core PCE inflation to remain below 2

percent, even though they see cyclical upward pressure, is global disinflationary pressure on import prices.

In regard to the way forward for monetary policy, I'd like to make two points. Building on my outlook remarks yesterday, I note that the median SEP number for u^* remains at 4.2 percent, and five participants, including me, project a long-run u^* of 4 percent or lower. If, indeed, u^* is 4 percent or lower—and, of course, I think this is consistent with the wage data and recent research by Crump, Giannoni, and others—then the output gap is smaller than we think, which means that upward pressure on the output gap will be less than we think, which in turn means that, if anything, the staff estimate that core PCE inflation remains at 1.8 percent may be too optimistic. To me, this is a persuasive argument, along with market signals from TIPS and the yield curve slope, that our current policy is too tight.

Second, I would like to discuss briefly the way that I think about monetary policy alternatives in response to a fall in economic activity that could be attributed in part to trade policy. Here I believe it is important to distinguish between trade policy actions that have been taken, as opposed to trade policy uncertainty about possible future actions. Trade policy actions, such as tariffs that are in place for a long time, potentially affect both aggregate demand and aggregate supply via disruptions to global supply chains. And recent empirical research from the IMF does support this logic. It finds, in a large panel of countries over recent decades, that with a lag of several years, a sustained rise in tariffs does lower real GDP and, ultimately, productivity, but this has to be sustained over a number of years.

To the extent that trade policy actions reduce long-run U.S. aggregate supply, the fall in potential output is not something that monetary policy should try to offset. If inflation expectations are well anchored, I think a central bank can and should be willing to “look

through” price-level increases arising from new tariffs but not try to maintain GDP at a level inconsistent with potentially lower potential output. Let me be clear: I don’t think that’s the case now. But, theoretically, that is the case.

Trade policy uncertainty, on the other hand, or trade policy actions that do not reduce potential output reduce aggregate demand via lower investment and reduced purchasing power. These are shocks that monetary policy can and, I believe, should offset, just as it would endeavor to counter a fall in aggregate demand arising from any other source. Although we have not seen this yet, were we to see a material rise in unemployment that we might attribute in part to trade policy uncertainty, our dual-mandate obligation of maximum employment would not vanish simply because unemployment rises in response in part to uncertainty about trade policy. Thus far, neither we, as a Committee, nor the staff is marking down our view of potential growth or maximum employment. Nor, for that matter, are we projecting that current or anticipated trade policy will push inflation above our target or compromise our price-stability mandate.

Finally, in practice, if not in textbooks, fluctuations in aggregate demand are caused by multiple and shifting sources that are difficult to disentangle statistically even after the fact, let alone in real time. Governor Brainard and I recently attended an OECD meeting, and the discussion among global central bankers and finance officials was quite telling. There was, to be sure, discussion of the adverse effect of trade policy uncertainty on the outlook. But other factors were also mentioned prominently as contributing to the global slowdown, including Brexit uncertainty, weakness in emerging market economies, and a slowdown in China due to a rebalancing of the economy and the lagged effects of past restrictions on private-sector credit growth.

The state of our knowledge and time-series econometrics is simply incapable of telling us with any precision how much of any fall in demand is due to any particular source. And I think we need to bear that in mind. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Chair Powell. I support alternative C at this meeting. If the statement made it clear that we would need to see more evidence in the data of an economic downturn before easing further, I might have been supportive of alt-B at this meeting. However, with language that is nearly identical to July's, which led to the near-certain expectation of an additional reduction in interest rates at this meeting, I fear that the language in this statement will lead markets to similarly price in another cut in October or December with near certainty.

With today's reduction in the funds rate, we are now noticeably below where we judge the federal funds rate to be in the long run. Monetary policy and fiscal policy are already accommodative. I do not see credit being restricted—quite the opposite. Reducing rates at the peak of the cycle has more undesirable financial stability features because it encourages more risk-taking. In a recession, we need to push back against credit contraction, but that is not a problem now.

With this sequence of easings, I also have communication concerns. Labor markets remain tight. The soft inflation numbers seem to have been temporary. It is not clear where the easing cycle would end. It is unlikely that tariffs go away anytime soon, and many of the geopolitical risks seem far from a resolution. Do we keep easing as long as risks are elevated? Another way of putting this is, if these actions are about buying insurance, how much insurance do we need, and at what point do the premiums become too expensive? It seems as if we're

paying a lot for risks that appear to have only modest effects to date on the economy and the economic outlook. So I hope that we do not continue easing for as long as these risks remain elevated. I would much prefer to express a bias toward easing and then to react strongly if it becomes clear that these risks will materialize.

We have a trade policy that is distorting trading relationships and supply chain management. The solution to that problem is not to distort monetary policy unless the trade distortions significantly affect our primary focuses of inflation, unemployment, and real GDP.

Just as tariffs have side effects, so does very accommodative monetary policy. I do not think, at this stage of the business cycle, we should be encouraging more risk-taking by further reducing rates. Lowering the price of credit will almost surely expand the quantity of credit and will likely reduce the quality of credit, particularly while economic conditions remain benign.

The risks that we all see warrant a bias toward easing, not a preemptive sequence of rate cuts that push real short-term interest rates into negative territory. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. I didn't sleep well last night, and I had a dream. And in the dream, I confronted the "WWBYD," which is What Would Brigham Young Do? [Laughter] The prophet offered three alternatives, but they were labeled in a way that I couldn't understand. [Laughter] I didn't know what the different letters were, so I couldn't quite make it out. But I think the prophet was telling me to support alternative A. So, therefore, I am going to support alternative A for today.

Alternative A, as you know, does contain a 50 basis point reduction in the policy rate. In my opinion, this would better center the policy rate on what I think is the desired value, given what I see as substantial intermeeting developments. I view the intermeeting bond market

volatility as more seriously pricing in the possible consequences of what is now likely to be a protracted global trade war, with little or no leadership pushing in the direction of trade liberalization. The Chinese side will likely want to wait for the 2020 U.S. election outcome before agreeing to any trade arrangements. Unfortunately for them and maybe for all of us, I do not think the election will change anything with respect to trade issues, because, as I said yesterday, I think it's really bipartisan agreement on ending the consensus on the United States being the leader and pushing for free trade globally.

Most other nations are more mercantilist in nature, so, accordingly, I think the right way to interpret the situation is that trade uncertainty will likely be a feature of the macroeconomic landscape over the medium term—that is, several years into the future and possibly beyond that. This is likely to continue to disrupt global business investment and lead to slower growth than would otherwise occur. The attendant global slowdown may feed back to the United States in important ways.

Bond market repricing has been swift during the intermeeting period and has left this Committee out of position with respect to the policy rate. The policy rate today is higher than nearly all sovereign yields in the G-7.

We are reducing the policy rate today if the Committee adopts alternative B, but, in my opinion, not far enough and in conjunction with a Summary of Economic Projections that suggests only weak appetite for further policy rate reductions. This might leave the yield curve inverted over a longer period.

I do view the Committee as taking out insurance, both at this meeting and at the previous meeting, against meaningful downside risks. I think an important consideration is that we can take rate cuts back later should we view these risks as having subsided. The Committee did

behave in this manner during 1995 and '96 and again in 1998. I think the 1998 example is particularly apt in this circumstance. You had disturbances overseas that we wanted to guard against, but, eventually, we took those rate cuts back.

In both the '95 and the '98 cases, the Committee successfully lowered rates, mitigated risk, and subsequently increased rates. My SEP path does pencil in a baseline that mimics this pattern, with two rate increases over the forecast horizon as current downside risks fade.

To those who argue we are meeting our dual mandate today, I generally agree, but I also think we are at substantial risk of not meeting our mandate over the forecast horizon should a recession develop. In that case, our current low unemployment rate will rise sharply, and, in addition, inflation will fall further below target. At that point, should we allow it to develop, we will not be meeting our mandate, and it would likely be a long time before we could meet it, and our tools will be limited.

Recession probabilities, according to many models, are high. I think we should take the signal from these at face value. I don't see any reason to play them down in the current environment.

With inflation by our preferred measure running below target, there's little to gain from a tighter-than-necessary stance, given current conditions. I also take some signal from President Kashkari's comments concerning probabilities of inflation outcomes based on options pricing that suggest that the probability that inflation will be less than 1 percent is much greater than the probability that inflation will be greater than 3 percent in coming years. This suggests that the big risk over the forecast horizon for this Committee is that we unwittingly allow the United States to fall into an outcome that looks like the situation in Japan and Europe today. We should be especially aggressive now to avoid that outcome in the years ahead.

Core PCE inflation, our preferred measure, is below target, but I don't think it is enough to simply argue that it will return to target or to 1.8 percent, as the Tealbook has it, in the next couple of years. The framework discussion yesterday highlighted the fact that we would prefer to run inflation above target, perhaps 2 to 2½ percent, when the economy is not in recession in order to meet our inflation target, on average, over a long time frame—that is, over the entire cycle.

So, in summary, I support alternative A for today. As general advice to the Committee, I suggest that we move the policy rate where we want to go and go there, and suggest that we'll watch the incoming information from there. With alternative B, I think markets will, as in June, price in another rate cut with high probability. If that's what's going to happen, then I think we're better off simply making the 50-basis-point cut today and maintaining flexibility to take it back in the future if downside risks do not develop or fade away.

On the question of the federal funds rate and where it's trading, my preference would be that the Chair would state during the press conference that we are at least studying the possibility of a repo facility. In my mind, if we had a repo facility, we would meet an international standard for how these kinds of things are done. I think we would eliminate the liquidity scrambles like the ones we've seen in recent days. I don't think we'd have to say anything more than that we're looking at it, but I think this would calm the current situation.

If we hint that we are thinking about restarting balance sheet growth, I think that will be taken as a cue that we're restarting quantitative easing. I'm not sure the Committee is ready to send that signal. I'm also not sure that merely allowing the balance sheet to grow would actually mitigate these types of situations all that well. As we just heard, the traders more or less were caught off-guard on a particular day because of a confluence of events. That could still happen

even if the balance sheet was somewhat larger than it is today. So I think the way to control this and really take it off the table—President Kaplan was saying, put something in place that will just take this issue off the table—that would be the repo facility, in my view. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. President Harker.

MR. HARKER. Thank you, Mr. Chair. I support alternative C at this meeting. Most economic forecasts show an economy growing at or above its trend rate because of solid consumption growth, which continues to be supported by strong personal income growth, a dynamic labor market, and accommodative financial conditions. Now, although I have concerns over the persistent undershooting of our inflation target, we do seem to be making slow—again, slow—headway, and I share the staff's view that inflation is moving toward target.

I am cognizant of the increase in downside risks posed by a weakening global economy and by uncertainty over trade policy. But with the exception of investment, important effects have yet to materialize on the U.S. economy or on forecasts of its likely trajectory. And, in view of the increased uncertainty, investment is unlikely to rebound with another 25 basis point cut. That is, I simply do not believe the rate cut or cuts we're contemplating today and in the near future will have any meaningful effect on business investment. So, for example, in the survey of the National Federation of Independent Business, a group of small companies that are sensitive to rates, they stated that only 3 percent of their member firms said that their need for capital was inadequate—3 percent. Larger firms also expressed little to no concern with respect to access to capital.

So, in this situation, lower rates will not significantly increase business investment. Coupling this fact with the supply chain reorganization information I mentioned yesterday in my

economic outlook, wherein very few firms are considering moving production back to the United States, I simply do not see how cutting short-term rates will demonstrably increase business investment in this country. Rather, my contacts clearly indicate that they want to see where the dust settles on trade policy and other policies before ramping up capital expenditures. As well, the price effects of the trade war have had a larger effect on the price of investment goods. If firms believe that these effects are temporary, they will delay investment decisions and wait for more favorable prices in the future.

There are also compelling economic reasons for keeping our policy powder dry, because there could be costs of preemptively taking out insurance against the possibility of a future bad shock. If the shock arrives in the near future, the effectiveness of further cuts in boosting demand may be impaired.

The logic is straightforward and works off the idea that a drop in rates—say, deposit and borrowing rates—encourages households that were expecting to make a lumpy purchase in the near future, such as a car or a house, to make that purchase now. But once these households have done so, the stock of households who can be induced to bring their purchases forward in time is depleted, and it takes time for that stock to build up again. Thus, the next rate cut will be less effective in boosting aggregate demand if it follows the first cut too closely in time. On top of that, if the next rate cut occurs when incomes are falling, the stock of potential adjusters could be further depleted, and the rate cuts will be even less effective.

Now, I admit that there is a possibility that the current rate cuts may lower the probability of negative demand shocks and, hence, help avoid the scenario I just outlined. However, given the strength in current consumption, there is little reason, in my mind, to think that we are about to witness a downturn in demand. And the insurance policy is not likely to have a material effect

on investment in the current climate of uncertainty. Therefore, the insurance policy that we're purchasing may, in the end, not provide any insurance at all but merely damp the effects of policy reactions to future shocks, while reducing the room for future policy adjustments.

If we were to see meaningful weakening in the labor market or on the part of the consumer, I would favor a very aggressive easing. But the policy contemplated in alternative B is not likely to have any appreciable effect, and it is also difficult to communicate as a systematic response consistent with past actions.

I worry that alternative B is putting us on a glide path of continuing increases in accommodation, with little communication of what we would need to witness before rates are deemed low enough. I am uneasy with the lack of a clear narrative. Without one in place, others will and are supplying it. That could risk an eventual disconnect between the Committee and markets. And I am hearing an increasing concern among my contacts and directors regarding the FOMC's underlying strategy, with many expressing, simply, confusion and frustration. Thus, a clear communication of the Committee's path of our policy stance at this time is absolutely critical. Thank you, Mr. Chair.

CHAIR POWELL. President Mester.

MS. MESTER. Thank you, Mr. Chair. I support no change in the federal funds rate at this meeting. This is based on my assessment of incoming economic information, my outlook, and the risks to the outlook.

The economy continues to perform well along a number of dimensions. Although trade policy, tariffs, and uncertainty have weakened business investment and manufacturing activity, this weakness has been offset by strong consumer spending, and, overall, the economy continues to expand at its strong pace. Labor market conditions remain strong, and wages continue to grow

and are supportive of continued solid consumer spending. Recent inflation readings are largely consistent with inflation gradually moving back to 2 percent over time.

No doubt there are salient risks to the outlook. If these risks manifest themselves and we find that the weakness in business investment is spilling over into hiring and into consumer spending or if we see evidence of a deterioration in inflation expectations, I would support our acting—and acting decisively. But, until we see that evidence, I prefer not to add to the risks by cutting rates again in an economy that is still performing well.

A main source of the weakness in the business sector is uncertainty about trade policy, not restrained access to credit. Corporate debt levels are already at high levels, and firms are not reporting that access to credit is a problem.

The main short-run effect of a rate cut would be to raise asset prices, posing a potential risk. The effect on the real economy would come from a signal that a rate cut would provide about the future path of our policy rate. In light of the already low level of our funds rate, I would prefer to preserve that signal until it's needed and then act decisively.

I don't feel that our communications over the intermeeting period have given us the optionality that we craved coming into this meeting. The markets are placing 100 percent odds on our cutting the funds rate today and very high odds on another rate cut by the end of the year. There's little change in our statement language from the July meeting, when we last cut, and the Committee plans to cut again at this meeting. It's hard to see how this statement creates any optionality for us going into the October meeting. The lack of a change in language reinforces the expectations for further cuts consistent with market expectations. Even under the revised SEP median path, the policy rate path expected by market participants is still easier than what the Committee currently sees as appropriate.

So it's difficult to see how this ends well. If we take no steps to influence market expectations via our communications, at some point, our actions will have to disappoint the markets. Or if, instead, we put very high value on not disappointing the markets because of the potential disruption that would cause, we will be compelled to ratify market expectations and take actions that we don't view as necessarily appropriate, given our outlook.

We can avoid this situation by using our communications to help bring market expectations into alignment. Perhaps the Chair can use his press conference to clarify things and convey that the Committee may be biased toward easing, given the risks, but our future decisions are going to be very dependent on how the economy evolves from here and whether we see the weakness in the business sector spreading to labor markets and the consumer sector. This is going to be a challenge, and, rather than placing this communications burden solely on the Chair, I would have preferred that the statement do some of the work—perhaps by articulating the risks to our forecast and bringing back a version of the “balance of risks” language. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chair. I support alternative B as written. I support lowering the IOER rate as suggested and also the overnight RRP rate. As best we can, I think we should get the focus on the reduction in the target rate this round.

The downside risks to growth arising from international developments appear to have intensified and are spilling over more noticeably into business confidence and spending plans.

With regard to inflation, the recent readings on consumer prices have been good news, but the further deterioration in inflation breakevens just heighten my already strong concern

about the headwinds from low inflation expectations. We still have a ways to go to achieve our symmetric 2 percent objective, so I am on board for a rate cut today.

Beyond the current decision, I recalibrated my SEP funds rate assumptions this round. After a move today, my policy rate path is flat through late 2021 at the range of $1\frac{3}{4}$ to 2 percent. This is the same assumption I had in June, but I've slowed the subsequent funds rate increases by having only one 25 basis point hike in each of 2021 and 2022. This puts the funds rate in the range of $2\frac{1}{4}$ to $2\frac{1}{2}$ percent at the end of 2022. That's 50 basis points below what I would have written down if we'd been forecasting out that far in June.

The change reflects some reconsideration of r^* on my part. We haven't moved our view of long-run nominal r^* , which is still $2\frac{3}{4}$ percent, but important headwinds, especially uncertainty over the rules of the game regarding international trade and weak growth abroad, are pushing short-run r^* below its long-run level. We recognized these headwinds in June, but we now think they are somewhat stronger and will be longer lived than we assumed back then. This view is supported by our DSGE model in Chicago, which estimates current short-run nominal r^* is quite low and will still be under $2\frac{1}{2}$ percent at the end of the projection period. Some decompositions of the yield curve also suggest that the real short-term rates will be low for quite a while.

In light of this r^* reassessment, we had to move our baseline funds rate path to maintain a modestly accommodative policy stance and generate overshooting of our inflation target within the forecast window. This overshooting has been a design feature of our projection for some time, which, as I'm sure you all know by now, is something I feel we must do in firmly establishing the credibility of our symmetric 2 percent inflation objective.

I also see this as a risk-management move. Our uncertainty about short-run r^* is very large, but a lower-for-longer rate path is consistent with managing against the asymmetric risks between policy being overly restrictive rather than overly accommodative. Overly accommodative policy would lead to inflation picking up more quickly than we expect, but in that case, we would then simply achieve our inflation objective sooner, and the Committee could then use its usual policy tools to manage the economy. Overly restrictive policy could produce risks to the expansion. It would also further cement below-target inflation trends, making it even harder to achieve our symmetric 2 percent objective, and bring the effective lower bound closer into play.

Tealbook B spelled out this risk-management argument quite well in making the case for alt-B this round, and it seems to me that this rationale will be an important factor in our policy thinking for some time. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Barkin.

MR. BARKIN. Thank you, Mr. Chair. At my core, I remain convinced that the economy is healthy. Growth is good, labor markets are tight, and inflation is firming toward our target. In a bubble, I would keep rates steady. However, the environment feels like it's interfering with my calm life within the bubble. The risks are clearly elevated versus our July meeting. The markets are sending a strong message, one we've not pushed back on. In that context, it's clear to me that holding rates steady would be a significant negative event, and, with the economy possibly at a razor's edge, that event could put us in the center in a way I feel would be unwise.

When reasonable people disagree, as we are doing today, I find it helpful to step back and try to calibrate myself. I clearly share the view of many that the risks are tilted to the downside and that the cost of a couple of cuts that I might not have chosen is probably low. Where I think

I may differ from some, on reflection, is the weight, as President Harker also said, that I place on the risk of moving too low too quickly. I fear that our logic on inflation or on risk management will inevitably lead markets to pressure us to go ever lower, as they have over the past six weeks and as President Bullard foreshadowed. I see nothing in the statement that works to limit this downward progression, and I believe taking rates back up will be more difficult than our forecasts suggest, meaning we spend ammunition we may want later.

In the late '90s, just for context, we did take rates up, but when we did that, real GDP growth was more than 4 percent. In the '90s, we used to communicate two messages: rates and tilt. While not my preference, like President Rosengren, I could get comfortable on this rate decision if we had a message that flattened the outlook to one that's more balanced. One idea is to let the statement do that work—say, by changing “this action” to “this adjustment” or another phrase that you might prefer more—or to do so in the press conference, and the median SEP may offer a reference point that helps that.

My board meeting was interesting. I made the case to them that I just made to you and asked for their support for a 25 basis point reduction paired with a flatter trajectory. Kartik is here, and he will attest that I was extremely compelling. [Laughter] After reassuring themselves that my ego could accept rejection, they voted unanimously to hold.

This raises for me the question of how we best communicate. They do not believe monetary policy tools are effective stimulus, given that business hesitation is being driven by uncertainty and labor market tightness. They, too, fear a race to the bottom and would have us conserve our ammunition. They believe further reduction sends a negative confidence signal. They would like us to take a stand against what they perceive as bullying by the markets.

One final comment—on the phrase “sustain the expansion.” I know we’ve grown accustomed to it, but it does worry me, given that the expansion will surely end at some point, and it’s most likely to be ended by a factor other than monetary policy. It sends a message that we own that outcome, when it’s easy to imagine that we shouldn’t. I accept that this is a comment about future statements. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Mr. Chairman. I support alternative B as written. From a risk-management point of view, I am concerned that decelerating rates of global growth, weak manufacturing, and weak business investment in the United States will ultimately translate into slower jobs growth, which will, in turn, ultimately affect the consumer. I’m concerned that, if we wait to see that consumer weakness in order to act, I believe we will have waited too long. I believe the yield curve is a reality check in this regard, and it tells me that the policy setting is too tight.

I agree with President Barkin’s comment that, over time, I hope we can wean off that sentence about sustaining the expansion. I would prefer that the FOMC focuses on full employment and price stability over a sustained period. There are limits. We haven’t reached them yet, but there are limits to what I would be willing to support in order to sustain the expansion, for fear that going too far, maybe as other central banks in the world have done, will ultimately make it harder to meet our dual mandate over a sustained period. So I hope we will consider weaning off that language not at this meeting but in the future. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. Governor Bowman.

MS. BOWMAN. Thank you, Chair Powell. I support alternative B as currently written. My baseline expectation continues to be that the domestic economy will perform well in 2019. We continue to achieve our goals of maximum employment and price stability. But since our July meeting, the outlook for economic performance abroad has declined again, and trade uncertainty remains high. Compounding this are the recent disruption in global oil production and the effect that it may have here in the United States.

In light of these facts, I believe a modest downward adjustment to our policy rate is appropriate at this meeting to help lower these risks and mitigate their possible effect on the U.S. economy. Although the economic headwinds from abroad have had a modest effect at this point, the global growth outlook and ongoing trade policy uncertainty are serious risk factors weighing on the outlook for U.S. economic performance. With inflation pressures muted and a strong labor market, we have room to provide some additional accommodation to reassure firms and households that the expansion in U.S. economic activity is poised to continue. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bostic.

MR. BOSTIC. Thank you, Mr. Chair. I support alternative C as the appropriate policy action at this time.

There are several dimensions along which I'm currently assessing the stance of policy: the dual mandate, including both the current performance of the economy and inflation as well as risks to the outlook; the current signal being given by financial markets embodied in a flattening and/or intermittently inverted yield curve; and a strategic perspective on policymaking over the coming months. Along each of these dimensions, I believe the best action is to hold.—First, let me start with the macroeconomy. As I mentioned yesterday in the go-round, my assessment is

that the economy is currently achieving the dual mandate with continued solid employment performance and gains in household income.

That said, there are certainly risks related to the potential for a global slowdown, led by Europe, China, and a full-blown trade war. Any of these could potentially drag the U.S. economy into recession. And I agree with others that we need to protect against this possibility. However, our policy action in July was widely viewed as providing just such insurance. While the new cycle of risks has continued and arguably strengthened with the recent disruptions to Saudi oil production, the U.S. macrodata have continued to come in, in line with my 2019 forecast for 2 percent growth, and I see no indications that more insurance is necessary at this time.

In fact, I am concerned that a further insurance-motivated cut could signal that we perceive the economy to be on the brink. Some of my directors and contacts are suggesting that some of their pullback in manufacturing capital expenditures is being driven more by fear that we know something that they don't than any actual softening of demand or forecasts of weakening demand for their products. Continuing to ease in the absence of weakening data may facilitate a self-fulfilling prophecy.

Regarding the other half of the dual mandate, another motivation for easing that has been discussed at these meetings is the view that inflation is currently not at target and that decisive easing is needed to drive it to target and protect against a lowering of inflation expectations. As I noted yesterday, the most recent data on inflation suggest that by some measures, we are close to target, if not beyond it. Therefore, on this basis, a hold also seems appropriate at this time.

With respect to financial markets, my staff and I—like, I imagine, many of your staffs and you—spent a lot of time during the intermeeting period discussing the flattening and

inversion of the yield curve. The first observation that I'll make is about the volatility of the yield curve. It's a whole lot steeper now than it was just a few days ago, and I expect this volatility to continue. I also think that we are getting somewhat mixed messages from financial markets. Many take the inverted yield curve to be a sign that the market expects a recession soon. However, my staff's analysis of the federal funds and Eurodollar derivative markets suggests that most market participants expect policy rates to stay at or above 1 percent for the foreseeable future, which is arguably inconsistent with expecting a recession, as there is broad consensus that we will go to the effective lower bound if a recession actually occurs.

Finally, as others have mentioned, there are other global dynamics affecting the shape of the yield curve that aren't tied to domestic risks at all. The volatility, mixed signals, and other factors all prompt me to ask, if we were to move, do we think it would materially affect the shape of the curve and have a real-side effect? Now, taking that question one step further, I have been thinking about issues related to global finance and wondering whether there's a limit on how far our policy can diverge from that of other central banks. Put bluntly, are we now more a following economy and a following policy body rather than a leading one? That's a significant departure from how we've approached our policy space and something I'd want to think about and discuss more before taking strong action on that basis. So, all in all, I'm watching financial markets closely, but I again believe the best course of action right now is to hold and watch how events and market assessments evolve.

Now, as an aside, I agree with President Mester. At some point, we will have to have a reckoning with the expectations of financial markets. At some point, we are going to have to tell them something that they don't want to hear and that they don't like, and when we do, there will be some disruption and volatility in those markets, and we're just going to have to be

comfortable letting that play itself out. I have concerns that the longer we wait, the more disruptive it will ultimately be.

Finally, with respect to thinking about the evolution of policy over the next 6 to 12 months, I worry a lot about our setting out on a trajectory where we march to zero and ultimately wind up there, perhaps even in the absence of a recession. At this point, the rationale for the policy moves does not provide any clear guidance on what conditions need to prevail for us to stop cutting rates. If we create a trend in our policy actions, given the current economic environment, as others have said today, I don't think it's going to be easy to justify stopping the trend. I have no reason to think that the current environment—that is, the data and the risks to the economy—will be appreciably different at the next meeting or even 4 to 6 months from now. And on this point, I'm finally agreeing with my team. If that's the case, if we are data dependent, and if our statement remains largely unchanged, then our actions should roughly stay the same over this period, which, with a cut at this meeting, would put us, I believe, on the road to zero.

I don't think this would place us in a very good policy stance, given the robust performance of the economy. And from my engagement with the business community and other leaders in the Sixth District, I think there's broad consensus about this view. Therefore, with respect to each of these dimensions—the dual mandate, financial markets, and the longer policy rate path—I believe the best action right now is to hold on rates. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. The outlook for my SEP submission is mostly unchanged from June. The incoming data have been in line with a forecast that calls for growth to decelerate toward trend over the medium term. With that modal outlook, however, a

number of downside risks and uncertainties have accumulated, posing difficult policy choices for this Committee.

I view maintaining the current range for the funds rate, as described in alternative C, as appropriate in the current environment and not unlike the approach taken by the Committee as it responded to the manufacturing and commodity slump in 2014 and 2015. Rather than adding stimulus, the Committee lowered its projected path of interest rates. Using the median SEP as a reference point, I note that the projection for the appropriate setting of policy at the end of 2016 was lowered nearly 1 full percentage point. That adjustment provided appropriate support for the broader economy at a time when some sectors were experiencing weakness, and the economy continued to expand.

Similarly, from last September to June 2019, the median SEP projection for the funds rate at the end of 2019 declined 1 full percentage point. This adjustment occurred as signs emerged from business contacts—and were later confirmed by data—that the economy would approach trend growth more rapidly than previously estimated. I see this shallower path as offering support without using the Committee's limited policy space to respond to issues that monetary policy is arguably unable to resolve.

Given that inflation remains somewhat below our 2 percent target, some may view the cost of a further reduction in rates today as benign, and that may turn out to be the case. However, I'm also mindful of the fact that easier policy is designed to encourage risk-taking and leverage, and, at this stage of the business cycle, our ability to offset any unintended effects related to financial stability seems limited. Although the most recent QS report discussed at our July meeting was generally sanguine about overall vulnerabilities, its assessment did point to elevated risk in key sectors, including commercial real estate and leveraged lending.

Corporate debt also continues to rise to high levels, with the fastest growth among the riskiest firms. At the same time, systemically important financial institutions are lowering loss-absorbing capital levels. Historically, such a combination has proved costly to employment and growth, especially at this stage of the expansion.

As I noted yesterday, I remain attentive to the incoming data for signs that downside risks to the outlook materialize in a way that meaningfully affects broad economic conditions. Under those circumstances, I would be prepared to adjust monetary policy accordingly. Thank you.

CHAIR POWELL. Thank you. Governor Quarles.

MR. QUARLES. Thank you, Mr. Chair. I support alternative B as written. Although the domestic data alone remain relatively strong, the risks to the outlook are elevated. And while I think it's a close call, I am comfortable with a further "insurance" cut. Our economic momentum is being impeded by increased trade tensions and fragile foreign growth, so cutting rates at this meeting is an appropriate policy.

While I'm comfortable with today's rate cut, at this point, I see value in maintaining optionality going forward, as a number of the members of the Committee have said. My baseline is that rates remain on hold through the rest of the year. Obviously, we'd reassess that if the data were to deteriorate or risks were to increase meaningfully further. But if, as I would expect, the data are essentially the same going forward, we need to make sure that our communications would allow us not to cut further.

Further out, although I have cut my estimate of the long-run neutral rate down a notch, as I mentioned yesterday, the reduced business investment that, like President Harker, I attribute principally to trade policy will nonetheless have consequences. I still believe that we do have,

over the long term, a strong and growing economy, and soon enough, rates will have to increase to maintain sustainable growth.

Regarding two other points that have come up in the discussion, like President Bullard, I would be cautious about communication. I think any indication that we're sort of ready to start increasing the balance sheet even theoretically will be overinterpreted in the current circumstances, and I'm not sure that the Committee has done that. I think that the response to the events of the past couple of days does require, as Vice Chairman Williams said, more study and more thinking through—maybe not months and months of examining our navel, but more than we currently have—and that, ultimately, I think we're going to be more comfortable with something like the repo facility, as President Bullard said, as the way to respond to what we've seen over the course of the past couple of days.

Similarly, although it was not something I had given any thought to until this discussion, I was taken by the comments of President Barkin, supported by President Kaplan, that the phrase “sustain the expansion” at some point is going to turn around to bite us, because when the expansion ends, it will suggest that we must not have been doing that, and that if there was some way to free us of the phrase, that would be a good thing. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chairman. I support alternative A. I think we should be more aggressive than a 25 basis point cut. I see two reasons to increase accommodation. First and foremost, inflation remains low, and inflation expectations are too low and declining. Second, the U.S. economy is slowing in the context of weak global growth, and I think there's a clear balance-of-risks case for cutting now rather than waiting until we're actually sure we're in a recession.

Let me expand on these two arguments. Focusing on inflation first, I don't think it's hard to understand why expected inflation is low. We raised rates, in my humble opinion, too soon and too quickly, and in doing so, we signaled that we view 2 percent as a ceiling rather than a symmetric target. All of our discussions about the framework review and about a low- r^* environment—I think there's widespread consensus that the zero lower bound is a real constraint on our ability to respond to possible downturns, and in those environments, we should be responding aggressively to signs of economic weakness and move sooner rather than later.

I want to remind the Committee of a proposal I advocated in the past two meetings about forward guidance. By the way, in Minneapolis, we call this the Feldman rule, because it was Ron Feldman who first recommended this to me. That was to cut the federal funds rate 50 basis points and then simultaneously announce that we will not raise the federal funds rate until core inflation reaches 2 percent on a sustained basis. Such an announcement would help convince people that we're serious about our symmetric 2 percent target and also help ourselves from repeating previous hawkish mistakes.

The Bank of Japan, the ECB, and the Fed have declared victory too soon in the past, and then they've undermined their ability to achieve the 2 percent target. Last week, the ECB announced a set of new policy measures to try to drag inflation back up toward their target. One component of their package was literally what I just proposed—which is, they announced that they're going to either keep rates at the current level or lower them until they actually achieve their inflation target as they've defined it. So they literally just did what we suggest. Now, why have they done this? As I said, because in the past, they made the mistake of declaring victory too soon, raised rates, and undermined their ability to achieve their inflation target.

It might be too late for the ECB. It might be too late for the Bank of Japan because they've allowed inflation expectations to slip. But I don't think it's too late for us. And that's why I actually think forward guidance is a more useful tool and a potentially more effective tool if we do it when we're closer to achieving our target than if we wait until we're sure that we're missing it.

I'm just really struck by the debate and the discussion, which I thought was very useful, on the framework review. It seems like there's broad consensus of the problem with the ELB and a lot of interest in these makeup strategies or redefining what "symmetry" means, *et cetera*, and yet we're not walking the walk. This is not a time-inconsistency problem. We're not walking the walk even while we're talking the talk. So if you look at the SEP that we're putting out this afternoon, in 2021, 12 of 17 of us have some rate increases between now and then, and only 3 of those 12 actually had core inflation above 2 percent at the time. If you go to 2022, 15 of 17 of us have rate increases, and only 5 of those 15 actually had core inflation reaching 2 percent. So our own bias toward raising ahead of inflation is maintained today even while we're having all of these thoughtful deliberations about what to do in the ELB.

It's very easy for us to say what we're going to do. When we're actually walking the walk, we're not willing to do it. So that's why I think a commitment to not raising rates until we actually achieve our inflation target is useful for the ECB, and it would be useful for us.

Regarding the recession arguments, as others have noted and as I've myself noted, weak investment and slowing job gains suggest that the U.S. economy is losing momentum. Estimating the exact recession probabilities is difficult, but I'm really taken by the Tealbook's estimates. Whether it's 45 percent, 50 percent, or 60 percent, those are all way too high for me, and I think we should be getting out aggressively. If we wait until we are sure the economy is

really slowing, it's too late. Maybe we can make the recession a little less soft, but I would rather avoid the recession. And, again, all of the analysis in the framework review says, in a low- r^* environment, you are far better off to get out early and ahead of it.

The last comment I'll make is, we've had a lot of debates about nonlinearities in the inflation process over the past few years. I call those "ghost stories" because there's no evidence that those nonlinearities exist, but I also can't rule them out—like a ghost. Where do nonlinearities exist for sure? In the recession process. It's almost impossible for the Board staff to generate recessions by shocking their models. You have to do something very nonlinear to actually get the economy into recessions. Yet recessions, in fact, happen. So we know there are nonlinearities in the recession process. There are no known nonlinearities in the inflation process, which says we should raise rates very slowly, only when we see the whites of inflation's eyes. But we should be cutting rates aggressively because there are nonlinearities on the downside that lead to recessions. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. President Daly.

MS. DALY. Thank you, Mr. Chair. I support alternative B as written. Headline indicators of real activity remain solid, with fairly tight labor markets, strong consumption, and moderate GDP growth. However, we continue to fall short on our inflation goal. Furthermore, a number of headwinds are slowing growth, including soft business investment, ongoing trade uncertainty, and continued global weakening. In the absence of additional policy accommodation, these headwinds would reduce aggregate demand. Monetary policy can and should offset these effects with additional accommodation, and here I'm just echoing some of the things that Governor Clarida said earlier in his remarks.

There are also longer-run factors that favor additional accommodation. We have now been below our inflation target for an extended period, and there are risks, as we discussed yesterday, to this persistent undershooting. If we don't defend the target in these good times, it will be harder to convince people we will defend it in the future when the pressures are even greater, and here I completely agree with President Kashkari that we need to walk the walk today, because it's going to be very difficult to convince people that our promises are real if we haven't delivered it in these relatively good times.

It is, therefore, appropriate that we move today to provide some of the requisite accommodation. In view of the lagged effects of monetary policy, we shouldn't wait until the economy stalls before we act. Indeed, the good growth projected this year in the face of growing headwinds partly reflects our adoption of an easier stance of policy since December, which has mitigated their drag.

As I discussed in July, declines in my estimate of r^* , combined with a worrisome, persistent inflation shortfall, motivated the projection of two rate cuts in 2019. Today's 25-basis-point reduction would be the second of those two cuts. Since then, I have updated my forecast, which now calls for one additional cut this year. My downward revision of u^* , combined with continued deterioration in global financial conditions and soft inflation readings, moves me to pencil in this additional accommodation.

Should we be surprised to the upside, we can easily adjust that policy rate path. But a surprise to the downside is not as readily fixed. Except for a risk-management situation, in all of the framework memos that we've reviewed, it calls for being a little overaccommodative rather than underaccommodative.

Importantly, I want to add that I'm not coming to this decision lightly. I'm not on a preset course. There are important concerns that have been raised about the desirability of today's cut. First, there is the view that a cut would be ineffective in addressing the types of headwinds we currently face, and, therefore, it would be simply unwise. Though it is true that monetary policy cannot address all of our headwinds directly, our transmission channel for stimulating aggregate demand appears to be alive and well. Anecdotal reports given by some of my directors and data from the Mortgage Bankers Association show that household refinancing has increased markedly this year with falling mortgage interest rates. And my contacts in the banking sector tell me that these refis are not just taking equity out of their homes. They're really just lowering payments or deleveraging, putting households in a better position to spend in the future. Our accommodative monetary policy during this period surely helped contribute to this pickup, and at least some of the robustness of consumption expenditures, such as auto sales, is likely also attributable to lower interest rates.

The second concern that's been raised is that our easier policy stance could raise some concerns for financial stability. But while some asset valuations remain elevated, with the exception of corporate debt, leverage ratios in most sectors of the financial system are within normal ranges, at least by their latest assessment in the QS. Moreover, the strong capital positions of our major financial institutions mitigate some of the risks of a systemic event. More to the point, we have a macroprudential toolkit that's specifically designed and better placed to address financial vulnerabilities. Monetary policy is a blunt tool to stem financial "froth." Additional accommodation seems unlikely to contribute to financial instability risks at present but helps in achieving our dual mandate.

So, balancing all of these tradeoffs, I favor a 25-basis-point cut at today's meeting.

Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Governor Brainard.

MS. BRAINARD. Thank you. Since July, revisions to previous GDP and payroll employment data suggest that activity in 2018 was relatively weaker than was apparent earlier and that momentum going into this year was somewhat less. Although the recent domestic data have remained solid overall, we are seeing a clearer deceleration in the labor market. Since our July meeting, risks to the downside associated with more persistent trade policy uncertainty and weakness in global growth have become more prominent, and we've also seen some geopolitical risks. Against the backdrop of muted inflation, risk management supports the case for today's 25 basis point cut in the federal funds rate.

The labor market remains strong. The unemployment rate and initial claims for unemployment insurance are hovering near historical lows. But the pace of payroll growth has slowed, and the pace last year was a continuation from the previous year rather than an acceleration as we thought at the time of the July meeting.

Against the backdrop of strong employment and higher disposable income, strong consumer spending has continued to power aggregate demand, and sentiment remains quite favorable. However, the weakness in business fixed investment and manufacturing production has extended, and exports have disappointed. The risk is that this weakness might spread more broadly, leading not only to lower cap-ex, as we've already seen, but also, ultimately, to slower hiring and lower consumer confidence.

The escalation of trade conflict since we last met poses significant downside risks. Uncertainty surrounding global supply chains and trade rules appears to have increased and

could further damp business investment and sentiment and exacerbate the challenges related to weak foreign growth. Several foreign central banks have added accommodation to address their growth and inflation disappointments, which in turn has implications for financial conditions and inflationary developments here.

Although the recent data on prices have come in broadly in line with expectations, inflation continues to fall short of our target. And with a variety of statistical models suggesting underlying trend inflation is running about 1.8 percent persistently, it is imperative that we remain visibly committed to moving trend as well as realized inflation back up to 2 percent and not allow expectations to drift down.

Finally, a variety of market-based recession indicators are flashing warning signs with growing urgency.

So, from a risk-management perspective, the downside risks to output and employment from elevated trade uncertainty at a time when inflation is on the soft side would, on their own, warrant a small downward adjustment to the modal path for policy, especially considering we're operating in an environment of a low and uncertain neutral rate and reduced conventional policy space.

The one reason to be cautious about our projected low-for-long path, with growth running above or close to its potential pace, is the risk of exacerbating imbalances in financial and credit markets. I agree with Eric and Esther. Experience suggests that financial market risk appetite and private-sector leverage are strongly procyclical, and we see clear signs of that in current elevated risky corporate debt and the associated asset valuations. We should be addressing these financial imbalances by augmenting bank buffers countercyclically. Instead, we've seen

common equity Tier 1 come down by about 1 percent over the past two years at our largest banks, and we continue to allow payouts to exceed earnings.

As reflected in my SEP submission, I anticipate a modest downward tilt to the path for the federal funds rate, and alternative B signals continued openness to additional policy adjustments if the incoming data warrant. That said, I don't see the case for moving with greater force today. While additional accommodation can help with residential investment, consumer durables, and the exchange rate, access to credit doesn't appear, as others have said, to be an issue for businesses, as suggested by the NFIB, the Beige Book, and the SCOOS. Instead, business sentiment and the behavior of business investment appear to reflect fundamental uncertainty tied to policy.

One important question is how much monetary policy can address the fundamental changes that businesses increasingly appear to think they may be facing on the rules of engagement on trade and the potential for permanent alterations to supply chains. And I think my thinking here also reflects the conversations that Governor Clarida mentioned earlier. As Brexit illustrates more starkly, the potential for fundamental changes to trade rules, with the possibility for some capital to become stranded, has important features of a supply shock that monetary policy alone cannot address. But, if business pessimism tips and we see a pullback in hiring, this could quickly spread to consumer sentiment and pose greater downside risks to aggregate demand. So I'll be watching very carefully for signs of that kind of tipping in the incoming data.

Finally, I agree with concerns that were expressed by President Barkin, Governor Quarles, and others that the phrase "sustain the expansion" doesn't actually describe our dual mandate very precisely and does have this risk that, over time, we could own a problem that goes

well beyond our toolkit. So although it's not something I would suggest that we consider altering now—and recognizing that any change to our language will be overinterpreted—I do think we should be thinking about a path to change our language there.

Lastly, I will say that the turbulence we have seen in repo markets is precisely the kind of outcome we were seeking to avoid by running an ample-reserves regime. I don't see the benefit to continuing to shrink reserves by another \$10 billion to \$15 billion per month, if it comes at the cost of more ad hoc responses to turbulence in repo markets and at a time when it could muddy our message on monetary policy. So I do look forward to having options in front of us regarding the resumption of organic balance sheet growth, as well as potential other facilities, soon and preferably signaling that today. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Vice Chair Williams.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. I, rather strangely, had exactly the same dream that President Bullard had. [Laughter] I'm not sure if the word "dream" is the right one, but I, too, found myself in a world in which I wasn't able to read the documents because the letters were strange. But unlike President Bullard's dream, at the end, after very careful study and research, I was able to translate the options in front of me—when they all said alternative B [Laughter] So I support alternative B as written.

As has been the case for most of the year, the economic outlook and associated policy considerations are complex. I think the discussion today and at our previous meetings reflects that. I think everyone is weighing all of these issues—the same issues—and coming to slightly different places, perhaps, but these are all very pertinent, relevant concerns that we're thinking through.

Although the expansion remains intact, cyclical downturns in many major economies, trade policy tensions, and geopolitical risks are weighing on the economic outlook. On the inflation front, measures of inflation expectations obtained from financial markets and provided by surveys remain too low for comfort. The ongoing weakness in inflation represents a persistent challenge facing us, interacting with and compounding the uncertainties on the real side of the economy.

Now, the best response to the outlook, an outlook of slowing growth, low inflation, and elevated uncertainties, is—I'm going to say it—to remain focused on keeping the expansion on track. I do think that is what we're trying to do right now. I want to see real GDP growth around or slightly above the trend rate. And when thinking about the stance of monetary policy, I don't think of this as very accommodative.

My own view is that the nominal neutral rate is 2.4 percent. We're talking about being roughly 50 basis points below that. Against the background of the low rate of inflation that we're seeing and the uncertainties about the economy, that doesn't seem like excessive insurance to me. But there is definitely some insurance there.

I am concerned about the signals we're getting from the yield curve. They have been persistent—volatile but persistent. And it's appropriate for policy to act preemptively, given the dangers of recession, as President Kashkari highlighted.

Today's action will support accommodative financial conditions and help support growth and progress toward our 2 percent inflation goal. I think it positions us well for the uncertainties and risks ahead of us.

I have just one brief comment about how I view the monetary transmission mechanism. This is echoing comments by President Daly and Governor Brainard, and it actually echoes

comments given by the Chair in Jackson Hole. Yes, we're seeing the trade and other uncertainties hit particular parts of the economy—business fixed investment—and exports hitting manufacturing. And I don't see any policy actions that we're contemplating actually directly fixing or rectifying the weakness in those particular sectors. I mean, that would never really be the case.

The question really is, how do we get the aggregate economy to the place consistent with our dual-mandate goals? So when you think about it, I think more favorable financial conditions, both in our models and in the real world, are not really about boosting business fixed investment. Even in the FRB/US model—many, many years ago, we did a *Federal Reserve Bulletin* article and looked at the question: Within the FRB/US model, how does a funds rate cut or hike, whatever, affect the economy? And it's through the effect on broad financial conditions, the effect on the dollar, and the effect on residential and consumer spending. So the business fixed investment channel is a relatively small part of that even in our models. I think what we're trying to do here is get to a somewhat accommodative stance of policy, try to offset some of these negative effects on the real economy, which I think are actually in the data now—they're not just in the forecast—keep the overall economy growing at or slightly above its trend rate of increase, and help facilitate the return of our 2 percent inflation goal.

So, again, I think this is the way monetary policy works in our models. I think this is what we're seeing, as President Daly mentioned, and I don't see this as a race to zero. I think my own view—and I think you're seeing this in the dot plot—is that this is more of this adjustment to just get the stance of monetary policy consistent with continued growth and reaching our goals as best we can. Thank you.

CHAIR POWELL. Thank you. And thanks, everybody, for your comments. I do see and acknowledge the diversity of perspectives around the table. I would say it's a challenging time for policy, and I'll just repeat that I do value, respect, and understand the different perspectives that people have. I expect I'll have the opportunity to say that again. I've had a lot of practice saying that. [Laughter] Why should today be any different? Anyway, I do mean it, and I just would say, it's a challenging time, and people are in different places.

So, with that, let me now ask Jim Clouse to make clear what the FOMC will vote on and to read the roll. Following the FOMC vote, the Board will vote on interest rates on reserves and discount rates. Jim.

MR. CLOUSE. Thank you. The vote will encompass the monetary policy statement as it appears on page 4 of Thomas's briefing materials. There are some minor revisions to the implementation note, and let me just be clear about those. The FOMC vote will encompass the directive to the Desk as it appears mostly in the implementation note shown on pages 8 and 9 of Thomas's briefing materials, but with an amendment to reflect a 30 basis point reduction in the overnight reverse RP rate to incorporate the technical adjustment, as discussed by the Chair.

And then, as the Chair noted, shortly he'll be calling for the usual Board vote on interest rates on reserves. Those rates will also be reduced 30 basis points—again, to incorporate the technical adjustment.

Finally, in past implementation notes, when there has been a technical adjustment, we've inserted a sentence to emphasize the role of interest rates on reserves in supporting the Committee's decision, and we would suggest incorporating that again. That sentence will read "Setting the interest rate paid on required and excess reserve balances 20 basis points below the

top of the target range for the federal funds rate is intended to foster trading in the federal funds market at rates well within the FOMC's target range."

And with that, I'll call the roll.

Chair Powell	Yes
Vice Chair Williams	Yes
Governor Bowman	Yes
Governor Brainard	Yes
President Bullard	No
Governor Clarida	Yes
President Evans	Yes
President George	No
President Rosengren	No
Governor Quarles	Yes

CHAIR POWELL. Thank you. Now we have two sets of related matters under the Board's jurisdiction: corresponding interest rates on reserves and discount rates. May I have a motion from a Board member to take the proposed action with respect to the interest rates on reserves as set forth in the first paragraph associated with policy alternative B on the second-to-last page of Thomas's briefing materials as amended, as Jim just went over?

MR. CLARIDA. So moved.

CHAIR POWELL. May I have a second?

MS. BRAINARD. Second.

CHAIR POWELL. Without objection. Thank you. May I now have a motion from a Board member to take the proposed actions with respect to the primary credit rate and the rates for secondary and seasonal credit as set forth in the second paragraph associated with policy alternative B on the second-to-last page of Thomas's briefing materials as amended?

MR. CLARIDA. So moved.

CHAIR POWELL. May I have a second?

MS. BRAINARD. Second.

CHAIR POWELL. Without objection. So ordered. Thank you very much, everyone. Our next meeting is October 29 and 30. That concludes this meeting, and lunch will be served in about an hour. Vice Chair Williams.

VICE CHAIR WILLIAMS. Chair Powell, I totally agree with you that we've had a very robust discussion, and this has been very healthy. But I will admit, maybe something we could do to improve this would be, perhaps if we had two flags down [laughter] at the end of the table to perhaps provide more support for those of us—

MR. CLARIDA. Well, on cue.

VICE CHAIR WILLIAMS. Is there a solution for this? [Laughter]

MR. QUARLES. It's set.

VICE CHAIR WILLIAMS. Aha. Very—there we go. Anyone else? [Laughter] Thank you, I think we've solved that.

CHAIR POWELL. Yes. Thank you so much for that. [Laughter] And with that, we are adjourned.

END OF MEETING