Meeting of the Federal Open Market Committee on
June 9–10, 2020

A joint meeting of the Federal Open Market Committee and the Board of Governors was held by videoconference on Tuesday, June 9, 2020, at 10:00 a.m. and continued on Wednesday, June 10, 2020, at 9:00 a.m.

PRESENT:
Jerome H. Powell, Chair
John C. Williams, Vice Chair
Michelle W. Bowman
Lael Brainard
Richard H. Clarida
Patrick Harker
Robert S. Kaplan
Neel Kashkari
Loretta J. Mester
Randal K. Quarles

Thomas I. Barkin, Raphael W. Bostic, Mary C. Daly, Charles L. Evans, and Michael Strine, Alternate Members of the Federal Open Market Committee

James Bullard, Esther L. George, and Eric Rosengren, Presidents of the Federal Reserve Banks of St. Louis, Kansas City, and Boston, respectively

James A. Clouse, Secretary
Matthew M. Luecke, Deputy Secretary
Michelle A. Smith, Assistant Secretary
Mark E. Van Der Weide, General Counsel
Michael Held, Deputy General Counsel
Thomas Laubach, Economist
Stacey Tevlin, Economist
Beth Anne Wilson, Economist

Shaghil Ahmed, Marc Giannoni, Trevor A. Reeve, William Wascher, and Mark L.J. Wright, Associate Economists

Lorie K. Logan, Manager, System Open Market Account

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

Matthew J. Eichner,[1] 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

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[1] Attended through the discussion of developments in financial markets and open market operations.

Rochelle M. Edge, Deputy Director, Division of Monetary Affairs, Board of Governors; Michael T. Kiley, Deputy Director, Division of Financial Stability, 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

William F. Bassett, Antulio N. Bomfim, Wendy E. Dunn, Ellen E. Meade, Chiara Scotti, 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

Brian M. Doyle,[2] Senior Associate Director, Division of International Finance, Board of Governors; Eric M. Engen, Senior Associate Director, Division of Research and Statistics, Board of Governors

Edward Nelson[3] and Robert J. Tetlow, Senior Advisers, Division of Monetary Affairs, Board of Governors; Jeremy B. Rudd, Senior Adviser, Division of Research and Statistics, Board of Governors

Sally Davies, Associate Director, Division of International Finance, Board of Governors; David López-Salido, Associate Director, Division of Monetary Affairs, Board of Governors

Burcu Duygan-Bump, Andrew Figura, Shane M. Sherlund, and Paul A. Smith, Deputy Associate Directors, Division of Research and Statistics, Board of Governors; Jeffrey D. Walker,[1] Deputy Associate Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors; Paul R. Wood,[3] Deputy Associate Director, Division of International Finance, Board of Governors

Brian J. Bonis, Etienne Gagnon, and Zeynep Senyuz, Assistant Directors, Division of Monetary Affairs, Board of Governors

Matthias Paustian,[3] Assistant Director and Chief, Division of Research and Statistics, Board of Governors

Penelope A. Beattie,[4] Section Chief, Office of the Secretary, Board of Governors; Dana L. Burnett, Section Chief, Division of Monetary Affairs, Board of Governors; Dario Caldara,[5] Section Chief, Division of International Finance, Board of Governors

[2] Attended through the discussion of economic developments and the outlook, and all of Wednesday's session.
[3] Attended through the discussion of forward guidance, asset purchases, and yield caps or targets.
[4] Attended through the discussion of economic developments and the outlook.
[5] Attended from the discussion of economic developments and the outlook through the end of Tuesday's session.

Mark A. Carlson, Senior Economic Project Manager, Division of Monetary Affairs, Board of Governors; Canlin Li,[3] Senior Economic Project Manager, Division of International Finance, Board of Governors

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

Hess T. Chung,[3] Group Manager, Division of Research and Statistics, Board of Governors

Michele Cavallo, Bernd Schlusche,[3] and Mary Tian, Principal Economists, Division of Monetary Affairs, Board of Governors; Maria Otoo, Principal Economist, Division of Research and Statistics, Board of Governors

Sriya Anbil,[3] Erin E. Ferris, and Fabian Winkler, Senior Economists, Division of Monetary Affairs, Board of Governors; David S. Miller,[3] Senior Economist, Division of Research and Statistics, Board of Governors; Gaston Navarro, Senior Economist, Division of International Finance, Board of Governors

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

James Hebden[3] and James M. Trevino,[3] Senior Technology Analysts, Division of Monetary Affairs, Board of Governors

Andre Anderson, First Vice President, Federal Reserve Bank of Atlanta

David Altig, Joseph W. Gruber, Anna Paulson, Daleep Singh, and Christopher J. Waller, Executive Vice Presidents, Federal Reserve Banks of Atlanta, Kansas City, Chicago, New York, and St. Louis, respectively

Edward S. Knotek II, Paolo A. Pesenti, Julie Ann Remache,[1] Samuel Schulhofer-Wohl,[1] Robert G. Valletta, and Nathaniel Wuerffel,[1] Senior Vice Presidents, Federal Reserve Banks of Cleveland, New York, New York, Chicago, San Francisco, and New York, respectively

Roc Armenter, Matthew D. Raskin,[1] and Patricia Zobel, Vice Presidents, Federal Reserve Banks of Philadelphia, New York, and New York, respectively

Robert Lerman,[1] Assistant Vice President, Federal Reserve Bank of New York

Daniel Cooper and John A. Weinberg, Senior Economists and Policy Advisors, Federal Reserve Banks of Boston and Richmond, respectively

Transcript of the Federal Open Market Committee Meeting on June 9–10, 2020

June 9 Session

CHAIR POWELL. 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 move to our formal agenda, I'd like to review some logistics. We again have a parallel Skype session that participants and others can use to indicate when they have a question. But please use that Skype session only for indicating your desire to speak. If you make comments in there and that sort of thing, they'll need to become part of the record.

Following each staff briefing, if you'd like to ask a question or a two-hander, please indicate that in the Skype session, which I'll be monitoring. I'll also call for any further questions at the end of each Q&A session in case anyone is having difficulty with Skype. A link to a single file, consisting of all presentation materials, was distributed yesterday evening. You can open the file at that link and follow along during the briefings.

Next, the video element of this meeting involves some new technology—thanks to Matt and everyone who worked so hard to get it up and running. We hope that it works well, but if there are unexpected problems, we may need to revert to an all-audio call, as in April. In that case, everyone will drop off the video and dial back into the meeting using the conference number and PIN numbers that we distributed to all participants. We certainly hope that will not be necessary.

Finally, I want to begin by acknowledging the extraordinary and troubling events of the past couple of weeks. Like many of you who are Bank presidents, last week I sent an internal message to all Board employees, and our message read as follows:

> The tragic events of recent days have left many of us deeply troubled. Injustice, prejudice, and the callous disregard for life have led to social unrest and even a sense of despair.
>
> Especially in difficult times like these, I find some measure of comfort in the values, compassion, and support that make our Fed family strong. Chief among those values is an unwavering commitment to treat one another with dignity and respect. To be very clear, we reject racism in any form. There is no place for it here and there should be no place for it in our country.
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> Our core values underpin our ongoing work to foster a culture of diversity and inclusion. These values give purpose to everything we do to strengthen and support the economy on behalf of the public we serve. In particular, we stand together with African American members of the Fed family at a time when events may cause you to feel especially vulnerable. . . .
>
> I am proud to work alongside all of you in this public mission. Our shared values and commitment to justice and dignity strengthen our community, help us serve and support one another, and equip us to carry out our work for the American people. Thank you for all you are doing to help serve each other and the public.

I think we should have our mutes on. If—I can hear some pleasant background noise there, so—[laughter]. Thank you.

Many, many—indeed, perhaps all of you—made similar internal statements, and appropriately so. I think it's important that we, as leaders of the Federal Reserve System, continue to communicate with force and clarity about our values and our unflinching commitment to pursue those values in our work as we pursue our mandated goals. That includes the Board, the presidents, and anyone in a leadership role in any of our institutions.

Tomorrow's press conference is going to be my first public appearance since the uproar that began over George Floyd's death, and I will say, at the end of my opening statement, the following:

I want to acknowledge the tragic events that have again put a spotlight on the pain of racial injustice in this country. The Federal Reserve serves the entire nation. We operate in, and are part of, many of the communities across the country where Americans are grappling with and expressing themselves on issues of racial equality. I speak for my colleagues throughout the Federal Reserve System when I say that there is no place at the Federal Reserve for racism and there should be no place for it in our society. Everyone deserves the opportunity to participate fully in our society and in our economy.

These foundational principles guide us in all we do, from monetary policy to our focus on diversity and inclusion in our workplace, and to our work regulating and supervising banks to ensure fair access to credit around the country. We will take this opportunity to renew our steadfast commitment to these principles, making sure that we are playing our part.

We understand that the work of the Federal Reserve touches communities, families, and businesses across the country. Everything we do is in service to our public mission. We are committed to using our full range of tools to support the economy and to help assure that the recovery from this difficult period will be as robust as possible.

Let us now move to the first of our briefings. First up is our discussion of forward guidance, asset purchases, and yield curve targets. We'll have two staff briefings by Matthias Paustian and Paul Wood followed by a go-round. Matthias, would you like to begin?

MR. PAUSTIAN.[1] Thank you, Chair Powell. I will be referring to "Material for Briefing on Forward Guidance, Asset Purchases, and Yield Caps or Targets." I'll summarize the analysis of forward guidance and of large-scale asset purchase policies that we presented in the staff memo "Macroeconomic Effects of Alternative Monetary Policies in Pandemic-Driven Recession Scenarios." The simulations I will review use the April Tealbook projection as the baseline.

In our forward guidance simulations, which are shown on slide 2, we consider forward guidance in the form of credible announcements that policymakers will delay departure from the ELB until some specific improvement in the labor market or inflation has been achieved; thereafter, the federal funds rate follows the baseline policy rule. The Tealbook projection, shown by the blue line in all the panels, includes such forward guidance—namely, that the federal funds rate will stay at the ELB until the unemployment rate has fallen to 4.3 percent, which occurs in early 2023 in the baseline. In this presentation, we consider an alternative unemployment rate threshold of 3.8 percent, and core PCE inflation thresholds of 2 percent and 2¼ percent that may provide further accommodation. In our forward guidance

[1] The materials used by Messrs. Paustian and Wood are appended to this transcript (appendix 1).

simulations, we hold the size of the SOMA portfolio at its path in the April Tealbook baseline.

As shown in the upper-left panel of slide 2, the 3.8 percent unemployment rate threshold, the dash-dot red line, and the 2 percent core inflation threshold, the dotted black line, both prescribe departing from the ELB in early 2024—one year later than in the April Tealbook, the solid blue line. Because both policies use the same rule after liftoff, the similar policy rate paths over the longer horizon yield similar macroeconomic outcomes. In particular, the inset box in the lower-left panel shows that the longer ELB spell lowers the unemployment rate an extra ½ percentage point by 2025 compared with the baseline. The near-term effects on unemployment are small, however, because real activity responds slowly to policy actions in the FRB/US model. Because we assume that price and wage setters are forward looking, the anticipation of less resource slack over the medium term than in the baseline results in upward near-term pressure on prices and wages. The lower-right panel shows that core inflation under these two thresholds is a touch higher than in the baseline in coming years, but it nonetheless does not return to 2 percent until mid-2023.

Under a 2¼ percent core inflation threshold, the dashed yellow lines, the federal funds rate stays at the ELB until early 2025—two years later than in the baseline. The later ELB departure leads to a more pronounced decline in the unemployment rate, to below 3 percent by 2024. Core inflation returns to the 2 percent goal in 2022, about two years earlier than in the baseline, before modestly overshooting that goal for several years.

Your next slide presents two illustrative LSAP programs. Under LSAP program 1, we assume purchases of $110 billion per month of Treasury securities and agency MBS over the coming 12 months. As a result, the Federal Reserve's asset holdings, reported in the upper-left panel, expand $1.3 trillion, or 6 percent of GDP, more than in the April Tealbook baseline. Under LSAP program 2, purchases are at a pace of $150 billion per month for 18 months, resulting in an extra $2.7 trillion, or 13 percent of GDP, in asset holdings.

The upper-right panel shows the total term premium effect of Federal Reserve asset holdings on the 10-year Treasury yield. Under LSAP program 1, the effect on the 10-year term premium is about 30 basis points more negative, on average, over the next three years than under the April Tealbook baseline. Thanks to these more accommodative financial conditions, the unemployment rate, shown in the lower-left panel, declines a bit more rapidly over the medium term than under the baseline, hastening the departure of the federal funds rate from the ELB by one quarter, not shown. As shown in the lower-right, core inflation is a bit higher than under the baseline over the medium term.

Under LSAP program 2, the 10-year total term premium effect is about 65 basis points more negative at the end of the medium term than under the April baseline. Under this more forceful program, the unemployment rate declines a touch more than under LSAP program 1 over the next several years, while inflation runs modestly higher, peaking at 2¼ percent in 2025. Consistent with this stronger economic outlook, the federal funds rate, not shown, departs the ELB half a year sooner than under the April baseline.

Slide 4 presents some key messages and caveats. To speed up the recovery, policymakers in our simulations must maintain accommodative financial conditions for many years—possibly even after unemployment and inflation have returned to their longer-run levels. Under the second-wave scenario that is discussed in the memo, monetary policy would need to be accommodative for even longer than under the April Tealbook baseline.

Of course, the effectiveness of policy measures in our simulations depends importantly on our modeling assumptions, not all of which may hold in the current extraordinary circumstances. For example, forceful policy announcements may bring more immediate benefits than in our model—say, by cementing private-sector expectations around better outcomes or by reducing perceived tail risks. Price and wage setters may be less forward looking than we have assumed, in which case a prompt achievement of the 2 percent inflation goal would require even stronger policy measures. Additionally, in a low interest rate environment, longer-term nominal interest rates may be subject to a lower bound—a factor possibly limiting policymakers' ability to apply downward pressure on term premiums through LSAPs.

This concludes my prepared remarks. Now Paul will review the international and U.S. experience with yield caps or targets.

MR. WOOD. Thank you, Matthias. As the Committee considers policy options in response to the recession, it may be instructive to look at policies that have been used in other settings. I will discuss the memo "Lessons on Yield Caps or Targets from International and U.S. Experience," starting on slide 6. The memo reviews the experience of the Federal Reserve in the 1940s and the more recent experiences of the Bank of Japan and the Reserve Bank of Australia in directly managing the yields of government securities. Each of these central banks was trying to solve a different problem, so the objectives of their yield caps or targets have varied.

In 1942, as the U.S. government ramped up spending for World War II, the Federal Reserve capped yields across the curve to keep Treasury borrowing costs low and stable.

The Bank of Japan faced a different problem in 2016 as it sought to make ongoing stimulus more sustainable. After years of large-scale asset purchases, the BOJ held 40 percent of outstanding Japanese government bonds, and its overnight policy rate was negative 10 basis points. With 10-year yields as low as negative 25 basis points, the BOJ became concerned about the adverse effect on Japanese financial institutions of an "excessive decline and flattening of the yield curve." To regain a slightly positive yield curve slope, the BOJ targeted the 10-year yield at zero.

More recently, the Reserve Bank of Australia faced a situation similar to the Fed's current circumstances. In mid-March of this year, in response to the pandemic, the RBA board cut its overnight cash rate to 0.25 percent and gave forward guidance that the rate would not increase "until progress is being made towards full employment and it is confident that inflation will be sustainably within the 2 to 3 percent target band." To further support the economy, the RBA announced a 0.25 percent target for the three-year yield, "as it influences funding rates across much of the Australian economy" and is "consistent with the Board's expectation that the cash rate will remain at its current level for some years."

What can we learn from these experiences? First, as discussed in slide 7, a credible cap or target can control medium- to long-term government bond yields, pass through to private rates, and may not require large and protracted purchases. As shown in the left chart, the BOJ was able to reduce its pace of purchases over time from ¥80 trillion per year to less than ¥20 trillion. As shown to the right, the RBA's purchases tapered quickly as the three-year yield settled at 0.25 percent.

Second, a yield target can operate alongside purchases to meet other objectives. As the RBA bought bonds on the short end, the red bars, to achieve the 3-year yield target, it also bought longer-dated and state bonds to improve market functioning. Similarly, the BOJ has maintained its 10-year target as it also continued large-scale asset purchases—including a range of private-sector assets—aimed at stimulating the economy in various ways.

Slide 8 discusses a few design features and exit challenges. First, both the BOJ and the RBA allow some variation around their yield targets. The BOJ initially allowed 10-year yields to move in an informal band of plus or minus 10 basis points around zero. In July 2018, the BOJ doubled that band, aiming to encourage trading in the secondary market for Japanese government bonds. The RBA has not indicated how much variation it would tolerate.

Second, although the BOJ and RBA describe their targets as symmetric, they tend to be asymmetric in practice. When yields have neared the top of its band, the BOJ has, on occasion, offered to buy unlimited amounts at a fixed rate. In contrast, the BOJ has not sold bonds when the 10-year yield moved to the bottom of the band, in part because that could be seen as withdrawing stimulus.

Third, conditioning exit on economic outcomes may pose challenges. Progress toward policy objectives can pressure yields higher if investors perceive the target as inconsistent with fundamentals or expect it to be removed, and this could force increased central bank purchases to maintain the policy stance.

More broadly, as discussed in the final slide, by committing to manage yields on securities with particular maturities, the central bank allows its balance sheet to be determined by market demand for those securities and by government issuance. The historical experience of the Federal Reserve during World War II demonstrates this point. The Federal Reserve established caps with a significant upward slope, from ⅜ percent at 3 months to 2½ percent at 25 years or longer. With volatility held down, investors moved out of bills and into bonds to obtain higher yields, while the Treasury issued securities across the curve. Amid steady pressure on the bill rate cap, the Federal Reserve absorbed 75 percent of Treasury bills by 1945.

This historical experience also highlights that directly managing yields can bring monetary policy into conflict with the government's debt management objectives. After the war ended, the Federal Reserve wanted to lift its yield caps to prevent rising inflation, while the government sought to keep financing costs low for the large debt built up during the war. The Federal Reseve did lift the bill rate cap in 1947—which shifted investor demand toward the short end—but the Fed bought long-term bonds to maintain the cap on long-term rates. The Fed negotiated with the Treasury periodic changes to the intermediate-rate caps, but this process made setting appropriate monetary policy challenging. It was not until the Treasury–Federal Reserve Accord in 1951 that the Federal Reserve really regained independent monetary policy. Thank you. That concludes my remarks.

CHAIR POWELL. Thank you, Matthias. Thank you, Paul. This is the time for any questions there may be for our briefers. If you have a question, you can type the word "question." President Kashkari.

MR. KASHKARI. Thank you, Mr. Chair. I was just curious—to the presenters: There wasn't much discussion in the memo of *r**. There was some, and there wasn't much discussion of short-run *r**. I'm just curious, as you think about where short-run *r** might be today, are these tools effective in actually getting the effective federal funds rate below—I mean, are we actually going to be providing accommodation, or are we still constrained so we're not actually providing accommodation? I'm expecting that short-run *r** has fallen a lot. How close do you think we get to making up that gap? Thank you.

MR. PAUSTIAN. That's a difficult question. I haven't seen any model results on this. We estimated that, in the Great Recession, short-run *r** was highly negative—I believe on the order of minus 6 percent, minus 8 percent, or so—in the short run. It's really difficult, in the current situation, to think about short-run *r** because part of the pandemic is to—you know, we have supply effects there, too, so I can't really make a good judgment other than acknowledge that I think this is a really, really difficult situation to get a sense of what the right short-run r^* is and how much accommodation the FOMC can provide.

CHAIR POWELL. Further questions? Either on the Skype session or—if you want to just wave your hand, that's okay, too. [No response] Okay. Seeing none, let's begin our go-round on these matters, starting with Governor Clarida, please.

MR. CLARIDA. Thank you, Chair Powell. For this meeting, the staff has prepared two excellent memos that are both timely and substantive. I will begin my comments with some general observations on our initial economic conditions that the Committee confronts and the toolkit we can deploy to achieve our dual-mandate goals. I'll then offer some specific thoughts on the forward guidance and LSAP memo and the yield curve control memo.

Even allowing for a robust recovery to commence in the third quarter, the U.S. economy may well end the year 2020 with an unemployment rate near 10 percent, with core PCE close to 100 basis points below our target, and with an output gap of at least 7 percent of GDP. If so, we will enter 2021 further away from our dual-mandate goals than we were entering 2009.

In paragraph 1 of our current FOMC statement, we say we are committed to using our full range of tools to help achieve our objectives. To state the obvious—and piggybacking on something Neel just said—we're at the effective lower bound now and likely to be here for some time, and the ELB is a binding constraint, and so it's going to be important for us to rely on other tools. Indeed, that's all we can do—we can't rely on cutting rates. In particular, we'll need to be ready to consider using tools that are both familiar and perhaps also untried, and we may need to deploy bold and creative variants of both forward guidance and balance sheet policy to have a fighting chance of achieving our dual-mandate goals over any reasonable time horizon.

Now, especially with regard to balance sheet policy, there are certainly costs as well as benefits, and I am on record as recently as January of this year commenting that, with respect to the Federal Reserve's GFC balance sheet programs, the benefits to me appear to decline, and the costs appear to rise. But in the circumstances that we now confront, I recognize—and I think these memos do support the view—that while there may be diminishing returns to balance sheet policy, the benefits remain positive, especially when compared against the cost of falling further short of both pillars of our dual mandate.

With regard to the forward guidance and LSAP memo, the authors consider several variants of threshold forward guidance. In the baseline variant, the FOMC is presumed not to lift off from the ELB until the unemployment rate reaches the staff's estimate of long-run u^*, 4.3 percent. This is, in effect, a baseline very similar to what the FOMC did in 2015 when it lifted off from the ELB when the unemployment rate was in the neighborhood of the Committee's estimate of long-run u^*, but, of course, well before core PCE inflation had risen to 2 percent.

In this baseline, as was the case in 2015, the Fed begins to hike before core inflation reaches 2 percent. In other variants in the memo, the Committee would delay liftoff until an inflation threshold of either 2 percent or 2¼ percent is reached. The 2 percent threshold delays liftoff by about a year in the simulations, and the 2¼ percent threshold delays liftoff by about two years—four years after hitting the ELB. In the staff simulations, both inflation threshold policies result in a modest overshoot of the 2 percent inflation target. A notable feature of these simulations is that the inflation thresholds have a material effect on actual inflation years before the thresholds are reached, an insight due originally to work by Reifschneider and Williams.

Achieving this outcome would depend on the public and markets believing that the Fed, unlike in 2015, would not lift off until the inflation threshold had been crossed. And I point out, in this model, the inflation threshold is always crossed after the unemployment threshold, given the Phillips curve structure. In my judgment—and I know this is for a future meeting—considering a revision to our consensus statement that would allow for such an overshoot under circumstances similar to what we face today would greatly enhance the credibility of such a policy.

The memo also considers two different LSAP programs, and I'll focus on the second one, which would entail a substantial increase in the Federal Reserve's balance sheet split between Treasury securities and MBS. In these simulations, the LSAP program is paired with a liftoff rule for the policy rate. And that's an important insight. You can't think about these tools in isolation; you have to think about them as a package. In the simulations, the large LSAP program, when paired with other policies, again leads to a persistent but moderate overshoot of the inflation target and tends to push up inflation before the other thresholds are reached. Again, I think if we were to consider something like this, it would be important to pair it with some revisions to our consensus statement.

Regarding the yield curve control memo, it offers valuable cross-country comparisons of how yield curve control is being implemented and practiced at the BOJ and, since March of this year, by the RBA. It also offers a concise review of the U.S. experience with yield curve control during and after World War II.

I'll focus my comments on the BOJ and RBA experience, as these seem more directly relevant to the circumstances we confront today. In the case of Australia, the RBA is using yield curve control as a complement to calendar-based forward guidance on the policy rate. In the case of Japan, the introduction of yield curve control appears to have been motivated by a desire to scale back the amount of JGB purchases required to achieve the goals of their QE program.

One thing that both Japan and Australia do share in common is that neither has put in place a regime of formal yield curve caps. Indeed, the RBA has noted that their judgment is that it would not make sense to counter natural variation of yields on three-year bonds around its target yield of 25 basis points. The BOJ as well has expressed its yield curve control regime in essence as a target of zero with a range of plus or minus 10 or even 20 basis points. In the case of Japan, it does appear as though yield curve control has enabled the BOJ to scale back the amount of purchases required relative to the pre–yield curve control experience. And in the case of the RBA, obviously, they have only recently begun. It has continued open market purchases along the entire curve for market-functioning purposes.

To conclude, what I take away from all of this on yield curve control is that I do think of it as complement to other policies that we might consider. That said, it would seem that implementing yield curve control in a regime with threshold guidance on rates could be more complex to implement and communicate. And I believe we would benefit from further discussion of yield curve control in the staff briefings, focused on potential options for implementing in the United States. Thank you, Chair Powell.

CHAIR POWELL. Thank you. President Harker, please.

MR. HARKER. Thank you, Mr. Chair. First, I want to thank the staff as well for their work on the excellent memos. I agree with the staff analysis that forward guidance and LSAPs are unlikely to provide much more additional accommodation. Beyond the specifics of the models, a simple look at the Treasury yield curve and market expectations for policy already show that there is not a lot more accommodation to provide unless we go really far out on the yield curve.

Consistent with this, the memo finds that the forward guidance would require a commitment to extraordinarily long horizons for any meaningful improvement to the outlook, a commitment that I am uncomfortable with. LSAPs perhaps have a bit more left to give, and the expected increase in Treasury security issuance effectively gives us a bit more policy space, though it make take all the LSAPs we can do to keep in the same place, if I may paraphrase the Red Queen in *Alice in Wonderland*. In short, there are no bazookas left in our unconventional but tested toolkit.

As a protracted recovery looms, we definitely should look at all options. And if there is time to be bold, as Governor Clarida said, this is it. That said, I am skeptical about yield curve control. Simply put, it does not seem advisable to subordinate a tested tool—LSAPs—to an untested one—yield curve control—for what appear to be meager gains that come with an array of significant risks and challenges.

One obvious risk is that markets will put pressure on our yield target, requiring large increases in our asset holdings, potentially leaving our balance sheet with a very uneven maturity composition. Yet I am also concerned about what yield curve control could do to market functioning and the private sector's balance sheet.

As our previous experience during the Second World War with yield curve controls shows, banks and investors may aggressively shift the maturity of their Treasury security holdings and in somewhat unpredictable ways. This could lead to difficulties at exit and an excessive "footprint" in some markets for Treasury securities.

I am also concerned that yield curve control requires a degree of coordination with the Treasury that may prove difficult to achieve. I'm also wary about onboarding yield curve control in our day-to-day monetary policy decisions. We may be reducing market volatility of, say, the five-year Treasury yield, but we're adding policy uncertainty to it. I would rather direct monetary policy to interest rate levels that are governed by a well-communicated path of short rates than through influencing term premiums, and I do not see large gains that offset these concerns. Treasury rates are already very low, and a cap of 50 basis points would not bind for any maturity shorter than five years. Beyond that tenor, yield curve control seems simply unfeasible. Optimistically, we may gain something—10 or 20 basis points in accommodation.

I do see how yield curve control would reinforce forward guidance, but there is no indication that our forward guidance needs any reinforcing. This Committee has given credible forward guidance in the past and should be able to do so again without the need of major works of financial engineering. I could also see how yield curve control could help to limit the size of LSAPs. But that's, again, a solution to a problem that I don't believe we have, and we still have room to grow our balance sheet.

So, to summarize, yield curve control comes with large challenges, risks, and unknowns, and I do not see meaningful advantages. And while I would never say never to a tool because we never know what we're going to face, at this point I don't see implementing yield curve control in the short-to-medium run. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Evans, please.

MR. EVANS. Thank you, Mr. Chair. I'd like to say it's good to see my "map" colleagues up close and so personal—interesting technology. Thank you to the staff for the memos; they helped clarify my thinking on a number of issues.

Clearly, tools other than the setting of the federal funds rate will play an important role in monetary policy over the next few years, and completing our update to the long-run strategic framework will be vitally important. In my baseline scenario, which may be optimistic, I have the economy returning to the 2019 fourth-quarter level of GDP around 2022. But even when that milestone is achieved, the unemployment rate will likely be 5 percent or higher, and inflation will still be below 2 percent. As a central bank charged with achieving price stability, we need to get to 2 percent inflation and then generate an overshoot to be true to our symmetric target. A great deal of work lies ahead to fulfill both sides of our dual mandate.

The first memo presents forward guidance and asset purchases scenarios that are able to get inflation to 2 percent by 2022 or ’23. This seems optimistic to me. As the memo points out, there are many caveats to that trajectory. Importantly, if expectations are more dependent on current and past economic conditions, stronger accommodative actions would be needed. Of course, this is in the baseline health scenario.

In the memo’s second-wave virus scenario, the FOMC will need to promise to hold the funds rate at zero for 10 years with full credibility to get inflation to 2 percent. I think this result highlights the point that addressing such severe economic conditions will almost certainly require even more aggressive and persistent fiscal policy responses than we’ve seen so far.

Nevertheless, fighting persistently low inflation under all conditions is the responsibility of the monetary authority. What tools should we bring to this job? First, completing the review of our long-run framework will be key. Our updated framework should clarify our inflation objective, explicitly stating that it’s two-sided in nature and that we are willing to overshoot 2 percent. I think we need strong language here, but that discussion is for another day. Also, we need to update what we mean by “maximum employment” and how we would respond to stronger labor market conditions by emphasizing employment shortfalls rather than the long-run normal unemployment rates.

Second, there are operational tools under discussion today: forward guidance, asset purchases, and yield curve control. Over the past dozen years, we've gained a lot of experience with forward guidance and asset purchases. Our policy experts have studied them, and the FOMC and other central banks have deployed both tools extensively.

We have a pretty good idea of their strengths and their limitations. Yield curve control is much less understood. I have many more questions than confident answers. I can imagine this tool usefully amplifying our policy intentions, perhaps without adding lots of long-duration assets, but I can also see many difficulties in its use. The details will be important. And whether we're talking about asset purchases or yield curve control—especially at the long end of the curve—our plans for the balance sheet will be an important determinant of success.

My questions about yield curve control include which maturities to target and how to design a cap structure that's robust to changing economic conditions. If the Committee was committing to a flat policy rate for a fixed calendar period, then a reasonable argument could be made for a cap over the corresponding part of the yield curve. This could bolster the credibility of our commitment to a flat rate path if the public was skeptical about it. But if there's little doubt about this commitment, the added value of the yield curve cap is unclear to me.

With regard to targeting rates further out on the curve, the endogenous nature of longer-maturity nominal yields makes me nervous. For example, upward pressure on long rates could be a strong signal of policy success. Inflation expectations could be improving or real rates could be rising due a stronger economic situation. In such cases, the Desk would have to purchase assets to defend the peg. The stronger the state of real economic growth or inflation is, the more assets we would have to buy. This highlights how a critical ingredient of yield curve control is accepting what it might mean for the balance sheet. If we are hesitant to do that, then I'm concerned that the policy wouldn't deliver the desired accommodation in the first place.

Then there's a question of exit. Before we start with any yield curve control approach, we will need to think hard about how to ultimately end the peg. I'm open minded, but simply announcing an end to a peg seems problematic. And particularly if we wanted an outcome-based policy, I suspect designing a smooth exit strategy may be pretty complicated and difficult to execute. I think Vice Chair Clarida put it well when he said the interaction with forward guidance could make that particularly tricky. Missteps would impair needed credibility, so I would like to see more staff analysis on this topic.

In conclusion, our long-run framework review will provide a solid foundation for our policy actions. When the time comes for us to adjust policy tools, I'm comfortable with our ability to design a program of forward guidance and asset purchases appropriate to the situation. I will note that the forward guidance threshold approach in which we keep the funds rate where it is until inflation is above 2¼ percent, on page 2 of the handout, had the most prompt inflation overshoot of 2 percent to the forward guidance that we saw.

I could see rate caps at the shortest end of the curve playing a minor complementary role, but I am less confident about designing an effective strategy for controlling endogenous market rates very far out. I will admit that taking duration out of the market may be less important now than it was after the great financial crisis. If yield curve control can help thread the needle, that would be useful. So I have more questions.

All this said, considering the pandemic risks and rising social unrest, my deeper concern at the moment is that our monetary policy decisions will be of second-order importance. If the current reopenings compromise health and safety objectives, if the virus spreads and more hotspots emerge, and if consumers begin to hold back because of numerous fears, then worse economic scenarios will take hold. We can help, but it will take a lot more than monetary policy action to address this level of economic distress. Only strong fiscal actions, greatly improved public health solutions, and strong leadership can truly deliver better economic outcomes. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Rosengren, please.

MR. ROSENGREN. Thank you, Mr. Chair. Asset purchases have been very helpful in addressing the recent disruptions in the Treasury securities markets and MBS markets. Both these markets have settled down. The problems created by panic selling are now behind us, and the two-year and five-year Treasury rates are below 25 basis points and 50 basis points, respectively.

As a result, limited room remains for further reductions of these rates, as Presidents Harker and Evans have just discussed. While purchases of securities can help offset upward pressure on rates from significant Treasury debt issuance or news consistent with an improving economy—such as experienced last Friday with the release of the May employment report—I view the current economic effect of Treasury security purchases to be limited by how low rates already have fallen.

Committing to additional purchases will be helpful and should be done, but for now, the major effect is likely to be from the communications and forward guidance that accompany the purchases. I would provide forward guidance indicating that we plan to keep the federal funds rate at the effective lower bound and to conduct purchases of MBS and longer-dated Treasury securities at least until the unemployment rate is in the range of full employment.

Given how high the unemployment rate is currently, such guidance will clearly signal that asset purchases and low short-term interest rates will provide stimulus to the real economy for an extended period of time. I would note that since the spreads embedded in private-sector interest rates relative to Treasury rates are particularly large at present, using 13(3) facilities to reduce those spreads may be our most potent policy tool at this time.

For question 2, rate targets and yield curve tools can be very useful. In effect, they can provide a combination of forward guidance and QE directed at a particular segment of the yield curve. Targeting rates can be particularly effective if shorter-dated Treasury yields remain elevated when the federal funds rate has already been lowered to the lower bound.

Under current conditions, however, short-term Treasury rates are relatively low, and the market already seems convinced that the federal funds rate will remain at the lower bound for some time. I would therefore prefer the flexibility to purchase across the yield curve and would approve of policies that make more open-ended purchases, possibly concentrating purchases at longer maturities to maximize their economic effect.

Thus, while deploying yield curve control at this time may not be as effective as asset purchases combined with strong forward guidance, I would certainly not rule out yield curve control or targeting rates if financial conditions change. I would note that choosing yield curve control or targeting interest rates can also result in a more complicated exit strategy but may be worth doing if rates remain higher than is justified by appropriate policy.

To the third question, at this time, the most effective tools would be strong forward guidance accompanied by open-ended purchases tied to economic outcomes. Personally, I would prefer an unemployment rate trigger. Perhaps more importantly, we should continue to explore how we can use 13(3) facilities to narrow the large spreads on private-sector instruments relative to Treasury rates, which, in conjunction with the current policy commitments, should result in a quicker return to both elements of the dual mandate. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bostic, please.

MR. BOSTIC. Thank you, Mr. Chair. I'd like to begin by thanking the staff for producing the thoughtful memos. They frame the issues in ways that help me think about them in a more structured way, and that allows me to speak to the questions at hand with more clarity.

As generic tools, forward guidance and large-scale asset purchases are certainly among the primary tools for policy at the effective lower bound. We have had the benefit of some experience with these tools over the past decade, and that experience has shown them to be effective. However, as the memo discusses, the efficacy of these tools in the current crisis is still uncertain and will depend on details, especially those related to economic conditionality, monetary policy transmission, and communication.

As an aside, I think we should view communication as a tool in its own right, a complement to these other tools. And by "communication," I mean everything from the wording of the forward guidance and our large-scale asset purchase programs in the statement to the portfolio of press conferences, speeches, testimonies, SEPs, and other events in which we are collectively engaged.

There are a few different objectives for communication: to align the understanding of the Committee's current and future response function in the eyes of market participants, business, and households, with the understanding of the Committee; to enhance the credibility of any statement related to future actions and responses; and to balance the understanding and credibility with flexibility to adapt to changing conditions, among others.

The first memo nicely lays out several alternatives for forward guidance and asset purchases, and it describes various interpretations of these alternatives by the public and how those interpretations might affect attainment of the dual-mandate goals. What I'm struggling with is how to bring some analytical structure to this discussion of potential public interpretations. For example, in the memo, the forward guidance alternatives have economic conditionality, but the asset purchase programs are based on amounts and dates.

Does this matter? Can we use them together effectively? And, if so, does this rely on a particular layering of the tools—first, forward guidance, and then asset purchases? Can we articulate a strategy for deploying these tools so that communication is more cohesive and clear? And what would a communication strategy that complements the tool strategy look like?

To compound these questions about the role of communication, like others, I am also concerned about the limited potency of these tools related to their previous usage following the financial crisis. When the FOMC began using date-based forward guidance in August 2011, the 10-year Treasury rate was at 2.3 percent. Given that the rate now sits at approximately 0.9 percent, what does that imply for the efficacy of our forward guidance and asset purchase tools in the current situation?

My big-picture "takeaway" from reading this memo is that it seems clear that, across a variety of policy alternatives, we are likely to find ourselves at the ELB for years—and may well confront an ELB on long-term rates. Given our experience over the past decade with rates at or near the effective lower bound and persistently low inflation, I am finding myself wanting to know much more about our understanding of the monetary policy transmission mechanism. In particular, what are our options for action if long rates stay very low, the yield curve remains flat, and the economy receives another shock?

Regarding targeting of interest rates along the yield curve, I began reading the memo with two questions in my head. What are we trying to accomplish with this tool? And what are the costs and benefits related to other alternatives? On the first question, the memo mentions four possible objectives: reinforcing forward guidance near the ELB, maintaining low rates throughout the economy, improving the functioning of the market for Treasury securities, and facilitating coordination with the Treasury related to the composition of new debt issuance.

All four of these overlap with potential objectives for a large-scale asset purchase program. In other words, it seems that yield curve targeting is, for the United States right now, more of a potential substitute for large-scale asset purchases than a complement. Put more directly, I currently do not see a case for viewing yield curve targeting as an independent tool that can be effective in, say, a potential scenario in which large-scale asset purchases were done but did not achieve the sufficient progress toward our policy goals. If I am missing something here, I would appreciate more work by the staff to flesh this out.

That brings us to the question of how yield curve targeting compares with large-scale asset purchases and its ability to achieve the four objectives. My staff and I spent some time exploring this issue and came up with a few preliminary observations and more questions. First, large-scale asset purchases seem to have worked well this spring to improve the functioning in the Treasury securities market. When it is not the level of yield, *per se*, but liquidity that is an issue, the asset purchase program can be flexible and effective in ways that yield curve targeting cannot.

Second, in terms of reinforcing forward guidance, one clear difference between using asset purchases versus yield curve targeting with forward guidance on the overnight rate is that yield curve targeting could well involve sales even during the period of forward guidance. This may pose a direct communication challenge, but likely one that could be handled.

An additional related communication question: Would the public perhaps perceive a stronger commitment on our behalf of doing whatever it takes with the yield curve targeting than with a large-scale asset purchase program? How can we judge whether this is likely to be true? And how could we use communication to support that perception if it were indeed what we meant? On this point, Japan's experience with yield curve targeting suggests that market perceptions of targeting could result in a smaller increase in the balance sheet than under the use of asset purchases. To the extent that the balance sheet size is an issue, yield curve targeting might be preferable. I would note, though, that questions remain as to whether the efficacy of the Federal Reserve yield curve targeting program would match the effectiveness seen in Japan.

Finally, does the fact that yield curve targeting is price based while large-scale asset purchases are quantity based imply any differences in operations and market function effects? If we were to seriously consider yield curve targeting, I would like to see some staff analysis of what it would take to defend the target in terms of potential weekly operation sizes and whether operational details like CUSIP limits would be problematic.

Also, what might be the risks to committing to a program in which our purchase and sale activity is responding to market forces in the longer part of the curve? We've always had a "do no harm" stance toward the Treasury and operationalize that by striving to be transparent and as predictable as possible in our purchase schedule. It seems to me that yield curve targeting would make our Desk operations much less predictable on a weekly and monthly basis, and I am curious to know what the ramifications of that would be for financial markets.

In sum, I see forward guidance and large-scale asset purchases as our primary frontline tools to provide further accommodation when it is warranted at the ELB. For me right now, there are still many questions to be answered before I can assess the relative merits of yield curve targeting as a substitute for asset purchases. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bullard, please.

MR. BULLARD. Thank you, Mr. Chair. I have just a few remarks on the possible roles for forward guidance, large-scale asset purchases, and yield curve targeting. My first remark is that I believe we are currently benefiting from the 2007–16 era of monetary policy in the United States to an extraordinary degree. That era showed that the FOMC was willing to keep rates at historically low levels for many years, so long as inflation pressures remained muted.

In the end, there was no sustained liftoff of the policy rate until 2017. The peak unemployment rate for the 2007–09 shock was 10 percent, whereas today the unemployment rate is substantially higher, so that by this and other metrics, the current shock is much sharper than the one experienced from 2007 to 2009. And after the 2007–09 period, the challenge was to get markets to expect that the FOMC would keep rates low, and that inflation pressure was likely to remain muted.

As a consequence of the actions of this Committee from 2007 to 2016, in the present situation, financial markets and macroeconomic observers arguably already expect that the FOMC will keep the policy rate low for a very long time—and here I'm agreeing with President Harker and others—and that inflation pressure will likely remain muted during the period when the policy rate is at the effective lower bound. Medium- and longer-term Treasury yield expectations are, at least for now, about where we'd like them to be as an appropriate reflection of the intent of the Committee's future settings of the policy rate and the likely accompanying inflation developments. In short, we enjoy an advantage in the current situation that we did not have during the 2007–09 period.

A corollary to this thought is that we should perhaps expect additional forward guidance and additional LSAPs to appear to be ineffective relative to previous implementations, as they are likely to be widely anticipated this time around. This may appear to be worrisome, but actually it may be a benefit of this Committee's aggressive actions during the 2007–16 period.

As a bottom line, in my judgment, we can afford to wait and see, with respect to yield curve targeting measures at this juncture. They may be needed if an expectation developed in markets that the FOMC intended to pursue a premature liftoff, but that does not appear to be the expectation at this time.

I have several broader remarks on yield curve targeting. An important drawback is that yield curve targeting may prove to be incompatible with central bank independence. Central banks that lose their ability to act independently from the rest of government have a very poor track record with respect to macroeconomic goals like inflation control and stable labor markets.

A benefit of yield curve targeting is that it can be effective without large-scale asset purchases, and here I am going to echo Governor Clarida and others. In Japan, yield curve targeting effectively replaced a state-based asset purchase program in which the desired state was 2 percent inflation. I think it's a caution for us all, when we're thinking about state-based policy, to name states that we think we can achieve, because Japan has been caught by naming a target that they haven't been able to achieve. When that level of inflation failed to materialize, it made sense to target yields directly and conserve on purchases of JGBs. This has been "successful" in some ways, but not in attaining the 2 percent inflation goal. It's not clear to me that we are in the Bank of Japan situation at this juncture.

On the notion that yield curve targets have effectively been caps, I would comment that in the United States, in the 1940s experience, caps were arguably not binding for much of the period. My suggestion is that nonbinding caps are unlikely to be very effective, as they change the equilibrium only in certain states of the world and only if they are completely credible in those particular states. Much depends on exactly what these states are and the precise location of the caps.

Theory would suggest that there is a “correct” yield curve from the policymaker’s perspective, taking as given the future intended policy rate path, along with the expected future evolution of the economy. Setting yield curve policy targets equal to this correct yield curve would likely work well, because these are the very same yields that would be the equilibrium outcomes in a competitive equilibrium with a given policy path—here, I am echoing President Evans a little bit. However, this would require the Committee to adjust these yield curve targets’ values each period as the economy continues to evolve. Failure to adjust appropriately could lead to seemingly odd behavior, such as market participants wishing to hold only fixed-price short-term debt or only fixed-price medium-term debt or only fixed-price longer-term debt, because the relative prices between these debt types are inappropriate for the situation, as they have not been adjusted in response to the changing environment.

This seems to have actually happened in the United States’ wartime and postwar experience in the 1940s, and this was covered a little bit in today’s presentation. So I guess the point would be that, if you want to do yield curve control, you’re going to have to adjust the targets in an appropriate way at each juncture. The 1940s experience, I would note, ended in an unsatisfactory way. Contemporaries were unhappy after the war and with the policy that led up to the Treasury–Federal Reserve Accord, and subsequent scholarly research was also negative on the experience.

With respect to the idea of maintaining yield curve targeting as a way to provide forward guidance, I have long argued on this Committee that I generally prefer state-based to calendar-based guidance. I think it is hard to rationalize calendar-based guidance, which is somehow independent of actual economic events.

Nevertheless, the SEP could be viewed as a sort of calendar-based guidance, which has already been institutionalized, and it is not clear to me how new types of yield-curve-targeting forward guidance would interact with the SEP. It is true that yield curve targeting would name yields out the maturity structure that the Committee would like to see, but these proposed yields would also have to be consistent with a proposed future path of the policy rate coming from the SEP. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kaplan.

MR. KAPLAN. Thank you, Mr. Chair. My own view is that the experience since early 2000 suggests that forward guidance is a useful tool, and I think it is particularly effective when it is outcome based and not date based. I also think there is an argument that large-scale asset purchases have also been helpful in previous periods in pushing down longer-term yields, again, particularly if they involve open-ended purchases that are outcome based.

I would just comment regarding asset purchases, which I'm sure we'll debate more on another day. In the current situation that we're in, I'm very mindful that health-care policies may have more to do, at this stage, with driving economic outcomes than other policies, and that also fiscal policy is critical. And I do worry currently about the speculative nature that's developing in the financial markets. Put another way, I'm confident about the potent effects of asset purchases on financial markets. I'm a little less confident about the potent effects on economic outcomes. There is an effect, I'm convinced, but I would think we need to trade those two things off, and I'm a little worried at the moment about some of the things I see developing in the financial markets. Having said that, we're in the middle of a crisis, and we'll come back to that.

Regarding yield curve control, in debating this extensively with my team, I honestly have more questions and concerns than I do answers. I do understand the pro argument that, in a period when you've got very large and rising fiscal deficits and rising public debt, if Treasury yields start to be driven by that, I could see where the Federal Reserve is going to have to take a close look at that situation. Otherwise, I'm concerned about some of the destabilizing effects, potentially, of yield curve control, particularly if it's a forward commitment. Obviously, if the economy weakens, yields generally decline, and that puts less pressure on the central bank to purchase securities.

Conversely, as has been mentioned by others, I'm worried about a situation when the economy strengthens and yields tend to increase, and yet we've made a commitment potentially to a yield level—we're forced to increase asset purchases at a time when we actually don't want to be providing more stimulus. So, obviously, as others have said, the details of this will matter, but I'm worried about the implementation.

I also do worry about central bank independence. The 13(3) programs we've done have been, in my opinion, highly appropriate and needed, but I also am cognizant that they have blurred the line between Federal Reserve independence and Treasury functions. I think it was necessary in light of this crisis, but I'm very concerned about taking other steps which may further blur that line. I'm conscious of the fact that the last time yield curve control was done in the United States was during wartime, and I'm not sure that the current situation rises to that level at which it's worth jeopardizing or putting into question that independence.

As others have mentioned, I am extremely concerned, once you start yield curve control, how you wean the market off yield curve control. By the way, I have the same concern around asset purchases—how do you wean the market off them? But I'm particularly concerned about yield curve control, because, if the markets start to anticipate that we would like to exit, they obviously will take their own actions, which may complicate this exit. And we may be in a situation in which we're creating unintentionally negative effects on the financial markets and distorted effects because of that.

Other issues and questions I have—what is the effect of yield curve control on asset allocators and asset allocation? For those who want to balance owning Treasury securities against equity exposure, how does this affect asset allocations, what kind of distortions does this create, and what are the implications? We'll worry about the effects on the U.S. dollar, on currencies generally, and on confidence in currencies: Could this type of further action accelerate adoption of non-dollar-denominated or even digital reserve currencies?

I guess all these points are a way of saying, is yield curve control—and, by the way, also if we go too far with asset purchases—going to encourage the market to start asking even more than they are currently, is the Fed doing too much? Are we overdoing it? Is the Fed now becoming a crutch for the market, creating speculative activity, which will make it very hard then for us to withdraw and may even be a source of instability? All this while the Fed may be, due to yield curve control, potentially losing control of its balance sheet because of commitments we make.

I guess all this is a long way of saying, I would rather rely on forward guidance and asset purchases at this point. I'd be open minded about reconsidering, at a future date, yield curve control. But, as the Fed has already injected substantial liquidity into financial markets and Treasury rates appear to be muted, at least at the moment, I'd want to defer this debate on that point until we see the situation change.

And I continue to worry about the increasing disconnect between what's going on in the real economy and in the financial markets and what the implications are for that, in terms of Fed credibility and our ability to do what needs to be done to further drive and improve the economy to meet our dual-mandate objectives. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. President Barkin, please.

MR. BARKIN. Thank you, Mr. Chair. My perspectives on these tools are grounded in three beliefs. First, we're better off with more tools at our disposal to support public confidence that we can handle any eventuality. Second, we should promise only the effects we can credibly deliver. And, third, we should only use our tools when they're fit for the purpose—call that "horses for courses."

Overall, then, I'm happy to have forward guidance, asset purchases, and yield curve targeting in our toolkit when they are fit for the purpose. But, like many of the previous speakers, I'd counsel us against overpromising and overcommitting to them right now because, at least today, the flatness of the yield curve suggests to me they will have relatively lower effects.

On yield curve targeting, I admit to being intrigued by the scenarios in which we announce a target and actually avoid balance sheet purchases as the market reacts to our announcement. But I have to say, I don't think the challenge will be announcing the program, but will be—and President Evans and Kaplan have both gone there—announcing the end of the program. Exiting artificially influenced market rates can be messy—think foreign exchange pegs or even the taper tantrum—and the political exit can be messy, too. For more color, I highly recommend a piece by Richmond Fed alumnus Bob Hetzel and Ralph Leach on the drama associated with the 1951 Treasury–Fed Accord.

On LSAPs, my only caution is on the sizing of the effect. Tealbook B has continually estimated quite sizable term premium effects. I know we have sophisticated models, but my market contacts estimate the effect much more conservatively.

On forward guidance, the memo assumes a significant near-term inflation effect. Like President Evans, I guess I just wonder whether in fact that may or may not be the case. It also shows second-wave scenarios in which we don't have liftoff from the lower bound until as late as 2030. That made me ask whether our analyses fully assess the potential costs of an extended period at the lower bound. Intuitively, I think they're significant, and I'd appreciate any efforts the staff could take to make them more explicit. I'm thinking of costs like excess leverage, outlined in a recent NBER paper on indebted demand by Mian and coauthors; reach-for-yield behaviors, especially outside the banking system; market volatility; and a reduction in the effectiveness of intertemporal substitution.

As an aside, 2030 is a long time away. And 1928 and the Roaring Twenties surely felt a lot different than people would have imagined during the 1918 second wave of the previous pandemic. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President George, please.

MS. GEORGE. Thank you, Mr. Chairman. I want to first thank the staff for the work they've done to continue to provide high-quality analysis on these memos and, frankly, the

Tealbook too. When you think about not just working from home, but—I think about the staff who are working while parenting and while teaching and other kinds of caregiving, so my thanks for this work.

We've had extensive discussions over the past year about our monetary policy framework and how we might think about ways to provide further accommodation to the economy in the face of the ELB. That reality has unfortunately arrived at our doorstep, and I expect we will be faced with considering whether additional measures should be deployed to support the economy as it recovers from this historic shock and, if so, how.

Before discussing the merits of the different policy options, I think the current uncertain environment, with the historic amount of accommodation already delivered or in train, does not necessarily lead me to believe that further action is required. It will take some time for the dust to settle on the economy and also to judge the effectiveness of the actions that we've already taken. However, as part of that uncertainty, I'm also aware that downside risks could materialize, causing the economy to deteriorate rapidly once again. As such, now is the right time to have a discussion of our policy options, and I'll turn to the discussion questions posed in the staff memo.

Our playbook from the Great Recession already includes forward guidance and large-scale asset purchases. In that regard, it seems reasonable to consider these tools in conjunction with our interest rate policy, although their efficacy was debated then, and I expect it will be debated again. In today's context, I'm skeptical of the benefits of launching a new LSAP program that goes beyond market functioning and aims to provide further accommodation. Given the size of the balance sheet and already depressed term premiums, I'm not sure how much bang we would get for our buck.

Based on our previous experience with balance sheet policy, we know unwinding these purchases is difficult, as others have already noted. Any further additions, as with the increases we've already taken, stand a fair chance of sticking around for some time, with significant operational and political economy implications.

In the ranking of further policy accommodation, my own leaning is to use more explicit forward guidance. Again, the effectiveness of forward guidance will be limited by the already low level of long-term yields, but I found the analysis in the staff memo encouraging. In fact, staff work at the Kansas City Fed also shows that, even in a low-rate environment, date-based forward guidance can be very effective. In particular, their analysis shows sizable effects from the Committee's August 2011 date-based forward guidance compared with its subsequent state-based guidance adopted in December 2012.

In terms of yield curve targeting, I'm open to further staff work and discussion of this potential policy instrument, although I do have several questions about its use. First, it seems there are many similarities and complementarities between yield curve targeting and date-based forward guidance. Does targeting the yield curve introduce a level of complexity in the conduct of a policy that could be accomplished as effectively and more simply with explicit forward guidance? Is it possible to quantify the benefits of adopting yield curve targeting relative to date-based forward guidance, and do those benefits stem from enhanced credibility? How should we weigh such benefits relative to the additional apparatus required by yield curve targeting?

Second, yield curve caps are argued to have the advantage of limiting the crowding-out of private investments that might otherwise occur with a large increase in government spending. However, with this more explicit link between fiscal and monetary policy, issues of central bank independence would certainly be prominent. Depending on how targets or caps are implemented, we'll need to consider how the use of yield curve control is explained relative to the 1951 Accord and how the equivalence of bank reserves and Treasury securities could lead to perceptions that we were giving the Treasury control of our balance sheet.

Finally, I'm mindful that as we intervene in markets and influence prices in a low-for-long environment, we risk losing valuable sources of market information. Market signals are important, and we smother them at some risk to ourselves and the economy. As a corollary, I don't think we should take for granted that, once we move so explicitly into a particular market segment, we can subsequently depart and expect things to go back to normal. So forceful an intervention as a price target is likely to have lasting effects on the market, even if we do plan to eventually exit. And as a practical matter, with Treasury yields already near record lows, we may find we really don't have much yield to control. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. Governor Bowman, please.

MS. BOWMAN. Thank you, Chair Powell. I'd also like to thank the staff for their work to prepare the memos for today's meeting and for this discussion. These memos provided excellent research to help inform my understanding of the complex issues and will certainly inform our future discussions.

Consistent with the model simulation results shown in the first memo, available evidence suggests that the Committee's use of explicit forward guidance and large-scale asset purchases played a meaningful role in pursuit of our dual mandate following the 2008–09 financial crisis. These tools help stimulate spending and employment, in part by lowering the interest rates available to many households and businesses.

I would be open to considering the use of these tools again, should circumstances require it, if or when our short-term interest rate decisions are constrained by the effective lower bound.

Of the explicit forward guidance approaches discussed in the memo, I prefer outcome-based guidance tied to the unemployment rate. Our past policy actions, including forward guidance, helped bring the unemployment rate to a 50-year low in the period before the pandemic. If we do adopt a form of outcome-based forward guidance in the months ahead, I believe that focusing on outcomes that we have achieved in the recent past, like bringing the unemployment rate down to levels before the pandemic, would help maintain or enhance the credibility and effectiveness of our monetary policy.

With regard to asset prices, I recognize that our previous large-scale asset purchase programs also helped support the attainment of our policy goals, but I would be mindful of how much further we would need to expand the size of our balance sheet. Costs are associated with the size and composition of our balance sheet, such as increasing our "footprint" in the financial markets, and we should weigh these costs against the economic benefits of these programs. Even though I don't think we're currently constrained in our ability to further expand the balance sheet, I do see a higher bar for large-scale asset purchases than for explicit forward guidance.

Let me conclude with some observations on the second memo. In our current circumstances, with a very low federal funds rate, and with the public not expecting a funds rate hike anytime soon, I am skeptical of the role that yield curve control could play in the United States. In addition, as I have noted, I believe this Committee has been able to use explicit forward guidance as a credible and effective monetary policy tool. Therefore, it's not clear to me that there is a need to rely on yield curve caps to reinforce our forward guidance at this time, especially because yield curve caps have potential costs, including their effect on the size and composition of the balance sheet.

Of course, our circumstances could change, and down the road we may find ourselves looking for ways to reinforce our forward guidance. With this in mind, I would be interested in learning more about issues related to exiting a cap policy implementation. I would also be interested in further work on how to reconcile capping the shorter end of the curve—which could be interpreted as a form of date-based forward guidance—with the types of outcome-based forward guidance that were discussed in the first memo. I look forward to future discussions of these issues. Thank you, Chair Powell.

CHAIR POWELL. Thank you. Governor Brainard, please.

MS. BRAINARD. Thank you. I want to start by joining Chair Powell in expressing my anguish at the death of George Floyd and the injustices experienced by many black Americans. Along with colleagues across the System, I am committed to combating racism as evidenced in our commitment to a diverse and inclusive work environment, our engagement with diverse communities across the country, our enforcement of fair lending rules, our support for minority depository institutions, our recognition that addressing racial inequities in credit markets is a core purpose of the Community Reinvestment Act, and our recognition of the importance of work to the dignity of Americans of every race and ethnicity. We can and must make a difference in the work the Congress has entrusted us to do.

I will now turn to the staff memos. First of all, let me join others in thanking them for the very helpful analysis. Last Friday's jobs numbers validate our agreement in the previous meeting to watch the data for a few months until activity has passed its lockdown-induced trough before shifting from stabilization to accommodation. With activity resuming somewhat earlier than anticipated, we should have a better sense of the tone of the recovery by our September meeting.

When it is appropriate to define a comprehensive program to provide accommodation, that program needs to be informed by the structural features of the economy that the Committee emphasized in our long-run strategy discussion as well as the particulars of the COVID-19 crisis. These structural features include an equilibrium rate of interest that is well below its historical level, an inflation process that exhibits low responsiveness to resource utilization, and underlying trend inflation that is consistently below target. We highlighted the risk that the resulting proximity of the policy rate to the lower bound could impart a downward bias to inflation when conventional policy space is constrained in responding to a significant disturbance, and the resulting experience of below-target inflation could depress inflation expectations and nominal rates and further compress conventional policy space. In these circumstances, the commitment to use a more expansive set of policy tools is vital.

Before the COVID-19 shock, the Committee was converging on an approach that would actively employ the full range of tools in responding to significant disturbances, define price stability as average inflation of 2 percent, commit to achieving both maximum employment and the inflation target, and seek to address shortfalls rather than deviations of employment from its maximum. Although the COVID-19 crisis was not contemplated when we began those deliberations, the Committee's emerging approach to its strategy and tools should serve us well in returning the economy to full employment and target inflation.

In assessing our tools, we are fortunate to have had several years to assess how a variety of innovations performed here and abroad in response to the Global Financial Crisis. The memos the staff prepared for today's meeting as well as for our discussion in August 2018, together with the papers prepared for the conference held in Chicago last June, are very helpful.

From the earlier policy memos, we learned the Committee's actions would be more powerful if they were conditioned on certain outcomes or dates. As we learned from experiences here and abroad, in the absence of such contingent forward commitments, market participants can overreact to economic surprises, leading to excess volatility in interest rates and steepening the yield curve prematurely.

We also learned that markets are sensitive to the joint settings of different policy tools, so communications and actions around them need to be deliberate and coherent. This is particularly true as the recovery becomes more entrenched—when tapering purchases and engineering balance sheet runoff posed some challenges here and abroad.

With the benefit of hindsight, it is important that exit should be taken into account *ex ante*.

The literature suggests we can effectively compensate for the relatively compressed amount of conventional policy space relative to that used to combat recessions historically by providing a forward commitment that we will refrain from removing accommodation until certain conditions have been met. This can be accomplished through a set of forward commitments that are either outcome based or based on dates that are projected to coincide with the achievement of those outcomes.

Simulations in previous staff memos in August 2018 suggest that conditioning forward guidance on inflation leads to better economic outcomes than employment on its own. In view of the independent importance placed on shortfalls of employment and deviations of inflation in the emerging long-run strategy, and against the backdrop of the persistent undershooting of our inflation target, my initial inclination would be to commit to refrain from liftoff until maximum employment and 2 percent inflation are achieved.

This would be consistent with the view that is emerging from our long-run strategy discussions. Whereas, in past decades, such an approach would have carried a substantial risk of an outbreak of inflation to the upside, the structural features of the new normal suggest a lesser commitment could pose a material risk of entrenching inflation expectations below target, as we learned in the previous episode when liftoff was undertaken on a preemptive basis. Alongside the employment commitment, by stating its intention to refrain from lifting off the lower bound until inflation reaches 2 percent, the Committee would demonstrate its commitment to its average inflation target, as this would imply support for inflation rising a bit above 2 percent for a time following liftoff to compensate for the period of the undershoot.

Both the literature and experience suggest such forward commitments can suffer from credibility challenges associated with their possible time inconsistency. The forward commitments are more powerful in influencing expectations—and, importantly, behavior—the more credible they are. The Committee could ensure the credibility of the forward guidance by setting targets for yields at maturities that correspond to the Committee's proposed achievement of the associated objective.

A key advantage of yield curve caps or targets on the short-to-medium part of the curve is that they provide a credible commitment technology. It is true that market participants currently expect rates to remain low through the medium term, but we saw during the previous recovery that those expectations can change prematurely as the recovery gathers strength, and this comes at considerable cost.

In addition, yield curve targeting can help bolster inflation expectations by providing an important nominal anchor and reducing uncertainty about rates over the medium term. Such yield curve targets can be seen as a relatively intuitive expansion of the Committee's conventional policy approach of interest rate setting.

The research suggests the efficacy of asset purchases in the previous recession reflected in part—an important part—their signaling about the future path of policy. It is likely that a yield curve targeting policy at the short end could provide a clearer and stronger signal regarding the likely horizon of the forward guidance.

If yield curve targets are implemented effectively, they should, in principle, lead to reduced outright purchases, and the resulting securities will be at shorter maturities that can roll off sooner. Any asset purchases made as part of that policy can be allowed to roll off once the targets are reached, potentially avoiding the volatility that appeared at several junctures when markets tightened prematurely, undercutting the Committee's intended posture.

Important design features need to be worked through, as others have noted. Others have highlighted the possible choice between targets and target ranges. Moreover, like forward guidance, yield curve targeting can be either outcome or date based. In either case, the horizon at which yields are initially targeted necessarily provides information on the date at which the Committee expects the outcomes to be achieved. As such, decisions about whether to extend or shorten the targeted horizon provide ongoing information about the Committee's judgments regarding the horizon over which forward-guidance commitments are likely to be achieved, possibly increasing the clarity of the Committee's communications.

Policy targeted at the short-to-medium part of the yield curve, in combination with forward guidance, hasn't been tested in the U.S. context, and the Committee has not been given commensurate analysis of such policies relative to asset purchases and forward guidance over the past few years. It will be very important to see further analysis of the design and implementation of such a policy, as well as analysis of the potential economic and financial effects.

In addition, to ensure that the forward trajectory of the Committee's expected policy rate path transmits effectively to the long-term rates that influence households' housing investment decisions, these actions can be augmented with asset purchases at the longer end of the yield curve. In contrast to the liquidity-easing asset purchases that we've undertaken all along the yield curve so far, a move to providing accommodation via quantitative easing would shift to targeting purchases at the long end. By pinning down the short-to-medium-term end of the yield curve, all else being equal, the combination of forward guidance and reinforcing yield curve target ranges should transmit to the back end of the curve, thereby potentially reducing the magnitude of the requisite purchases.

The staff memos presented in August 2018 and October 2018 indicate that the effectiveness of asset purchases is likely to depend on whether they are open ended, and presumably designed to achieve employment or inflation objectives, or at a fixed pace, presumably tied to some calendar guidance. Market expectations should inform our assessments, but it would also be helpful to see analysis of the level and composition of asset purchases calibrated to the achievement of the particular objectives we set as part of a comprehensive three-legged approach to supporting the recovery. And it would also be helpful to see further analysis about how exit can be undertaken with less market volatility than was experienced over the past several years.

I appreciate the staff's analysis of yield curve approaches adopted historically in the United States as well as currently in Japan and Australia. The historical experience in the United States underscores the importance of tying our policy approach clearly to the objectives set for us by the Congress to differentiate it from monetary financing. And this is true for asset purchases no less than for yield curve targeting.

I look forward to further analysis on the design and implementation of the yield curve targets; the appropriate size, composition and objectives of asset purchases; and the selection of outcomes to condition the forward guidance on liftoff from the lower bound. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Governor Quarles, please.

MR. QUARLES. Thank you, Mr. Chair. Let me just note at the outset that the spring weather in the Rocky Mountains is variable and chilly, so the fire is not for the ineffable ambience, or at least not merely for the ambience. It's about 40 degrees outside.

I want to thank the staff as well for their comprehensive and well-elucidated discussion of these topics and particularly to echo President George's acknowledgement that the memos are not only, as usual, excellent, but produced under difficult personal circumstances and are very much appreciated.

We now have more than a decade of experience using forward guidance and large-scale asset purchases when the federal funds rate is at the effective lower bound and experience with transitioning from the effective lower bound. I think this memo prepared by the staff shows that some combination of these tools can continue to serve us well as we navigate through the aftermath of the current crisis. The key to that effectiveness is our credibility in making forward-looking statements about the path of interest rates. Our current policy stance is that we'll maintain the current target range until we're confident that the economy has weathered recent events and is on track to achieve our dual mandate.

We're also committed to purchasing Treasury and agency securities in such quantities as needed to support smooth market functioning. As a result, the Treasury yield curve shows interest rates at 26 basis points or lower all the way out to three years, at least as of Friday. It's hard to imagine a more effective transmission of our desired policy rate path. And I agree with President Bullard and others who have acknowledged that we're benefiting from the credibility of forward guidance that was created during the 2008–16 era.

Another consideration is whether those two tools alone are sufficient to achieve our employment and inflation goals in an acceptable amount of time. The staff's baseline projections show extremely rapid growth in 2021, growth continues well above trend in 2022, and as a result, unemployment decreases by the end of 2022 to a level that's within the range of estimates of NAIRU, and inflation is back to 1.8 percent.

The analysis in the memo shows that if we want a faster recovery, a combination of explicitly establishing an asset purchase program roughly in line with the 2012–14 LSAP program and a commitment to maintain the federal funds rate at the effective lower bound until inflation reaches 2 percent would move unemployment to about 4½ percent early in 2022.

Now, that may create a concern that we wouldn't meet our employment mandate for two years, but we have experienced an unprecedented shock. And with the costs and uncertainties associated with monetary policy at the lower bound, an even more aggressive LSAP or a new, untested policy may have unintended consequences. And, as we often remind folks, monetary policy can't always do all of the work. We need further actions on other fronts, including fiscal policy, if a faster recovery is desired.

The second memo does an excellent job of explaining the experience of yield curve targeting by other central banks. I'm very supportive of our efforts to study carefully potential alternative policies at the effective lower bound, especially in light of the possibility of prolonged high unemployment and inflation below our target. But I share the concerns that many have expressed with the approach. Most important, the commitment to purchase as much Treasury issuance as is necessary to defend the target blurs the lines between monetary and fiscal policy, thereby at least confusing and possibly risking our reputation for independence. And on that point, I think the memo made very clear that that's not just a hypothetical risk. The description of the negotiations between the Treasury as we tried to extricate ourselves from the World War II commitments in the late 1940s made it clear that Federal Reserve independence was compromised at that time.

In light of the host of other concerns about the strategy, including giving up control of the size of our balance sheet, I think we'd have to perceive significant potential marginal benefits to adopt this tool. Our ability to exert downward pressure on both short- and longer-term rates effectively through forward guidance and LSAPs and control rates on the way up through increases in the federal funds rate makes that a high hurdle—potentially not insurmountable.

As many have commented, yield curve targeting seems principally a reinforcement for forward guidance. Like President Harker and a number of others have commented, it's not clear to me that our forward guidance needs reinforcement, certainly at this time. You could imagine that reinforcement might be helpful if we expected an extremely long period of accommodation, such as the one considered in the first memo under the second wave or "*W*" scenario, in which the optimal policy in one of the simulations was to hold the federal funds rate at the effective lower bound through 2030. But, again, I think that that's a helpful heuristic analysis but certainly not an expectation currently.

I think our experience to date shows that as long as we maintain our credibility and financial markets are functioning, forward guidance acts forcefully on short- and medium-term interest rates, and that LSAPs exert significant downward pressure on term premiums of longer-term debt. Certainly, the current situation has us in an economic hole that's larger than we have experienced before, so it's prudent to be considering additional tools in case they're necessary. But I return to a point I've made a number of times over our discussion of monetary policy frameworks, which is that I think we shouldn't focus excessively on the constraints imposed by the effective lower bound but, rather, to continue to communicate our belief in the effectiveness of the tools that we've employed in this situation.

In conclusion, my current assumption is that forward guidance should remain our primary tool, backed up by LSAPs as conditions warrant. That said, I look forward to the staff's next update on yield curve targeting and continuing to study the potential for this tool to assist us in achieving our mandate under some circumstances. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Daly.

MS. DALY. Thank you, Mr. Chair. Let me start by seconding Governor Brainard's remarks about the events of late and also say thank you, Mr. Chair, for your opening remarks at our meeting about our commitment as an institution to standing against racism and injustice and doing everything in our power to combat them. I really applaud your willingness to speak tomorrow at the press conference about these issues. I also want to second President George's remarks and thank the staff for preparing these memos and consistently delivering high-quality analysis so that we can do our best work to discuss these issues.

So the topic today, of course, is forward-guidance, QE, and yield curve control. And as Governor Clarida started us off this morning, even in the most optimistic virus scenarios, it seems clear that the economy will need additional support beyond our emergency actions we've already taken to return to the two goals of full employment and 2 percent inflation. And I see this conversation as a first step in ensuring we are prepared to provide this support in a timely manner.

As we learned from the financial crisis, the foundation of additional accommodation at the effective lower bound is clear policy guidance: telling market participants, businesses, and households what to expect so that they can make informed decisions about how to invest and spend. And at present, I see this guidance occurring along three dimensions.

First, the completion of our policy framework review. I know this is for another meeting, but like Governor Clarida and President Evans and others have noted, I see the framework review as the basic support for the other things that we're doing. If we reinforce our commitment to a symmetric 2 percent inflation objective, the public will naturally incorporate this into their expectations and automatically help stabilize inflation around our target—doing part of the work for us, if you will. As I've mentioned in previous discussions, I see some form of average inflation targeting as the most direct and simple way to reinforce this commitment because it automatically builds in some sense that we are overshooting. Importantly, if I think about it through this lens, this would already, if we had it in place, be generating additional stimulus to the economy today. But whatever form we decide to take, I think just reinforcing our objective is really necessary. It's the foundational support.

The second thing we learned from the work in the financial crisis is that once we're clear about our objectives, we have this tool of detailed and specific forward guidance about the funds rate. I think state-based thresholds really worked well in that way. They're really effective at lowering interest rates along the yield curve and, importantly, reducing uncertainty about our plans. And we will likely need this type of specific guidance—state-based would be my preference—if we were to firmly pin down expectations about the future path of the funds rate. As Governor Brainard mentioned, although markets currently expect a long spell at the ELB, history has taught us that market expectations can move, especially when financial conditions—in particular, the stock market—are good, when there's this division between the real economy and the financial economy. In these cases, detailed forward guidance provides clarity that the adjustments to the funds rate will depend on milestones toward our dual-mandate goal rather than the evolution in equity prices or financial conditions more generally.

The third element of our guidance has historically been the role of asset purchases, and here we have learned that effectively communicating our intentions about asset purchases can reduce the ultimate amount we need to buy, because it does set expectations. In recent months, we have focused on market functioning as the role that asset purchases are playing, but they are also likely providing crucial macroeconomic stimulus, more so as financial conditions improve. So I would welcome, personally, a staff memo that just starts telling us about how much stimulus we think the balance sheet is currently providing and how much more stimulus is going to be necessary if we are to achieve our dual-mandate goals—similar in the type to the memos we've already seen.

Now, finally, with regard to yield curve control, I think I echo the remarks of others that this leaves me with more questions than answers at this point. So I don't have complete confidence that we fully understand what implementation would look like and what the effects would be in the United States. That said, I think yield curve control at the short end can complement our funds rate guidance and provide useful reinforcement on interest rate expectations. However, if I read the memos correctly and the research that accompanies them, the need for capping shorter-term yields diminishes if we have clear and credible forward guidance. I am actually really unsure about controlling long-term yields with yield curve control. There I would need to see much more analysis before being confident that we could embark on that policy successfully for so many of the reasons people have mentioned, including exit, et cetera. But let me name a couple of others.

Although there are potential benefits associated with this, and they were spelled out clearly in the memo, losing control over the size of our balance sheet seems a major concern. If we're going to target prices, we'll lose control of quantities, and those are issues that we've historically struggled with, about the size of the balance sheet and the "optics" of that. So I worry, in addition to all the real reasons we might struggle with that, how markets would react. Would they really think that we're going to do everything that—we're going to let quantity go just to target price? So I don't know how effective the policy would be.

In addition, uncertain estimates of *r**—we talked about short-run *r** earlier, but we don't have real confidence in the value of long-run *r** and how it's being affected. If we have *r** wrong, we run the risk of targeting long-term yields at a level that is incompatible with our inflation goal and only recognizing that as things evolve.

Finally, I'll say that I am skeptical about the applicability of the Japanese experience. I mean, it was useful to see it in a memo, but if I understand what they were trying to do, the BOJ was trying to boost 10-year yields and attain a positive yield curve slope. So we would presumably be trying to lower rates, and this would not necessarily have the same outcome in terms of how much purchases we would then not have to make because of yield curve control.

So if you put all of this together, I see deploying the framework review—forward guidance of the specific type we've used in the past and our asset purchases—as our first tool.

But as someone said earlier, "Never say never." So I think it's really useful that we evaluate this extra tool of yield curve control. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Mester, please.

MS. MESTER. Thank you, Mr. Chair. I also want to thank the staff for the work on the new memos prepared for this meeting, but also for distributing the two earlier memos on the Federal Reserve's experience of yield caps during and after World War II. I think this set of memos is a good illustration of what I believe is a very productive two-pronged approach to policy considerations—using our models to do in-depth analyses of potential policy actions across various scenarios and then augmenting that work with an evaluation of historical or current applications of the actions in the real world, a place that's more complicated than our models can capture.

Now, as part of the framework review, we discussed policy tools last October, and my views haven't really changed since then despite the different economic circumstances we find ourselves in at this time. During the Great Recession and its aftermath, we relied on forward guidance about the future path of interest rates and asset purchases to add policy accommodation. And I continue to view these as the tools to use to add further accommodation when the funds rate is at the effective lower bound.

The Fed's balance sheet holdings of assets have risen significantly since the start of the pandemic, at the end of May they were about 36 percent of GDP, and the staff projects they will rise to around 40 percent later this year. So while those are records, there's still space to continue asset purchases in support of the recovery. At the same time, we do need to be realistic about the limits of our tools, especially in an environment in which longer-term bond yields are even lower than they were when we last considered LSAPs.

Because both forward guidance and asset purchases work through their effects on expectations, clear communications are central to their efficacy. I know I have spoken about communications at many meetings before this, but I really think that they are central to the way these tools work. I do believe that qualitative, date-based, and outcome-based formulations can all work so long as we communicate what we're doing, why we're doing it, and that we're going to review and extend the guidance as necessary depending on the evolution of the economy.

Now, when we invoke any tool, we should think seriously about what our exit strategy will be. The threshold formulation of forward guidance has some appeal because it links the guidance to economic conditions, but that still leaves open the question of what the Committee will do once the thresholds are reached. In our models, the post-liftoff policy reaction function significantly affects the efficacy of the forward guidance. And, of course, in our models we are using rules to guide those policies, post-liftoff.

I do think it's interesting that we are willing to make what could be very long-term commitments when the funds rate is at zero, but we're much less willing to offer much, if any, specificity about how policy will react once the funds rate lifts off from the effective lower bound. And as others have mentioned, the exit from yield curve control is also going to be complicated.

Now, there's this tradeoff between credibility and commitment that should be considered in choosing the formulation of these tools. Under some of the simulations, it takes a very long time to reach the outcome threshold set out in the forward guidance, making this tradeoff more salient. And in models, a strong commitment to the forward guidance makes it more effective. But in the real world, other considerations, like financial stability concerns, may arise when interest rates are held very low for a long time, and they might come in conflict with medium-run macroeconomic goals. In such a case, if policymakers need to deviate from their own forward guidance, this will undermine their credibility—which, in turn, could limit the effectiveness of forward guidance used in the future.

Recognizing this type of tradeoff, I would consider financial stability escape clauses in threshold forward guidance, especially when the expected time horizon for reaching the goals in the guidance is long, even though such clauses may be interpreted as making a weaker commitment. The Bank of England's use of financial stability escape clauses in their monetary policy forward guidance in 2013 provides a useful example.

Regarding yield curve control, I am interested in following and learning from the Reserve Bank of Australia experience with their yield targeted at a three-year maturity. However, the background articles discussing the Fed's experience during and after World War II with yield curve caps do give me some pause. And I would like to see more analysis to better understand whether the benefits would outweigh the costs.

Our experience in the 1940s and '50s suggests three questions I would like to see answered. First, how would yield curve control affect the size and maturity composition of our balance sheet, and how would it interact with our LSAP tool? Second, what exit strategy from yield caps would minimize disruptions in the markets? And, third, how would we handle the relationship with the Treasury and ensure that the independence of monetary policy is not put at risk? The answer to each of these questions would help inform choices about the formulation of the tool—for example, caps versus targets, shorter versus longer maturities, and, ultimately, our assessment of the benefits versus the costs.

Now, as others have said, the good news is that there is time to analyze these issues. The public, including market participants, understands our current forward guidance that interest rates will remain low for quite some time, and tomorrow's SEP release will reinforce that guidance. Yields are low across the curve, so there doesn't appear to be a compelling need to reinforce our forward guidance at this point. Nonetheless, we have seen that conditions can change rapidly. So undertaking the analysis now to see if this tool should be added to our toolkit and how it should be formulated seems prudent.

One final point. The issue of the independence of monetary policy looms large whenever we take unprecedented actions as we are doing today with our facilities. As President Rosengren has pointed out in past discussions, some of the assets that we will be taking on under our Main Street facility may result in losses. This does not mean that setting up the facility was the wrong thing to do, but it does suggest that we should think now of ways to ensure that if the assets do experience losses, this does not compromise our ability to act in future emergency situations or to set monetary policy independently.

On March 23, 2009, in the aftermath of some of the actions that the Fed took to address the financial crisis, the Federal Reserve and the Treasury released a joint public statement clarifying their common understanding of the Fed's role. Four points of agreement were outlined. One, in unusual and exigent circumstances, the Treasury and the Federal Reserve would cooperate in improving the functioning of credit markets and fostering financial stability. Two, the Fed would avoid credit risk and credit allocation. Three, notwithstanding the actions taken in pursuit of financial stability, monetary stability had to be preserved. And, four, the Federal Reserve and the Treasury would work with the Congress to develop a comprehensive resolution regime for systemically critical financial institutions.

This statement went on to say that in the longer term, the Treasury would seek to remove from the Federal Reserve's balance sheet the Maiden Lane facilities that the Fed set up to stabilize critical financial institutions. Of course, that never happened. Nonetheless, at an appropriate time, the Chair may want to discuss with the Treasury a similar approach to the assets that we are taking on at today's facilities, set up in the unusual and exigent circumstances of the pandemic. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kashkari, please.

MR. KASHKARI. Thank you, Mr. Chair. Let me start by adding my acknowledgement of the tragic death of George Floyd in Minneapolis a couple of weeks ago. It's obviously affected people all around the country—indeed, around the world—but nowhere more than here in Minneapolis where the tragedy took place. What was most shocking for me watching the video was not only that he was killed helplessly by police, but that they knew they were surrounded by witnesses, they knew they were being videotaped, and they never hesitated. They never blinked. It was as though they didn't think they were doing anything wrong, because it was their own training that taught them to bring deadly force against African American men. I am just grateful that we have technology today that we can actually capture these things and begin to open our eyes to what's taking place. And so I applaud you, Mr. Chair, for speaking out tomorrow at your press conference, and I am also proud of the Federal Reserve and all of our institutions and our commitment to diversity and inclusion.

I'll turn now to the memos. I do think that these tools that were described are all useful—forward guidance, yield curve control, and LSAPs—and I think they could be, together, a very powerful package, which I'll describe in a moment.

Let me start by just echoing something that I asked about earlier, which is, are we in fact providing accommodation today? I could argue, we might not be. Despite all of our actions, if short-run *r** has fallen by as much as we think it has, we may well be in a contractionary policy stance today. Which is hard to get our head around, but that might just be the reality of a short-run r^* and an effective lower bound—that we're not providing any or much accommodation today. And so looking for ways to try to do more, I do think, is a useful exercise.

I look at our forward guidance today, and I think it is quite weak. This isn't a criticism, it's just—"The Committee expects to maintain this target range until it is confident that the economy has weathered recent events and is on track to achieve its maximum-employment and price-stability goals." That's a pretty soft commitment to keeping the federal funds rate at the effective lower bound, because anything could happen when all of a sudden we think we're on track to achieve it.

And if we look at our liftoff in the previous recovery, I would argue that we lifted off prematurely. We thought there was less slack in the labor market than there was, and we lifted off. Even if you look at the SEP, which I have been kind of a frequent critic of, the SEP was designed to be a tool of accommodative forward guidance. It was, in fact, a tool of contractionary forward guidance by always showing dots going up much faster than markets expected. So the forward guidance that we delivered in the recovery was actually providing a contractionary stance, not an accommodative stance. I think we would be well served by really strengthening our forward guidance today, to keep the federal funds rate at the effective lower bound.

Now, I'm in favor of state-based forward guidance, so tie it to achieving our inflation goals. So, for example, if we said core PCE inflation would have to be at 2 percent for at least a year, as an example, I think that that could be powerful forward guidance, that we're not going to raise rates until we actually achieve that inflation target. But I think we could go beyond that. I think we could tie all three of these tools to the same state-based goal of core PCE being at 2 percent for at least a year—so, keep the federal funds rate at the ELB until we achieve that. We could also tie yield curve control to the same goal. So imagine if we said we're going to cap two-year yields wherever they are today, and we're going to keep that cap until that inflation threshold has been met, and then we would begin an automatic rolloff.

In Ben Bernanke's blog a few years ago, he talked about a way to do yield curve control so you wouldn't have this binary feature that, all of a sudden, you'd be buying up the whole market. There would be a natural rolloff for the duration for the two years. So we say we're not going to start the rolloff of the two-year cap until we actually achieve our inflation target, and then the yield curve control naturally rolls off over the following two years. And then, third, we could tie LSAPs to the same threshold, which is, we commit to buying *X* billions of dollars of Treasuries and mortgage-backed securities per month, and we're going to keep buying them per month until we actually achieve 2 percent inflation for that 12-month period.

There are a lot of ways you could design this. My point is that the federal funds rate, a two-year or three-year yield curve control, and the LSAPs could all be put together in a very tight package that is all anchored on achieving the same inflation goal.

So what would this achieve? I think it would provide some accommodation today, primarily through boosting inflation expectations somewhat today, and I think that would be useful. But I think even more powerful is that this would be a way of defending our inflation target. Let's not forget that we missed on our inflation target for 10 years before COVID-19 came along. And now we are at even greater risk of missing our inflation target as this pandemic winds its way through society. And so, to me, doing all we can to defend the seriousness of our inflation target, and that we're going to do whatever we can to try to achieve it, is, in and of itself, a useful exercise beyond the fact that it would be providing some additional stimulus today.

Now, what's the downside of this? The downside is that we do these three things, this three-part package, to defend our inflation target, and we nonetheless don't hit our inflation target. Well, I would argue, it is better to try and then fail than to not try and then fail. And if we try, we might actually succeed in defending our inflation target. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Vice Chair Williams, please.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. The memos and presentations provide a good foundation for thinking about how to best use our policy tools to achieve our maximum-employment and price-stability goals. And, like others, I'd like to thank the staff not just on these memos, but all the staff work and analysis that's been taking place over the past few months to help us think through these extraordinary circumstances we're in, recognizing the challenges that people are facing working from home and everything around COVID-19. I'd also like to thank the staff in particular for sending the three questions—which, unfortunately, I seem to have mislaid.

I'll turn now to the topic. I would like to start with what a bunch of other people mentioned already, which is the framework. I actually didn't have this written down as my response, but I think it's an excellent point. As we think about the policy tools and what we do to try to get the economy back to full strength, the framework is going to be really important and the consensus statement that articulates our goals of eliminating shortfalls from maximum employment and getting average 2 percent inflation. Having that strategic overlay of what "good" looks like, what we're trying to achieve, will really, I think, be powerful, both in terms of the effectiveness of our actions and shaping our communications over the next several years. So I do think that's a key component of all of this.

Now, we did have a healthy discussion of our toolkit just last year. And I know that seems like eons ago, but some conclusions from those discussions still hold. I think the most important thing is that we do have effective tools, in terms of forward guidance and asset purchases, to provide support for the economy when the funds rate is constrained at the effective lower bound. I think the analysis, the research, and the experience of the past decade support that conclusion.

Yield curve control does add a new, additional element to the mix. In that regard, the memo on limited experience with yield curve control was informative, and I agree with everyone that we need to see more analysis and to understand yield curve control before drawing any policy conclusions from that. But I'm assured that that will be forthcoming.

In thinking about deploying our tools to their maximum effect, I start with the question—which is actually, I think, exactly what President Bostic asked about an hour ago—that is, what's the problem we're trying to solve? Based on my forecast, it will be appropriate to provide significant policy support to the economy, including having the funds rate at the ELB for many years. And given that expectation, which I think is consistent with what we've seen in the SEP projections that we prepared for this meeting, I think FOMC communications and actions should really be aimed at accomplishing three things—again, consistent, I think, with some of the comments heard earlier. But I'll just go through them quickly.

The first is to align market expectations of the baseline policy path with those of the FOMC. So that's basically having a good alignment between how we're viewing our policy and what the markets are expecting, just for financial conditions being supportive of growth.

The second is to align market understanding of our reaction function to changing information with our own view of the reaction function. And I think that's particularly important when you're at the effective lower bound, because you're not actually moving the policy instrument directly, but you want the market participants and the public to understand how you'll change when the conditions change. I think there's some important benefits of that. One is that it reduces uncertainty and potential confusion. And the other thing that's important is, there's a lot of uncertainty out there. Obviously, we are in an extraordinary time right now. Market participants and the public understand that if there's a severe negative shock, or we get a second wave, or some other scenario, we will react, we will add additional accommodation, we will do whatever is appropriate. And that could be a powerful mitigant, in terms of tail risks and adding confidence.

And the third is to reinforce the commitment to deliver on the longer-run goals of eliminating the shortfalls from maximum employment and achieving inflation that averages 2 percent over time.

And so I think that those are the three things that we really should be focused on, especially with the thinking about forward guidance.

Now, I do think I agree with everyone that experience shows that forward guidance in its different forms can support these goals. It also teaches us that market expectations can become unmoored from our own and that the public can misunderstand our intentions, and that makes clear and unequivocal communication essential.

And I do worry a bit that there's some complacency around where financial conditions are now and where market expectations are now. A couple of weeks ago, I was preparing for this meeting. And I was going to say, "Well, market expectations look pretty good, and they're at about kind of what I think many of us think." But what we've watched happen in the past couple weeks, and especially on Friday, is that market expectations of the future path of the funds rate, and two- and three-year yields, can actually move quite a bit. And that can perhaps inadvertently tighten financial conditions in a way that we wouldn't actually want.

And the other is that market expectations are currently basically founded on a belief that we are going to take further actions of some kind over the next couple of meetings. I think President Kashkari and maybe others have commented that our forward guidance right now is just a placeholder. It's something that was put in place because the pandemic was just starting, and we were still trying to understand its full effect. But out there in the markets, there's clearly an expectation that we're going to continue to carry through with bringing very strong support for the economy. And if we were to just say, "Well, market expectations are good, we don't need to do that much," I think that would undermine that market expectation, and we would see financial conditions potentially tighten in response to that. So, again, you can't take those as given.

In terms of the balance sheet, I see two roles that it can play. The first is, I think, potentially in supporting or reinforcing the commitment to keep interest rates low for quite some time through yield curve control. Just thinking of a two-to-three-year forecast horizon, which we typically talk about in monetary policy, yield curve control could be useful there. The devil is in the details, but, conceptually, this could provide a very clear signal to the public that we mean business when it comes to holding the line on rates. But like I already said, we need a lot more analysis on that before coming to conclusions.

The second is LSAPs aimed at lowering term premiums in MBS and longer-maturity Treasury securities. These, again, have proven a useful supplement to forward guidance in fostering accommodative financial conditions. And, importantly, they get directly at key parts of the monetary transmission mechanism. You think about mortgage rates, which are a critical part of how monetary policy affects spending. You think about the 5-to-10-year Treasury part of the curve. Those are the rates that affect costs of business investments, costs of purchases of consumer durables, and more generally affect financial conditions in other asset markets and foreign exchange markets. So although thinking about policy expectations over the next couple of years is important and critical, asset purchases can have a sizable effect on financial conditions more broadly as well.

So like we've always said, I believe we should be using all of our tools in combination as appropriate to support achieving our goals. I think the biggest challenge, which we've all discussed, is how to do this in an effective and clear package of communication—how we are using our tools, how our use of the tools will evolve, and how they'll interact.

I wanted to pick up on something President Kashkari said, because I'm going to say basically the same thing in terms of the principle. And that is, we really do need to think about a way to have a package of policy tools that we communicate as a package. Right now, I think it'd be pretty easy to say, "Here's what we're thinking about monetary policy—it may be well positioned for the fall of 2020." But we obviously need to think ahead and guide expectations on how we'll adjust the stance of policy over time as the economic outlook evolves. And here I will chime in in support of what many people have said—that outcome-based approaches that are linked explicitly to our longer-term policy goals could be useful in this regard.

Now, one thing I do want to bring back to memory is the challenge associated with having multiple thresholds at play at once. We did do multiple thresholds back with the funds rate in QE3. That did prove to be a source of some confusion as we were ending the QE3 program, but were still keeping the funds rate at zero, intending to do that for quite some time. I think that confusion may have contributed importantly to the market turmoil that we saw then. But more importantly, it just shows you the challenge of having several tools in play and having them described in different ways.

So I do think it would be really useful, as we think about this over the next couple of months, to really think about what President Kashkari said. Can we come up with a way of describing how we're using all the tools—whether it's asset purchases, forward guidance, and perhaps yield curve control—that's linked explicitly to our longer-run goals that we will be, it's hoped, articulating in our new framework? And then, of course, the actual evolution of the specific tools over time will follow as appropriate, but really try to have a nice, clean framework around that.

That's, I think, harder to do than to say, because I know we've been thinking about this at the New York Fed, so I think we should really use the time between now and whenever the appropriate time is to make a policy announcement to really think through that, not only in terms of what it would be like in September or sometime like that, but also how that would evolve in 2021, 2022 as the economy, we hope, improves or other shocks happen that were unanticipated. Thank you.

CHAIR POWELL. Thank you. And thanks for a really interesting set of comments. I'll also join others in thanking the staff for those memos, which superbly set the table for a thoughtful discussion.

We're seeing some initial stages of the return to work, but it seems likely that the pace of recovery will be constrained by ongoing distancing restrictions, business and household caution, and labor market frictions and fragility triggered by the upheaval and by the threat of the virus resurging. While happier outcomes would be welcome, I think our main focus must be on how to promote and sustain highly accommodative financial conditions during a recovery that is likely to prove halting and protracted.

Policy effectiveness demands—and the public deserves—our best efforts to communicate how we intend to use our policy tools, which is a big set right now, including federal funds rate guidance, potentially short-term yield curve control, asset purchases, and a wide range of 13(3) facilities. With markets seemingly sending the all-clear one day but likely poised to reflect despair on others soon enough, the main message I think we need to convey is the steadiness of our belief that the economy is likely to need support for highly accommodative monetary policy for some time and our commitment to using all of our tools to provide that support.

Now, today the public does seem to find our commitment credible, as many have noted. But in coming months, it will likely be appropriate to provide more specific forward guidance on the federal funds rate as well as to clarify our plans for the purpose and parameters of our asset purchase programs. The market is not carefully scrutinizing the language that President Kashkari pointed out, but instead is seeing us as committed, and this is a very important thing. I would even add that this is a case in which the SEP will actually help. Let the record show that the SEP, the dot plot, will actually help, I think, because it shows that we mean at least through the end of 2022 is appropriate monetary policy in our judgments. But I do think the time is coming when we will have to do and will want to do what a number of you have suggested, which is to put together a package that links together all of our tools in a smart way that underscores that commitment.

I'll start with forward guidance. As our discussions reflect, we're going to have a range of plausible options there, and I do think it's appropriate to keep our minds open now as to exactly where that will come in. So, for me, there is appeal in the inclusion of a commitment to keep policy at the effective lower bound until a particular rate of inflation is achieved.

Now, those are deliberately vague words. I do think that we will come to agreement soon on the Statement on Longer-Run Goals and Monetary Policy Strategy, and that will clarify where we're going with that. I think it's important that we do that soon, and that it be done in conjunction with or perhaps immediately before we do clarify what we're thinking.

I think we should state our intentions broadly to provide policy support in terms that we're confident will be durable and will put us on track to meet our objectives. As an example, we could say that we'll maintain highly accommodative financial conditions with the funds rate at its current level, so long as this is consistent with sustainably minimizing shortfalls from maximum employment and with modest inflation fluctuations centered on 2 percent over time. Thus, policy will remain highly accommodative until we see excesses that threaten maximum employment or stable, on-target inflation. I think some statement of this nature would be an accurate description of our intentions and one that is clearly expressed, in terms of our goals, in a way that does not depend too much on particular views of the economic structure.

Now, the way I have put it, the statement of our intentions would apply to all of our efforts to promote accommodative conditions, leaving open the mix of tools such as those in our questions for discussion. But before I turn to LSAPs in a minute and yield curve control, I also want to note that the 13(3) facilities are also part of this mix. Indeed, if exigencies were to intensify, adjusting those facilities with the consent and support of the Treasury could be among the most potent tools that we have.

I'll turn for a minute to asset purchases with the purpose of putting downward pressure on longer-term yields—traditional QE. Although our understanding is far from complete, I do believe that these purchases can promote accommodative conditions. In fact, I believe it today. FOMC purchases and the expectation that they'll continue are holding down yields, despite last week's increases. A recent rise in term yields could be in part due to a smaller perceived need for LSAPs.

As a number of you have pointed out, the fall in the neutral rate of interest and in term premiums present policy space limitations that were largely absent from the QE discussions in the wake of the Global Financial Crisis. During the QE1 and QE2 periods, the 10-year yield was fluctuating between 2 and 4 percent, and the term premium was clearly positive. By QE3, the 10-year yield was a bit below 2 percent, and the term premium was, by standard measures, negative at the outset but positive, on average, during the program. Now, until last week—and some of this was retraced this morning, but—the 10-year yield had been under 70 basis points, and estimates of the term premium were approaching minus 100 basis points.

Under those conditions, it is not clear to me—it's never been clear to me—that driving the term premium even more deeply lower would have the same net benefits that we attribute to earlier QE. As we made clear in the memo, the QE simulations largely skirt this difficult question. But the QE in the simulations offsets what would otherwise have been a steady rise in term premiums caused by outsized Treasury issuance. In short, the QE helped maintain accommodative financial conditions in what would have been a financial tightening otherwise. And the rise in the 10-year in the latter part of last year would, of course, support this view of rising term premiums.

So I think this is a particularly difficult and tricky issue, but one that I think will leave room for us to do something on asset purchases, as I'll come to. I think it's worth considering a program of longer-term asset purchases intended to keep longer-term yields in the low range that has prevailed since the onset of the crisis. Purchases could help cement the view that we're steadfast in our commitment to highly accommodative financial conditions. There are many ways to structure such a program, but I do see some appeal in the familiarity of an open-ended purchase program at a flow rate broadly similar to the current pace of purchases. The stated goal would be to promote accommodative conditions at least until the recovery in employment and inflation are well under way, perhaps. There could be many formulations.

Let me quickly then move to the short end of the curve—where we're looking at yield caps. I'm open to this idea. The question for me, as others noted, is, under what circumstances would a short-term yield curve control program add thrust to the Committee's deployment of forward guidance and asset purchases, thus fostering achievement of our mandated goals, which today are far in the distance? And the answer will depend on the situation we face. Today, markets do find our forward guidance credible, and as long as that's the case, I'm not clear that there would be much of a problem here to be solved. And I do think we benefit from the experience of the Committee keeping the federal funds rate at the effective lower bound for seven years. So, I think, as anticipated, rates really collapsed when the crisis came, because markets do believe that we'll be low for long.

Wrapping up: I continue to think that we're well served by waiting to see how the economy evolves in coming months before clarifying our guidance and making further decisions about asset purchases. We're going to learn a great deal about the path of the pandemic and the shape of the recovery in coming months as we see the early months of the reopening of the economy take place. When the time is right, I do expect that we will agree on a strong statement, spelling out our steadfast intention to support the recovery and to continue that support so long as it is consistent with sustainably achieving our mandate objectives. All that said, we will have to remain attuned to the possibility that the situation will evolve in a way that requires prompt, faster action than that. If that happens, we will respond appropriately.

And with that, thanks for a great discussion. It's 12:19 p.m. I think it's lunchtime. And why don't we say that we'll have a break here, and we'll come back at 20 minutes after 1:00. Thanks very much.

[Lunch recess]

CHAIR POWELL. Welcome back, everyone. We'll move right into the Desk briefing. Lorie, would you like to begin, please?

> MS. LOGAN.[2] Thank you, Chair Powell. I'll be referring to the handout titled "Financial Developments and Open Market Operations" on page 12 of the consolidated package of materials.
>
> Over the intermeeting period, financial conditions continued to ease, driven by optimism about reopenings and ongoing policy support. Market functioning also continued to improve. Reflecting these developments, new usage of Federal Reserve operations and facilities generally declined, and market participants focused on the fundamental outlook and the FOMC's next policy steps.
>
> As outlined on page 13, I'll discuss four topics. First, I'll review the easing in financial conditions, highlighting key drivers and risks that remain in focus. Next, I'll review developments related to Federal Reserve operations and facilities. I'll then discuss monetary policy expectations and Treasury and MBS market functioning.
>
> Starting on page 15: Financial conditions eased further, with momentum building and broadening. As shown in the table on the top left, through last Friday, equities rose by almost 12 percent, investment-grade credit spreads narrowed meaningfully, and the dollar weakened, all extending moves over the previous period. Remarkably, the S&P 500 index stood just 6 percent below its all-time high, seen in late February, and was down only 1 percent year-to-date. With the gains yesterday, the index is flat on the year. Meanwhile, the nominal Treasury yield curve steepened, as longer-dated yields rose.
>
> I'll now turn to page 16. Optimism around reopenings contributed to the broad easing in conditions, as parts of the United States and other countries relaxed lockdown restrictions. The optimism was reportedly fueled by encouraging readings from alternative high-frequency indicators of activity, like greater mobility as

[2] The materials used by Ms. Logan are appended to this transcript (appendix 2).

measured by cell phones—shown on the left—and increases in restaurant activity—shown on the right.

Additionally, as outlined on page 17, the suite of U.S. and global policy measures taken since mid-March laid a foundation for the improvement in conditions. In particular, market participants think monetary policy will remain accommodative. As shown in panel 8, the expected path of policy rates has fallen in most major economies. Funding operations and liquidity facilities continue to support stable conditions in short-term dollar funding markets, and credit facilities have contributed to more open primary markets and narrower secondary-market spreads. As shown in panel 9, significant fiscal stimulus has been enacted here and abroad.

Despite the buoyancy in markets, our contacts continue to see the U.S. economic outlook as grim and very uncertain. On the next page, panel 10 shows the average PDF for 2020 GDP growth from the Desk's most recent surveys in dark blue. The distribution was essentially unchanged from April. Averaging across respondents, the greatest probability continued to be placed on growth this year of between minus 4 and minus 6 percent. The distribution was wide, and the perceived risks were skewed to the downside.

While the drumbeat of optimism wasn't reflected in the 2020 growth PDF, the probabilities assigned to the U.S. and global economies being in recession in six months declined somewhat, as shown in panel 11, suggesting some improvement in the outlook next year. Of course, Friday's employment report, received after the surveys, also likely changed views to some degree.

So we've got buoyant markets alongside an improving but still very dark near-term outlook. This contrast led to questions over the period about whether the rally in risk assets has been overdone and whether equities in particular adequately price the full range of potential outcomes. One way to shed light on this question is to consider how the components that make up equity prices—that is, expected cash flows, risk-free rates, and risk premiums—might have changed since the virus's onset. Page 19 explores some of these factors.

On expected cash flows, analysts generally expect a sharp decline in earnings this year followed by a strong rebound next, as shown in panel 12, although uncertainty in the earnings outlook is especially high, with roughly 40 percent of S&P 500 firms having suspended guidance.

The differentiation in equity performance, shown in panels 13 and 14, looks consistent with the view that expectations for growth and earnings have been a significant driver. For example, while cyclical sectors are down a lot since the February peak in the overall stock market, health-care and information technology shares are about flat. Firms with relatively strong balance sheets have outperformed.

With respect to risk-free rates, as I showed earlier, Treasury yields have declined significantly, providing a boost to equity prices.

As for equity risk premiums, several offsetting factors have likely had effects. As I noted, uncertainty about earnings has risen, which should push risk premiums up. Countering that, the aggressive policy response might have reduced perceived tail risks, and "reach for yield" behavior driven by low rates may have pushed equity premiums down.

All told, a number of crosscurrents have affected equity prices. The differentiation shown here suggests the rally is not indiscriminate, but expectations still seem somewhat optimistic relative to the uncertainty in the outlook.

Although lower overall Treasury yields have supported equities and other asset prices, there has been a notable steepening in the Treasury yield curve in recent weeks. As shown in the top panel of page 20, the spread between the 5- and 30-year Treasury yields increased roughly 35 basis points. The steepening was driven by rising longer-run real yields, which models attribute mostly to higher term premiums.

So did the same optimism I've been speaking about drive this steepening in the curve? While it may have played a role, our contacts cited Treasury supply as the primary factor. In particular, the Treasury announced at its May refunding that it would concentrate more issuance in longer-dated coupons than had been expected. As shown in panel 16, since the beginning of March, the Treasury has increased coupon supply by roughly $270 billion out of the total of around $1.5 trillion that market participants expect by December. Some market participants have also pointed to the high volume of investment-grade corporate bond issuance this year, shown in panel 17, as pushing Treasury yields higher.

While for most of the period the increase in Treasury yields seem related primarily to long-dated term premiums, as talk of "green shoots" has grown more recently, the moves have crept forward along the curve and seem potentially more related to policy expectations. The five-year yield ended the period around 10 basis points higher. Looking ahead, Desk contacts caution that rising supply could further pressure yields, particularly if it comes alongside a material improvement in the economic outlook.

I'll close out this discussion of broad financial conditions by noting some key risks summarized on page 21. First is the prospect for a second wave of the virus and, more broadly, for health-related developments that necessitate renewed economic disruptions. Market participants think this would lead to a widespread resurgence in pressures across global markets.

Second, even absent more-adverse-than-expected health outcomes, there are risks related to how recessionary dynamics already in train might play out. Concerns around corporate credit, emerging markets, and the mortgage sector remain in focus, though anxiety around the mortgage sector has eased some as forbearance rates have come in below expectations. And we've seen increased focus on the financial positions of states and local governments, with a growing number of contacts expressing concern over the effect of lower expenditures and reduced employment in this sector.

And, third, distinct from the virus and the related economic dynamics, markets have been focused on escalating tensions between the United States and China and point to the U.S. election as a likely driver of markets moving into the fall.

All of these concerns contrast with the steady improvement in risk sentiment, and market participants highlight the vulnerability of markets to the realization of these potential downside risks in light of the run-up in risk assets.

I'll turn now to Federal Reserve operations and facilities on page 23. With the improvement in market conditions, new usage declined and outstanding amounts largely reflected term transactions initiated during the period of funding stress. The credit facilities that became operational over the period experienced only modest activity.

On the funding side, as shown in panel 18, overall Desk repo outstanding declined slightly as term transactions matured, although ongoing high Treasury issuance has led to increased take-up in overnight operations more recently. As I previewed at the April meeting, given the improvements in funding conditions, we reduced the amount of term repo offered over the intermeeting period. In the upcoming monthly schedule, we also intend to position repo operations in a backstop role by modestly increasing the minimum bid rates.

Broader dollar funding conditions also improved. For example, as shown in panel 19, after remaining elevated for some time, commercial paper rates fell notably relative to expected policy rates.

While U.S. dollar liquidity swaps outstanding remain around their recent peak of $450 billion, most of this is in 84-day swaps that start maturing this week. Take-up in recent operations has been very low, and if the maturing swaps aren't rolled over, total outstanding will decline in the manner shown on the right-hand side of panel 20. Starting in July, our central bank counterparts plan to reduce the frequency of the seven-day operations in light of these improved conditions. Meanwhile, take-up in the FIMA Repo Facility has been minimal. We also continue to see declines in discount window usage, shown in panel 21.

The upcoming maturities in both the repo book and the dollar swap lines will provide further insight into the robustness of private funding markets. Our contacts broadly note the ongoing importance of these operations as backstops. In this regard, we will be seeking guidance in July on whether to extend beyond September the temporary swap lines with the nine additional jurisdictions and the FIMA Repo Facility.

Page 24 covers the 13(3) facilities. With the improvements in short-term funding markets, usage across most of the liquidity facilities has been falling, although the

Paycheck Protection Program Liquidity Facility has grown steadily since its launch, as seen in panel 22.

Regarding the credit facilities, stresses in the corporate credit, municipal debt, and securitized product markets have eased notably because of the announcements of the facilities as well as the broader improvement in markets. As a result, activity in the facilities has been low thus far. In light of the improvements and low or declining take-up, expectations for future usage of the facilities moderated, as shown by the shift from the blue to the red diamonds in panel 23.

Overall, I'd say this is very positive: The tools have been effective, and the backstops appear to have had their intended effect. Moreover, many contacts note that the flexibility the Federal Reserve and the Treasury have shown in making adjustments along the way has boosted confidence. That said, market participants have expressed some concern that certifications, disclosures, and user requirements may give rise to stigma or make the programs less attractive should strains reemerge.

I will now turn to monetary policy expectations, on page 26. Overall, these were little changed, and most market participants don't anticipate policy changes at this meeting. The target range is generally expected to remain at the lower bound for the next couple of years. We see this in market pricing, in panel 24, and in the range of modal forecasts from the Desk surveys, in panel 25. Two features of the underlying probabilities that market participants place on different outcomes for the target rate are worth noting.

First, as shown to the left of panel 26, respondents continue to attach less than a 5 percent chance, on average, to the Committee adopting negative rates through 2022. The prospect of negative policy rates was in focus early in the period, as rates on federal funds futures settling late this year and next fell to slightly negative levels. Most contacts thought technical factors amplified the decline. Futures rates shifted back into positive terrain after the Chair and other Committee members reiterated earlier communications that negative interest rates were not considered an attractive policy option.

And, second, while survey respondents place the highest probability on the current target range being maintained through the end of 2022, they place significant probability on one or more hikes in both 2021 and 2022, shown by the light and dark blue bars on the right of this panel. This comes despite the historic declines in GDP expected this year.

On forward rate guidance, market participants generally don't expect the Committee to make material changes at this meeting, but many anticipate that the guidance will eventually be modified and see some chance of a change as most likely to come in September.

While we didn't ask about forward guidance on the surveys, in response to an open-ended question about additional policy measures that the Federal Reserve might adopt this year, around one-half of respondents noted that they expect some change to the current forward guidance, and about one-fourth explicitly noted that they expect outcome-based guidance. Roughly one-third noted that they expect some form of yield curve control.

Interestingly, those that expected yield curve control had lower expected rate paths and, as shown in panel 27, anticipated a lower median dot for 2022 in this meeting's Summary of Economic Projections. The notable probability placed on a hike by 2022 and the difference in SEP dot expectations suggest there may be some scope to reduce market uncertainty about the path of the target rate.

I'll conclude with the staff's assessment of Treasury securities market and MBS market functioning and considerations for asset purchases going forward, starting on page 28. Overall, functioning has improved substantially. This is evident across a range of indicators, many of which have essentially returned to the levels seen before the pandemic. For example, as shown in panels 28 and 29, bid-ask spreads in the Treasury securities and agency MBS markets are back near their pre-March levels. Other measures, like the average spread between actual Treasury security prices and a fitted curve, have continued to improve, but these have not yet returned to their pre-March levels. The still-elevated levels of some of these indicators may reflect structural factors. We continue to monitor these given the uncertainty in the outlook, heavy Treasury debt issuance, and continued work-from-home stance of many market participants.

In light of the improvements, the Desk gradually reduced the pace of purchases over the intermeeting period to their current levels of $4 billion per day in Treasury securities and $4.5 billion per day in agency MBS, as shown in panel 30. These equate to monthly increases in SOMA holdings of roughly $80 billion and $40 billion, respectively, significantly lower than the peak pace in mid-March. Continued purchases at the current pace could help sustain the gains we've seen and would be roughly in line with market expectations of Treasury security purchases and toward the lower end of expectations of MBS purchases.

As shown on page 29, in the Desk's most recent surveys, the median expectation of monthly purchases, net of the reinvestments, averaged around $85 billion through September for Treasury securities and $55 billion through September for agency MBS.

In terms of the communications regarding purchases, expectations are that the Committee will reframe the objectives around policy accommodation in coming meetings, possibly in line with broader changes to the framework.

If the Committee were to direct the Desk to increase Treasury, agency MBS, and agency CMBS holdings at least at the current pace, some elements of our operational approach would change. In particular, we would shift to monthly purchase amounts with semimonthly schedules, and agency MBS reinvestments over the purchase period would be noted separately.

We would continue with the current composition of Treasury purchases, which has been effective at supporting market functioning. However, we would transition to an MBS purchase allocation that places a modestly higher weight on more recently issued coupons, now that market dislocations in older production coupons have abated somewhat.

Finally, these changes could be communicated in a Desk statement, a draft of which is shown in the appendix to your materials. A summary of recently conducted small-value operational tests, as well as those we expect to do over the upcoming period, is also shown in the appendix. Thank you, Mr. Chair. Patricia and I look forward to your questions.

CHAIR POWELL. Okay. Thank you, Lorie. Are there any questions for Lorie or Patricia? If so, Skype me. [No response] Okay. Seeing none and seeing no hands raised, we now need a vote to ratify—

MR. EVANS. Mr. Chair, this is Charlie Evans. I lost connection, and I'm on the phone right now. Could I ask a question?

CHAIR POWELL. Please.

MR. EVANS. Lorie, I might have missed something, but on page 19, where you're talking about whether equities are overdone, and in chart 14 you've got firms with strong versus weak balance sheets, and clearly the strong balance sheets are doing better than the weak balance sheets, is it the strong balance sheet firms that are in the equity indexes? Or was it also the low interest rates that are responsible? I don't quite think I caught the punchline there.

MS. LOGAN. Overall, I'd say it's fairly remarkable, with stocks flat this year and off 6 percent of the highs. I think the rally has been driven by optimism about reopening and the low risk-free rates that bolster equity prices. Earnings are expected to rebound sharply next year, credit spreads tighter, and issuances strong, even for the poor credits. Still, I think what I was trying to show on that page was that there is still some differentiation. Sector performance in stocks shows cyclical companies down while is technology up, and the companies with weak balance sheets generally have underperformed and have higher credit spreads.

So I think the main point is that what we're seeing is not indiscriminate. Overall, the strength of the index as a whole has been a bit surprising to us and many of our contacts, and that could suggest that markets are not fully priced for the full range of potential outcomes.

MR. EVANS. Okay. Thank you very much.

CHAIR POWELL. Thanks. President Daly.

MS. DALY. Yes. Thank you, Mr. Chair. So, Lorie, I had a follow-up question—really, to President Evans, and also just looking at your—I think it's chart 27 in your packet in which you review the median expectations. I guess what I wanted to know is, I thought you had characterized there to be a little room for us to become more specific about the guidance, that there are some market participants that think we're going to raise earlier than I think we've talked about. So do you think they just have a fundamentally different view of the economy, if we were going to be clear? Or do you think they have a different view of our policy reaction function? Where is the disagreement in their views?

MS. LOGAN. I think, overall, the FOMC's forward guidance has been credible so far. I think, as has been discussed by a number of participants, rates are low. Nonetheless, I think there's some uncertainty in rates. As you can see in chart 26, survey respondents placed more than a 50 percent probability on rate increases in 2022 even before the employment report. So I think that this may suggest risks to higher rates if the economy performs better than expected. I think stronger, clearer forward guidance could help some. Yield curve control could also provide some insurance against rates rising before the FOMC wanted them to. So I think, overall, removing uncertainty could also bring down overall interest rates.

In terms of the difference in panel 27, from what we looked at in the survey it didn't seem to come from different views in their economic outlooks.

MS. DALY. Thank you, Lorie. Thank you, Mr. Chair.

CHAIR POWELL. I'm seeing no further questions and no one waving a hand, so with that, we need a vote to ratify domestic open market operations that were conducted since the April meeting. Do I have a motion to approve?

VICE CHAIR WILLIAMS. So moved.

CHAIR POWELL. All in favor? [Chorus of ayes] Thank you. Without objection. I didn't step over somebody's question there, did I? [No response] No? [No response] Okay. Let's now turn to a review of financial and economic developments. Stacey, would you like to start, please?

MS. TEVLIN.[3] Thank you, Chair Powell. My materials start on page 34 of the combined packet.

Friday's employment report provided evidence that the labor market recovery likely started in May, though clearly it has a long way to go. As shown by the bottom black bar in panel 1, BLS payrolls rose 2.5 million in May following the historic 20 million job loss in April, the light blue bar. As shown by the upper black bars, net job gains were reasonably widespread last month, and they were largest in categories in which we think social distancing was an important factor, such as leisure and hospitality, which includes restaurants; retail trade; and health care. Cumulative BLS private job losses are shown by the blue dots in panel 2 and totaled 18 million as of mid-May. The nascent upturn shown here is similar to that of our in-house weekly estimates of paid cumulative employment losses based on data from ADP, the black dots. Job losses among people who have actually been removed from firms' active rosters, the red line, which we equate with more permanent losses, are not as large but also have not yet started to reverse.

We are projecting that the upturn will prove durable and expect further job gains in the June report, as indicated by the blue hollow dot, based on the two weeks of ADP data we have since the May BLS reference week; data on cell phone movements to workplaces, the black line in panel 3; a measure of hours worked by small businesses, the red line in that panel; and our assumption that social distancing, both mandatory and voluntary, is easing further this month.

The May figures from the BLS came in much more upbeat than we expected. However, we had been expecting a huge increase in payrolls to occur in June, and we

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

are interpreting the surprise as primarily reflecting an earlier bounceback than expected. As a result, we have moderated our June forecast of payroll gains.

Panel 4 shows the unemployment rates for different racial and ethnic groups. Although all the groups shown here now have unemployment rates well into the double digits, the jobless rates of black and Hispanic workers have risen to especially high levels, a continuation of the pattern we have seen in past recessions. And I should note that even with the positive signs in the May data, the elevated level of joblessness and the more gradual recovery that we are forecasting for the second half means we only expect the overall unemployment rate to fall to about 9 percent by the end of the year.

Like employment, we have a variety of indicators that suggest consumer spending, the subject of your next exhibit, is moving up gradually after its collapse in April. According to two different high-frequency sources shown in panel 5, over the past few weeks consumers have been spending at close to the level seen a year ago. Panel 6 shows that although motor vehicle sales also bounced up in May, they remain at a low level. And spending on services, which constitute around half of consumer purchases, appears to have moved up only tepidly from its April lows, at least judging from the categories we can observe, some of which are shown in panel 7. The upturn in overall consumer spending may be due, in part, to the reopening of the economy seen so far, and we do see a somewhat faster rebound in states that reopened earlier, the black line in panel 8. But even the states that reopened later, shown in the red line, are seeing a significant bounce in sales, which likely has a lot to do with fiscal stimulus, a subject I will revisit shortly.

Despite the somewhat more upbeat tenor of the data, we have weakened our projection pretty substantially since the April Tealbook, as noted on the next exhibit. As shown by the dark green bars, we now expect that GDP will fall nearly 7 percent this year, compared with about a 4 percent decline in our earlier projection. The primary reason is that we now expect the spread of COVID-19 to slow by less than we'd anticipated in April, as public health measures have made less progress containing the spread than we had assumed. A secondary reason is that we increased the expected drag on demand from the severe budget pressures faced by state and local governments. We now expect aggregate demand next year to bounce back more from the deeper shock.

Panel 10 shows an index of the level of real GDP this year and next year, the black line, along with various influences on it in our projection. The most important influence is the direct effect from mandatory and voluntary social distancing and related production disruptions, the light blue line, which we assume will hit bottom this quarter but will not fully dissipate until late next year. On the plus side, we have the positive effects of fiscal spending, the navy blue line, which provides massive support this year, and monetary policy, the red line. We have built in fairly standard effects of monetary policy here based on the reduction in Treasury rates estimated empirically in past episodes and on a rough estimate of how Federal Reserve actions may have brought down spreads and the equity risk premium. This estimate should be viewed as a lower bound, as it likely does not include all the improvements in confidence, uncertainty, and financial market functioning; it is hard to imagine just how bad these might have been in the absence of forceful Fed action.

The gold line combines a number of other influences that we assume are going to slow the pace of recovery. These include the usual multiplier effects like declining income and profits on household and business spending; effects that seem especially bad during recessions such as uncertainty, pessimism, and reduced access to credit; and more persistent effects like the loss of worker skills, less investment in capital goods and R&D, and the loss of intangible business capital.

As you all know, the drop in real GDP in the first half of this year is likely to be the largest since the Depression. However, our assessment is that much of the sharp drop in production reflects mandatory closures of nonessential concerns and other restrictions. Because we view these as temporary structural effects, they do not really represent slack in the economy. For instance, we are assuming that a measure of the natural rate of unemployment that includes short-run disruptions, panel 11, jumped this quarter as workers are being prevented from supplying labor by closures and stay-at-home orders. Putting supply and demand together, our measure of the output gap is shown by the black line in the next panel. Clearly, this recession started much faster than any other post–World War II recession, but—under our assumptions about how much of the GDP drop is due to aggregate supply—the trough is about as deep as the recessions that started in 1973 and 2007. The key question is, how fast will it recover? We have built in a relatively brisk recovery in our projection—one that is much closer to the recovery that started in 1982 than to the recovery that started in 2009. There are two main reasons for that. The first is that we judge the regulated financial sector to be much more resilient in this episode. The second is the rapid response from monetary and fiscal policymakers. The fiscal policy response and its support of the household sector is the subject of your next exhibit.

Panel 13 shows the increase in the deficit as a share of GDP, along with the peak rise in the unemployment rate, for the first year of 10 recessionary periods. Compared with past episodes, the response of fiscal policy this year has been unusually large and timely. The huge federal transfers led to a historic rise in the saving rate in April, which is not shown here. But aggregate numbers can mask the experience of individuals, and we know, as shown in panel 14, that job losses have been much greater for workers in the lowest wage quartile. To get a better sense of how well different households might actually be faring, my colleagues Lisa Dettling, Neil Bhutta, Kevin Moore, and Jackie Blair have used microdata from the Survey of Consumer Finances to identify the household resources of families. Their work, in panel 15, shows that the recent fiscal measures to support households' incomes, the red and blue portions of the bars, combined with the automatic stabilizers, the gray portions, and existing household resources, the orange portions, will be sufficient to tide over most working households for the next six months if they lose all of their income. This result obtains even though the CARES UI payments expire after four months and also holds for those who work in industries with the highest likelihood of being thrown out of work—the topmost bar.

This is reassuring news, but it seems at odds with news we hear about overburdened food banks and households' despair. One partial explanation for that tension is shown in panel 16. The line on the left is net job losses by week, and the line on the right is the cumulative payout of UI benefits. There is, on average, a three-week lag between these two lines. And the average obscures the experiences of individual families. My sister, for instance, received her benefits in less than two weeks, while my neighbor waited five weeks. By late May, we think the stimulus checks and the UI benefits had been much more broadly received, though workers without bank accounts or steady addresses might still be waiting. The ample fiscal response is an important reason that we are projecting the recovery will be relatively brisk.

Regarding my final exhibit, so far I have been discussing the staff baseline projection, which was based on the assumption that the spread of the virus will consist of periodic and localized flare-ups but not a large second wave. As we have noted since the pandemic began, an outcome that we consider to be equally as plausible as our baseline projection is one in which caseloads soar in the fall, resulting in the reinstatement of another round of intensive social distancing and a hit to economic activity that is larger and more protracted than in the baseline. The exhibits on this last page summarize the outlook under such a scenario. In this case, we would expect the unemployment rate to move back up again around the end of the year. Moreover, with the financial system already facing elevated losses and depressed earnings from the first wave and with fiscal and monetary policy likely to have less capacity to respond, we would expect the recovery to be much more prolonged, leading to additional permanent damage, even lower inflation, and the federal funds rate remaining at the ELB for much longer. And now I'll turn it over to Beth Anne.

MS. WILSON.[4] I will continue Stacey's cheery tale by describing the damage being wrought by COVID-19 abroad. As you can see in the second international slide, page 40, a collapse in the foreign economies seems very much in train. Real GDP growth is expected to fall almost 30 percent at an annual rate this quarter after an 11 percent drop in the last. These declines will bring the estimated level of foreign real GDP almost 12 percent below what we had been anticipating when we met in January, marking the largest decline in foreign real GDP in generations. Moreover, we have little hope of a full return to the pre-COVID path in the medium term.

The disease and measures to contain it are central to this outlook, and slide 3 presents our assumptions about the stringency of restrictions on activity for key advanced and emerging market economies: Green represents a low level of restrictions on social interaction and international travel, and red indicates strict shelter-in-place. As you well know, the disease and the restrictions in response started in China and East Asia, spread to Europe, and are now hitting other EMEs—importantly, Latin America. We anticipate that the easing of restrictions will follow that same pattern. Greater progress in containment and rigorous monitoring in the

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

first-hit countries have led us to revise our expectations of stringency down, represented by the minus signs in the boxes. In Latin America, we are already seeing difficulties implementing effective shelter-in-place restrictions and anticipate that the virus will prove hard to contain there. Thus, some degree of social distancing may extend through next year in that region, as in some other EMEs.

Slide 4 illustrates how the stringency of COVID-19 restrictions relates to our forecast—overlaying the colors indicating restrictiveness with our forecasts for selected economies and regions. In China and several other East Asian economies, we project the effect of the virus will be severe but relatively short lived. Scarred by earlier experience with SARS, the region has had a rapid and comprehensive response, and strong systems have been put in place to contain flare-ups. In contrast, we expect the hit will be greater and more sustained in Europe, where the response lagged somewhat and underlying economic and financial conditions were less robust. This is even truer for Latin America, where the structural challenges are greater and the response in some countries has been delayed and disorganized.

While we are reasonably confident about our very near-term forecast, our assurance fades fast and furiously thereafter in the face of vast epidemiological and economic uncertainty. Given that, we are using a variety of means to attempt to diminish, define, and quantify the uncertainty and risks around our medium-term forecast. I will turn to those next.

First, clicking to slide 5, we are closely examining current experiences to help us refine our baseline and reduce uncertainty. Three early patterns are emerging: Lockdowns have generally been effective in controlling the spread of the virus; earlier, more rigorous, and more strategic responses have typically led to less costly experiences; and, conversely, countries with slower and less stringent responses, greater structural challenges such as impediments to testing and lockdowns, or a high density of poor populations appear to suffer greater economic costs. These early patterns help shape our baseline outlook, leading us to be more confident about our recoveries for China and East Asia and more concerned about other EMEs.

As illustrated in the next slide, we attempt to define the uncertainty surrounding our forecast through cohesive, well-defined scenario analysis that incorporates frequently-cited alternatives to our baseline assumptions. We could be surprised by the rapidity of the recovery when restrictions are lifted, as we caught glimpses of this last week. Moreover, our assumption that a vaccine will not be widely available until the end of next year could prove too pessimistic, given the intense medical efforts globally. Such outcomes are represented by our “Early Moderation” scenario. It is also quite possible that the virus proves more difficult to contain—as we are seeing in several economies lately—and possibly resurges later in the year, leading to greater economic, financial, and social costs, as detailed in our “Second Waves” scenario. Finally, as reflected in our “Depression” scenario, the virus and its effect could be severe enough to trigger financial and political crises, leading to deep declines in output and soaring unemployment. These scenarios help bound the uncertainty by providing well-articulated paths for the foreign economy that are based on commonly-cited alternative views. However, they do not provide any statistical or empirically based sense of the uncertainty we are facing. For that, I would like to highlight two other approaches.

A relatively simple historical context to our baseline path is described in slides 7 and 8. The current COVID-19 crisis is often compared to past extreme global events. Drawing on the work of Barro and Ursua (2008), we use 130 years of data for 42 countries in search of extreme macroeconomic events—“disasters,” if you will. These events predominantly happen around the Spanish Flu Epidemic of 1918, the Great Depression, and the two world wars and are associated with declines in annual GDP of 10 percent or greater. The red lines in the two charts describe the median path of the level of annual GDP per capita for the advanced and emerging economies in the aftermath of such disasters. The red shaded areas capture the 15th to 85th percentile range around this median. As can be seen, our baseline path for the AFEs, the black line on the left, lies in the upper tail of the past disaster experiences. Our baseline EME projection appears even more optimistic. Thus, if you thought the current crisis was on par with these past disasters, our Tealbook outlook might look too optimistic.

Slide 8 presents another point of comparison—those severe periods over the past 60 years associated with a collapse in real GDP growth in one quarter of more than 10 percent at an annual rate. Compared with these somewhat less drastic cases, our current projection initially looks more negative for the advanced economies and about on par for the EMEs. But the faster bounceback that we have built into our baseline returns GDP to pre-crisis levels in about the same number of quarters as the medians of these earlier episodes.

What do we learn from this analysis? There are reasons to expect a sharper bounceback now, including the very swift and strong response of policymakers around the world and the sharp off-and-then-on nature of many of the social-distancing restrictions. However, these exercises do point to the more lasting damage typically associated with such deep declines in output and provide support to our view that, despite buoyant financial markets and some encouraging data of late, risks are still tilted to the downside.

Another way of using historical experience to assess the range of uncertainty and risk is with an increasingly common statistical technique called growth at risk, or GaR, discussed on slide 9. Staff work on this is detailed in a box in the R&U section of the Tealbook, but, simply put, this framework generates estimates of the possible range of GDP growth, say 12 months out, based on current macroeconomic and financial conditions and, as such, helps us assess the uncertainty around the future path of GDP. To capture current conditions, we construct macroeconomic and financial indicators using a dynamic factor model to extract common movements in foreign macroeconomic data including GDP, IP, retail sales, and PMIs and financial market metrics such as the VIX and corporate spreads. These monthly real-time indicators are shown to the left. Note that, compared with the Global Financial Crisis, the current deterioration in macroeconomic conditions is greater and that of financial conditions is less. This likely reflects both the abrupt global shutdowns in foreign activity and the rapid policy response that characterize this crisis. Note also, as seen in the middle panel, that financial conditions have improved rapidly since the start of the crisis, as Lorie just described. In turn, the macro indicator is capturing signals from the data showing that the recent precipitous economic decline may be bottoming out, at least in aggregate.

Using these current conditions indicators, the growth-at-risk methodology allows us to estimate the range of possible outcomes of aggregate foreign real GDP growth one year ahead at any point in time. The resulting distributions for key dates are shown to the right. In general, the wider the distribution, the greater the uncertainty, and the more negative the tail, the greater the risks to growth.

The blue line is the conditional distribution of predicted GDP outcomes based on the financial and macro conditions abroad in the happier times of last December. As you can see, the median was for about 2 percent growth in the foreign economies over the next 12 months and had very limited upside and downside risks. By April, the bright red line, that picture had darkened dramatically as financial conditions and, particularly, macroeconomic indicators deteriorated. The median growth rate shifted to negative 2 percent, and the distribution was skewed decidedly to the left. In May, the black line, conditions improved, especially for financial markets, and this has helped contain risks. By comparison, the distribution during the height of the GFC, in dark red, showed median expected growth comparable to May but fatter left-side tails, reflecting the more acute financial stresses at the time.

This approach provides a very timely sense of the risks and uncertainties associated with the path of real GDP growth. Comparing the May and April distributions, for example, we can see both the benefits of reduced financial stresses but also the potential risks should financial conditions deteriorate again. This sensitivity to changes in underlying conditions can also be viewed as a disadvantage, however, as the assessment of uncertainty can be so rapidly changing. More generally, the use of this methodology, as with many others, assumes that past historical experience is a relevant guide for the current situation.

As this review of our approaches to uncertainty shows, developments both on the ground and of our tools have allowed us to come a long way since early March when we faced almost Knightian uncertainty. We have more experience with the course of the virus and the effect of the response, we can place our baseline in historical context, and we can start to quantify the downside risks based on historical empirical relationships. However, beyond the near term, we are still at the mercy of the course of the disease and the possibility of reaching tipping points in terms of financial and social stability. For us in the International Finance Division, those tipping points seem much nearer for the EMEs. Given this, IF and New York Fed staff have designed a detailed system for monitoring emerging market economy stresses. So far, the improvement in global financial markets has taken some of some of the pressure off of EMEs, but, as the economic and political costs of the virus mount, we will be watching carefully for signs of greater strain and the possibility that downside risks are being realized.

And, with that, I end on the same chipper note as I began and hand the phone over to Mark to learn how you all feel about the outlook.

MR. CARLSON.[5] Thank you. I will be referring to the "Materials for Briefing on Summary of Economic Projections" that begin on page 50 of your packet.

I am sure that you will not be surprised to hear that your latest projections differ dramatically from your projections in December, with all of you estimating that economic activity has plunged in the first half of this year as a result of social distancing and other measures aimed at containing the pandemic. Your projections indicate that it will take some time for the economy to recover, and, accordingly, nearly all of you judge it appropriate to maintain the current target range for the federal funds rate throughout the forecast period. A majority of you reported conditioning your projections on the absence of a second wave of contagion or on future flare-ups being local in nature. A common theme of your narratives was that the course of the virus and its effects on the economy are highly uncertain, making your economic projections and assessments about appropriate policy also more uncertain than usual. A solid majority of you view the risks to your outlook for economic activity and the labor market as adversely skewed and inflation risks as weighted to the downside.

As shown in exhibit 1 on page 51, your forecasts call for real GDP to contract between 4.2 and 10 percent this year, with the median participant seeing a contraction of 6.5 percent; GDP is then projected by the median participant to expand at a pace above its estimated longer-run rate through 2022. Your projections of the unemployment rate in the final quarter of this year range from 7 to 14 percent, with the median being 9.3 percent. All of you then expect the unemployment rate to decrease in each of the next two years. Highlighting the challenge of assessing the economic damage caused by the pandemic and forecasting the recovery in the labor market, the width of the range of your forecasts for the unemployment rate at the end of this year and next year are 7 percentage points and 7.5 percentage points, respectively—more than three times the widest ranges for forecasts of similar horizons that occurred during the financial crisis.

This dispersion aside, almost all of you who submitted longer-run projections expect that the unemployment rate at the end of 2022 will still be above your longer-run estimate. Among the factors most commonly noted to explain the persistence of slack over the projection period are the continuation of voluntary social distancing, unusual disruptions to labor markets, and the need for businesses to restructure operations. Only a few of you revised your longer-run estimates of the unemployment rate or real GDP growth, and a couple of you indicated that you would

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

be attuned to the possibility that the pandemic had inflicted longer-lasting damage on the economy.

With respect to inflation, the median projection is for headline and core PCE inflation to slow this year to 0.8 percent and 1.0 percent, respectively. Inflation is expected to rise over the next couple of years. However, almost all of you expect PCE inflation to fall short of the Committee's longer-run objective of 2 percent in 2022, with the median projection being 1.7 percent.

Exhibit 2 reports your assessments of the appropriate path of the federal funds rate. As shown by the blue dots in the top panel, almost all of you indicated that it would be appropriate to maintain the current target range through at least the end of 2022. Some of you noted in your narratives that your assessment of appropriate monetary policy includes additional measures, such as forward guidance or asset purchases. The median longer-run level of the federal funds rate, at 2.5 percent, is unchanged from December.

The green diamonds in exhibit 2 show the most likely year-end midpoint of the target range for the federal funds rate, as reported by the median respondent to the Desk's latest Survey of Primary Dealers and Survey of Market Participants. The green whiskers show the corresponding interquartile ranges of the distribution of the most likely policy rates. These statistics indicate that the bulk of Desk survey respondents, like the vast majority of FOMC participants, expect the current target range to be maintained through 2022, with the remaining respondents generally seeing only modest increases starting in 2022.

Exhibit 3 presents your judgments about the uncertainty and risks surrounding your projections. As shown in the left panels, all of you view the uncertainty about all four variables in your projections as greater than the average over the past 20 years, which is the first time this has been the case in the SEP. As the top-right panels illustrate, a substantial majority of you judge the risks to your real GDP growth projections as skewed to the downside and the risks to your unemployment rate projections as skewed to the upside. Similarly, as the bottom-right panels show, a substantial majority of you view the risks to your inflation projections as skewed to the downside.

As noted at the outset, the course of the virus was mentioned in many of your narratives as a key source of uncertainty, with the possibilities of second waves of contagion and delays in developing a vaccine seen as potential downside risks to the economic outlook and faster-than-anticipated progress in responding to, or in treating, the virus as potential upside risks. You also mentioned a number of other unknowns and risk factors, including the extent of supply-side disruptions, possible changes in household behavior, dislocations associated with the elevated levels of business bankruptcies, the extent of fiscal support, and the low foreign demand given the global nature of the pandemic. Several of you also expressed concerns about longer-run issues in the event of a prolonged recession, such as labor market scarring if the unemployment rate stays elevated or inflation persistently undershooting the Committee’s longer-run goal.

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

CHAIR POWELL. Thank you. Any questions for our briefers, either on Skype or through the hand-waving method? President Barkin.

MR. BARKIN. Thanks. Stacey, just a question on the “Second Waves” scenario. I just noted how long it took in that scenario for us to converge back to anything like the path we would be on without it. What’s your sense in the models? What drives the length of that gap?

MS. TEVLIN. One thing is that we also added into that scenario a little bit of additional drag due to supply-side damage, and we assumed that there was not as much capacity for policymakers to respond, and that the financial market conditions were not—there had already been some difficulty in the first round, and so there wasn’t as much ability for financial market conditions to be as healthy. So we’ve built all that in. I wouldn’t say that’s necessarily built in—that’s not something that’s a feature of the models. Those are assumptions that we made because we think that’s more likely if we were to get into the “Second Waves” scenario.

MR. BARKIN. Thanks.

CHAIR POWELL. President Kashkari, please.

MR. KASHKARI. Thank you, Mr. Chair. Stacey, on slide 36, your chart 12, you have a graph of the output gap today compared with other recessions. Can you explain that? I would have thought, given so much more labor market slack and a higher unemployment rate, that the output gap would be driven by labor market slack, and the output gap would be larger today than in previous recessions. What am I missing? Why are they so similar?

MS. TEVLIN. So if you look at the panel to the left, the natural rate of unemployment, that is our assumption that a good part of what’s going on in the labor market is structural, and so the gap isn't falling as far. And decisions about what to put into the forecast—how much is supply and how much is demand—are difficult to make. It's hard, as you know, even *ex post*, looking back at recessions many years later, to disentangle those—to do it in real time for big changes like this is difficult. But we looked by state and by industry and thought hard about where we thought the restrictions were mandatory, as opposed to driven by demand, and made those assumptions to aggregate supply. And so, therefore, even with the very large decline in GDP and the big rise in the unemployment rate, you don't see as much of a decline in the output gap as you might have thought.

MR. KASHKARI. Can I just follow up for a second? You said that I should look at chart 11. Is that what you pointed me to? I just want to make sure I'm following.

MS. TEVLIN. Yes, panel 11.

MR. KASHKARI. Can you just walk me through that? What would I be looking at to see that? It just isn't obvious to me, and I apologize.

MS. TEVLIN. That's our assumption about what the natural rate of unemployment is going to look like. And that includes both the—

MR. KASHKARI. Oh, I see, yes. The natural rate of unemployment is what took off. And so the fact that the unemployment rate exceeds that, that's what represents the output gap. I mean, I guess maybe that's the method in all of the other charts, but I would humbly quibble with that, the idea that the natural rate of unemployment is 10 percent and so the effective unemployment rate is really only 5 percent above that. I mean, I guess we could take that offline. But I appreciate it. Thank you for explaining it. I now understand how you did it.

MS. TEVLIN. Yes. I mean, it's a difficult issue, so on the one hand, you could imagine that we could have just kept the more long-run natural rate of unemployment in assessing our overall slack. But if we're thinking about what's going to actually affect prices and wages, for instance, we don't think that these people being restricted from going to their jobs are going to put pressure on wages, right? So this jump in the natural rate is meant to get at how much actual slack we think is in labor markets, given the unemployment rate.

MR. KASHKARI. Okay. Thank you. That's clear.

CHAIR POWELL. Thanks. Vice Chair Williams.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. I just have a comment or a question for both Stacey and Beth Anne, actually. On page 110 in the Tealbook, there was a really nice, interesting box on risks to the forecast, and it referred to growth-at-risk types of models, and, Beth Anne, you have that on page 47, slide 9, of your presentation.

I really appreciate that the staff is bringing these models to the discussion at the table. I think I mentioned some of the work among my colleagues at the New York Fed on that, so I'm very positive about doing this. But I will say that looking at what was in the Tealbook and looking at what you present here shows that we should be careful in interpreting these. If you look at your chart—I'll just use the one that everyone has in front of them on slide 9, page 47 of 60. In December, there was essentially no chance that real GDP would fall during 2020, according to this model. And then, by April, there was a high probability that GDP would fall by more than 5 percent. And then in May it looks like it can't possibly fall by more than 5 percent. Again, these are over the next 12 months.

So when you look closely here, one of the things is, what's happened during this period—why these things are flying around is not just because of COVID-19. Because between April and May—that's just a month, and we're in the middle of this—is that inputs into these models, specifically the macro uncertainty input, has just completely blown up, is at completely unprecedented levels, six times that—I'm talking about the U.S. model in the Tealbook—of what was true at the peak of the Global Financial Crisis.

I think it's great that we're trying to bring these tools here. I just would caution, especially on this May 2020 chart, that these models right now are very sensitive to these huge movements in conditioning factors. They're moving around a lot.

I'm supposed to put this into a question. I just think that as we watch these, we should be cautious that the conditioning factors themselves are really unusual movements, and those are what's driving it, and maybe not put so much emphasis on what the model itself is showing. Don't you agree? [Laughter]

MS. WILSON. I do agree, which is why I highlighted that in my remarks. I think this is an increasingly commonly used framework—financial market participants are referring to this, and certainly the IMF is highlighting this. I think what you see here is how sensitive this measure is. It's nice that it's in real time. It provides this nice distribution. But it is highly sensitive to the movements of the inputs. And also, especially because there are so few observations in the tail, that's another sensitivity of this technique. So I completely agree with you.

CHAIR POWELL. Thank you. President Daly.

MS. DALY. Well, I'm going to make it convenient, Beth Anne, because I'm going to stay on the same chart. I had the same question that Vice Chair Williams had, but I'll add another part to it, which is, in looking at May 2020 versus April 2020, a lot has changed, in terms of central banks and fiscal agents across the globe saying they're willing to do whatever it takes to not have this dig a deep hole.

So, in your mind, does that add another layer of caution that this is—if we look at this, we could say, "Wow, this is very optimistic" or "This looks like really good news," but all of this is conditioned on financial variables, which are responsive to the expectations of further policy actions. So I am just trying to see if I'm interpreting this correctly as another caution.

MS. WILSON. That's definitely—in that little middle panel, you see the big spike but then the immediate retracement of the financial indicator. One of the big reasons why that has retraced, of course, is the significant actions of fiscal and monetary authorities globally to come, and those have had a big calming effect on financial markets. Should that spike up again, for whatever reason—political stresses, news about the virus, incoming data, changes in the policy stance or the commitment—we could see that revert, I think, quickly back to a much more adverse situation.

MS. DALY. Thank you.

CHAIR POWELL. Governor Brainard.

MS. BRAINARD. Thank you. And excellent presentations, thank you very much. Just a quick question for Stacey, and I guess it's vaguely related to page 34. I'm just wondering, how much did our ability to analyze the ADP data help us in anticipating a very large surprise in the May payroll? And were we closer than private forecasters, or did we also miss it by a mile despite having that ADP data?

MS. TEVLIN. So we were closer, and—actually, because Bill Wascher and I can't see each other, we decided ahead of time that he was going to answer the labor questions, and I almost forgot that. So I'm going to let him answer this question.

MR. WASCHER. Okay, thanks, Stacey. So, yes, we were closer. A lot of the private forecasters were forecasting declines of something like 7 million, 6 million to 7 million, and we were forecasting a decline of 4½ million. So we still missed by a mile, but we didn't miss by two miles, I guess, is one way to think of it.

So, clearly, we were balancing a number of different indicators. The ADP numbers were on the positive side, but we were also continuing to see very large numbers of initial claims being filed, and that led us to write down the decline we had put in for May. And I think that's what other private forecasters were looking at as well. And then some of the other surveys, like the Census Household Pulse Survey and the Blick and Blandin survey, were also still showing declines through mid-May in employment. The other one that wasn't was the small business one from Homebase that was also showing an increase between April and May.

So, clearly, in retrospect we should have put more weight on the ADP data, and, looking at our forecast for June, in fact, we are. So, again, at the time we were balancing different things, and we were way off, but not quite as far off as most private-sector forecasters.

MS. BRAINARD. Can I just do a very quick follow-up? I presume we should be taking some signal from this. What signal are you taking from this?

MR. WASCHER. So, as Stacey mentioned, we basically assumed that the huge increase we had expected in June, which was like 9 million in the Tealbook, came in May—or a bunch, 2½ million of it, came in May. So we're expecting another 2½ million increase in June, another 3½ million increase in July. So we basically viewed most of this as a shift in timing, that the rebound occurred a little earlier than we were expecting. And I think the ADP numbers we've seen since mid-May seem pretty consistent with the 2½ million that we're expecting in the June report, which would be for the week of June 12. This week, in fact.

CHAIR POWELL. Thanks. President Evans.

MR. EVANS. Thank you, Mr. Chair. I've got two questions, I guess. They're labor related, so I guess maybe they'll go to Bill, but however you want to divvy them up.

The first one is on chart 18, "Unemployment Rate," under the second wave. It was sparked by President Barkin's question as I saw that longer return of unemployment to come down. I was thinking, this must be a scenario in which it's more like the recovery from 2010 after the great financial crisis, when long-term unemployment went up a lot, short-term unemployment not so much, and there was a scarring effect if you'd been out of the workforce for a long period of time. So I guess the question is, is that the type of phenomenon you have in mind? And maybe you could talk a little bit about that.

The other one is on the "Natural Rate of Unemployment" chart, number 11. And I've got an idea my staff is going to yell at me for this question, but this change in the natural rate of unemployment—when we talked about it before, I did not find this concept to be particularly helpful in this context. And the way I think Stacey was describing it, I began to think that this is a way of sort of aligning your wage forecast so that it doesn't go down on you as you have very high unemployment. And if you didn't make this adjustment you'd be expecting wages to fall in a counterfactual way. So it's a little bit more of a bookkeeping alignment issue.

I say it that way because, do you really feel this is likely to be a persistent assessment of a higher natural rate of unemployment, or is it a little bit more of a forecasting kind of thing? That would make me have to take this even more seriously than—I do, but it strikes me as a little bit of a—you have to do a very serious forecast. I don't do the same thing. And I would do exactly what you're doing too, I presume. But if you could help me think that one through, I would appreciate it.

MR. WASCHER. On the second wave, I think you're right. I think, as Stacey noted, we've built in more supply-side damage. And some of that supply-side damage would come in the form of a higher natural rate, as there's more long-term unemployment and permanent job loss, and we know that that takes longer to go away. So part of the reason that the decline is slower in the "Second Waves" scenario is, in fact, that we have built in a more persistent increase in the natural rate of unemployment in that scenario.

On the other question on our assumptions about the natural rate, again, as Stacey noted, we were trying to figure out how to split up supply and demand factors, in terms of the mandatory closures and shutdowns and so forth. And our view was that, if workers are prevented from going to work because of shutdowns, that should be a reduction in labor supply—which implied an increase in the natural rate.

I kind of agree with you that, in some sense, it's a forecasting tool because we don't think that the high unemployment rate is going to cause additional weakness in wage and price inflation. And, as you can see, the natural rate comes down pretty quickly as the social-distancing restrictions are anticipated to ease. And so by the end of the year, it's down toward 6 percent or a little more. And that represents more of what we think is going on, in terms of the damage associated with permanent job loss from this episode and the need for industry to sort of restructure their businesses and so forth.

I don't know if that answers your question, but, basically, it's a judgment, and it's a judgment based on our view of how mandatory restrictions are affecting labor supply.

MR. EVANS. Yes, if I could, I'd say that your second answer got very directly at what I was thinking about. And, you're right, it is coming down quickly. I think one thing that I worried about in the earlier episode is, many participants held onto this idea that the natural rate of unemployment was going to remain high—in my opinion, long beyond when that seemed reasonable. So, at any rate, having a conversation about that is useful.

If I could just clarify, I don't think I heard you say that the second-wave increase in unemployment would be related to long-term unemployment. I think you slipped in that the natural rate of unemployment would be higher. When you say the natural rate of unemployment is higher, is that short term and long term? I was going after the fact that there's a dichotomy between the people who are really scarred and out of employment for a long period of time. That's really more dire.

MR. WASCHER. Yes, that's what I meant to say, that there's an increase in long-term unemployment associated with the second wave, more permanent job loss, and that leads us to include a higher natural rate in that scenario. But that's right.

MR. EVANS. Okay, thank you.

CHAIR POWELL. President Kashkari.

MR. KASHKARI. I'm okay. Charlie asked a follow-up on the natural rate, so I'm good, thank you.

CHAIR POWELL. Okay. If there are no further questions, let's go to the economic round, and we'll begin with President Rosengren, please.

MR. ROSENGREN. Thank you, Mr. Chair. Massachusetts COVID-19 hospitalizations have fallen significantly from their peak. Significant challenges persist. As of last week, 1,600 people were hospitalized for COVID-19 in Massachusetts. Five hospitals were still on surge capacity. And deaths were between 40 and 50 people a day.

The state has started a phased reopening, with quantitative metrics determining the timing of the progression through the sequence of phases. The state has just declared the start of phase 2 that allows nonessential businesses to restart. Unfortunately, given new measured infections of around 400 a day in Massachusetts over the past week, the path to contact tracing and the end of community transmission is not in sight. As a result, people are likely to remain cautious, and the recovery and economic activity will continue to face headwinds.

I also take relatively little solace in the May employment report. Layoffs from mandatory shutdowns followed by earlier openings than expected or recommended by many epidemiologists may improve reported payrolls temporarily, but likely will increase the probability of the Tealbook's "Second Waves" scenario. In fact, given the poor public health performance so far in containing the virus in the United States, the Tealbook's "Second Waves" alternative scenario is closer to my base case, with the Tealbook's baseline forecast closer to my optimistic scenario.

Indeed, I expect the national unemployment rate to end the year still in double digits. The early restart of the economy combined with the high probability of multiple waves of the coronavirus—according to many epidemiologists—and still-inadequate contact tracing and testing capabilities will likely result in regional shutdowns to prevent overwhelming hospitals. This likely will then lead to rising business failures and the tightening of credit. It will also result in more distress for minority populations already disproportionately affected by the pandemic.

Note that this is not my pessimistic case. Seven of the eight major pandemics since the 1700s had a substantial second peak. All three of these pandemics that started in the spring—the 1918 Spanish flu, the 1957–58 Asian flu, and the 2009–10 H1N1 pandemic—had a second fall–winter wave that was much worse than the first spring wave. Thus, if the current pandemic follows the patterns of these other major pandemics, the Tealbook's "Second Waves" scenario may even be too optimistic.

Regarding data that provides information on foot traffic to 6 million points of interest by tracking cellphones, the behavior by individuals across states is strikingly different. In Massachusetts, where the economy is now only slowly reopening, nonessential retail and restaurant visits are down dramatically and do not look much different now than in the middle of March. In contrast, a state like South Carolina has seen visits to nonessential retail establishments and restaurants rise dramatically following their initial decline in March and especially since the early reopening of the state's economy. Indeed, visits to these locations are only somewhat lower now than their pre-shutdown level.

Higher-frequency expenditure data show a pattern similar to the mobility numbers, with spending in many southern states that reopened earlier rebounding more than in states in the Northeast and West. Whether Massachusetts or South Carolina fares better will depend importantly on the progress of the pandemic. In fact, evidence is already emerging that new cases in South Carolina are rising, though from a much lower base.

If there are significant flare-ups in states that have aggressively reopened, the reduction in social distancing that helps economic performance in such states now may translate to more depressed economic activity and increase public health issues in those states in the future. And given the U.S. population's ability to travel, any region that does not socially distance effectively and suffers increased rates of infection will likely export their public health problems to other regions of the country that are tourist sites, transportation hubs, or educational centers.

If the pandemic subsides, however, ex post, Massachusetts will seem to have been too restrictive. But given the death toll of the virus even with the economic lockdown, reopening too fast and relaxing social distancing too much are risks that I believe are not worth taking. States in the Northeast, with their large numbers of private and public colleges and universities, are also grappling with the appropriate strategy for classes in the fall. Even in Boston, where the response to COVID-19 has been quite conservative, the inflow of students from across the country and the world means that success against the pandemic now may be offset if the influx of students in the fall rekindles the public health problems.

It is striking to date how different the strategies are across institutions, perhaps because of the lack of state or federal guidance. Some colleges are staggering classes, others are online, still others are reopening with plans to do much more testing and tracing. However, the mobility of students and the close contact involved in living and studying on a college campus may be an important vector of infection in the fall.

Again, the problem with the more rapid opening in the absence of appropriate public health precautions is that such policies will likely result in a more severe second wave of the coronavirus in the future. Even if a second wave of the virus occurs, with less severe public health outcomes, the economic effect could be larger than what we have seen to date, because of the economy's increased fragility after the first wave.

It is too soon to know whether the worst of the pandemic is over. My baseline outlook is that resurgent pockets of infection will cause significantly diminished economic performance over this year. This highlights the need to carefully monitor the data and do what we can to reduce the financial spillover from this public health emergency. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Governor Clarida, please.

MR. CLARIDA. Thank you, Chair Powell. The U.S. economic outlook is broadly unchanged since our April meeting, but, alas, uncertainty about that outlook is also unchanged and remains extreme. Macroeconomic analysis is often based on tracing through the transmission of unobserved exogenous shocks to activity and inflation. But one of the few things that we are not uncertain about today is the very real observed shock that caused the recession that the economy entered in March—the coronavirus pandemic and the appropriate public health policies put in place to contain it.

This downturn will almost certainly feature in the current quarter the steepest decline in U.S. activity since World War II, and it's already recorded the highest unemployment rate since the Great Depression. It has also already featured the sharpest decline in core CPI inflation since the inception of that series in 1957.

But while official economic data have been mostly awful since our April meeting—with, of course, Friday's employment report the notable exception—financial markets are functioning well after the extreme turbulence and dysfunction we observed in March and, across many sectors, are serving their essential role of intermediating flows of saving and investment among borrowers and lenders.

Bank credit lines are providing liquidity to companies large and small, and corporations rated both investment grade and high yield are able to issue and do so in size in the corporate bond market. I believe, and most outside observers agree, that this easing of financial conditions is at least in part the direct consequence of economic policy decisions taken since then, including our actions that are obviously well known to us, including importantly the launching and announcement of nine new facilities.

Of course, this easing of financial conditions and associated restoration of credit flows is welcome. We do not know how durable it is. But, at a minimum, the easing of financial conditions is buying some time until the economy can begin to recover. But as many of us pointed out in April, and it's still true today, what today is mostly a problem of illiquidity may at some point morph into a problem of insolvency, which monetary policy is not suited to address under our existing structure.

Now, each of us for the SEP round faced the challenge of cobbling together a baseline outlook and forming a judgment about the balance of risks. And as was the case going into our April meeting, I found the staff's analysis and their marshaling of evidence to be persuasive. And, indeed, my SEP projections for growth, inflation, and unemployment are broadly in line with the staff baseline—actually, closer to the April baseline.

So I'm somewhat skewed to the upside for growth this year and to the downside for unemployment compared with the staff, but only at the margin. But I do agree with the staff and I think most, if not all, of you that even with some good luck on the course of the virus and an upside surprise on the trajectory of the economic rebound, the economy is very unlikely to return to the level of activity attained at the 2019 fourth-quarter peak until late in 2021 at the earliest, and possibly in 2022.

And if past cycles are any guide, it will likely take some considerable period after that for the unemployment rate to fall below 5 percent, let alone reach our estimates of u^*. So, as in April, I project a staggeringly steep collapse in activity in the first half of this year followed by a recovery that commences in the third quarter. If this more-or-less consensus forecast is correct—and, indeed, all of the outside forecasters reported in the Tealbook did show a rebound commencing in the third quarter—it would imply that this will not only be a very deep recession under the baseline, but also a very brief recession. Indeed, at five months—March through July, for example—it would be shortest recession on record.

Of course, even if the economic rebound does commence in July, for the millions of Americans who remain and likely will remain unemployed beyond our 2022 forecast horizon, their recession, to paraphrase Ronald Reagan, will continue regardless of what decisions the NBER makes on dating the business cycle.

Unfortunately, as we've heard from several of you, including President Rosengren, there are other far worse scenarios that are not only possible but plausible, and, of course, we're talking about the "Second Waves" scenarios. That said, and with the usual disclaimer that I am not an epidemiologist, I do wonder if the "Second Waves" scenario we focus on could at some point benefit from adding an alt-C to complement the alt-A "Depression" scenario we include. For example, one could at least consider a scenario in which second-wave infections are geographically concentrated in one or several metropolitan areas that lead to a shelter-in-place policy in those areas but do not shut down the entire economy for three months.

I also fully agree with the staff's judgment that the COVID-19 shock will be disinflationary, not inflationary. I don't think there's really any doubt about that anymore. We don't have that many hard data points since February, but the record decline in core CPI for April is certainly consistent with this view. The staff's projected decline in core PCE inflation to 1 percent this year is, to me, sobering but not unrealistic, given the paths of the output gap and the unemployment rate that I project. Notwithstanding robust and timely monetary and fiscal policy support, the plausible best-case scenario we confront features an output gap of perhaps 4 percent of GDP at least persisting into 2022 and significant slack in the labor market lasting longer.

To conclude: We entered this recession with core PCE running below our 2 percent objective for virtually the entire span of the previous economic expansion. And with many measures of inflation expectations drifting lower into a range that some of us consider barely consistent with our mandate, I believe that an unwelcome and difficult-to-reverse decline in inflation expectations is a significant risk we will face, and assessing and countering that risk and making sure we don't end up with an ECB problem should be an important priority for our future outlook and policy discussions. Thank you, Chair Powell.

CHAIR POWELL. Thank you. President Daly, please.

MS. DALY. Thank you, Mr. Chair. Like many other areas in the United States, communities throughout the 12th District have been struggling to survive the economic fallout from the pandemic. In recent weeks, this challenge in our area has been intensified by horrific images of racism and injustice, which have resulted in very justifiable outrage.

This has further challenged an already depressed economic environment. Walking around many of the District's major cities that we have, you see closed businesses, boarded-up shops, and a growing number of "For Lease" signs. This is all giving a sense that even if the virus and the outrage diminish, the underlying distress will remain, as others have mentioned.

Against this backdrop, none of my contacts expect a *V*-shaped recovery. That is behind us in their mind. The conversations have all turned to whether the recovery will be slow but steady or protracted and volatile. Like President Rosengren mentioned, many of my contacts saw the employment report and started to worry that the early openings that created that surprising number may actually increase the chances of us needing a broad shelter-in-place action once again throughout the United States.

So if you put all of this together, my contacts, to a person, expect it to take some time and additional policy stimulus to put the economy once again on a good footing. The shape of the recovery, of course, will in large part—maybe all parts—be determined by the path of the virus, which is our critical unknown. In this situation, it's hard to provide a single modal outlook. But because the SEP requires one, here is mine.

I expect a historically large drop in GDP in the second quarter that is only partly offset by a bounceback in late 2020 and in 2021. And given the persistent sizable output gap, I expect inflation to rise only to 1.6 percent by the end of 2022. And I see the risks to this outlook as heavily tilted to the downside. Should a second wave of the virus materialize, the resulting containment steps could derail the recovery before it has gained much momentum.

Even in the best-case scenario with no second wave, I expect it to take considerable time to return to full employment and price stability. And the longer it takes, the more tempting it will be to regard the resulting damage to the economy as related to structural factors rather than cyclical factors. We started to get a sense of that already just a minute ago when we were debating the short-run unemployment rate and whether that turns into a long-run unemployment rate. So I think this is a relevant thing to begin talking about now.

I raise it now because this cyclical versus structural debate arose in the years following the Great Recession. I was in San Francisco as a staff researcher at the time, and I remember many long discussions about whether the significant dislocation of workers and the buildup of the pool of long-term unemployed would result in permanent damage to the labor market that would prevent a return to pre-recession levels of unemployment and labor force participation.

And I say this not meaning to be jovial or joking about it, but, of course, while that debate that we were having was taking place, the unemployment rate was falling, eventually reaching a 50-year low despite a rising labor force participation rate. So it's just useful to think about this and to say that despite the tremendous dislocation and disruption in our economy and the likelihood that the virus will leave a lasting imprint on how and where we work, I am holding my estimates of potential growth and longer-run unemployment unchanged.

But we will, in part—and that would be us here in addition to fiscal agents—determine where these longer-run variables end up. As Dave Reifschneider; Bill Wascher, who is on the phone; and David Wilcox argued just a few years ago, when faced with potential supply-side damage arising from sustained weak demand, increased monetary policy accommodation helps the cyclical downturn. It stops it from becoming a long-lasting structural scarring. Hence, appropriate monetary policy in my projection involves aggressive policy support past the relief stage and well into the recovery stage of the current cycle.

Aggressive policy support is also necessary if we're to escape from our low-inflation difficulty. Last year we were hoping for a positive inflation shock that would pull us out of the decade-long experience of below-target inflation. Instead, we have undeniably been hit by a deflationary downdraft that pushes us even further from our price-stability goal. I will discuss the importance of forestalling supply-side damage and achieving both sides of our dual mandate tomorrow in my policy statement. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Harker, please.

MR. HARKER. Thank you, Mr. Chair. The staff forecast reflects accurately the historic decline in second-quarter output. Even with Friday's unexpected good news, I remain a little more pessimistic than the Tealbook baseline regarding the pace of the recovery. My own view is that structural change and dislocations accelerated by the virus will prevent the recovery from being quite as vigorous as outlined in the Tealbook. I, therefore, anticipate a recovery that will be fairly strong but a bit more gradual, with second-half GDP growing at about 12 percent, further growth of 5 percent in 2021, and growth tapering off to 3 percent in 2022.

Friday's labor market report may indicate that the unemployment rate has actually peaked and could decline to around 9 percent by year-end. I then project that it will gradually decline to 6 percent at the end of 2022, as the difficult task of job reallocation continues. My inflation forecast envisions inflation of around 1 percent this year, with the inflation rate gradually rising to 1.5 percent at the end of the forecast horizon. So, given this outlook, I do not anticipate any need for moving away from the ELB over the forecast horizon. My outlook is predicated on no second wave of the virus and some further extensions of existing fiscal stimulus as well as some fine-tuning of existing programs, as we have already started to see.

Also, I envision that more aid will be directed toward state and local governments, with another perhaps trillion dollars being legislated. I'm an optimist. Of course, as everyone recognizes, considerable uncertainty surrounds all forecasts. It is difficult to know how permanent many of the current economic dislocations will be, and, of course, the path of the virus will define what the path of the economy is. Information I'm receiving from the Third District contacts, our high-frequency data on consumer finance, and the various surveys being conducted by our research teams lead me to believe, at least for now, the worst may be behind us.

Regarding credit and debit card usage, it appears that much of the March–April decline was reversed by the week ending June 3. Relative to one year ago, we're actually witnessing a 1.5 percent increase in total card purchases, although credit card purchases remain somewhat depressed. Even so, there has been a notable improvement in spending across a variety of categories, as we saw earlier. Card expenditures on food and drugs are up 33 percent relative to a year ago, while travel expenditures have fallen 61 percent.

There's also evidence of what my staff has deemed the "Harker effect" that I mentioned in our April meeting, with spending on home improvement rising 35 percent relative to a year ago. I fixed almost everything there is to fix in my house. Notably, the relative gains have been driven by improvements in categories that had been weak since mid-March. These categories include expenditures on automotive goods, general retail and professional services, health care, and telecoms and utilities. We're also seeing a relationship between ATM withdrawals and economic shutdowns. Relative to a year ago, ATM withdrawals at the end of May were down 17 percent in Philadelphia, but only 5 to 7 percent in Atlanta, Dallas, and Houston.

Adding to the evidence that we are starting to see economic improvements is the fact that 75 percent of the surveyed workforce is working offsite or remotely, with only 4.6 percent reporting their firm is permanently closed. Those reporting that a COVID-19-related event is preventing them from working stands at a 2.7 percent rate. There are, however, disparities across income classes, with 28 percent of those earning less than $40,000 reporting they were furloughed and only 8.5 percent of those earning over $125,000 reporting a similar outcome.

In May, 58 percent of respondents reported they expect their future consumption to increase over the next 90 days compared with 43 percent giving that indication just in April. Creditors do not appear to be closing accounts or lines of credit, and both adverse action letters and delinquencies are down compared with a similar period in 2019. It does appear that the financial system is treating the pandemic as it would any other natural disaster. However, there is little appetite for extending new access to credit, and credit standards have indeed tightened.

With respect to the region's labor market, as elsewhere, unemployment insurance claims are unprecedented. Additionally, 222,000 workers have left the labor force. Job losses were especially severe in the region's travel and hospitality industries and in construction.

Manufacturing, although declining, has fared somewhat better, and our regional survey actually showed a modest improvement in May, although the index remains well below its recessionary average.

The future activity index remains in positive territory, however, which is indeed consistent with the anecdotal evidence I'm hearing. For example, a large, well-diversified manufacturer in the region reports very few order cancellations, with most orders just being delayed. In fact, his September order book has recently risen by 7 percent. His firm is also increasing inventories in those items that he has confidence he can easily sell in the future, and he wants to be ready to meet the anticipated release of pent-up demand. Also, with air-freight costs rising by as much as 800 percent, his firm is moving freight through the ocean, which requires them to have more inventory on hand. So he is building inventory.

Before closing, in my role as the chair of CRPICA, I would like to take the opportunity to mention briefly some of the work being done at the Philadelphia Fed and across the Federal Reserve System dealing with racial inequities in our economy. In recent weeks, we have been made acutely aware of the pain that these inequalities and injustices have caused our fellow Americans, especially those who are already economically disadvantaged. Thus, it's important that we do not lose sight of the economic, health, and other disparities that plague our society.

In order to ensure the economic downturn does not amplify the already existing disparities, we have to consider ways to reduce them. This is why the Federal Reserve Bank of Philadelphia launched a series in April called Equity and Recovery and examined the workers, businesses, and neighborhoods most affected by COVID-19. We know that the recent economic downturn has disproportionately affected the poorest and most vulnerable among us, and many of those communities are composed of people of color. The work of the Philly Fed concentrates on ways to invest strategically in the people and places that are most affected.

As we "pivot" toward reopening, we are working with local groups to provide for an equitable recovery. We know that this means addressing racial disparities and working with those who have been hardest hit economically, both now and before the crisis. The Bank is helping by convening conferences and through various research publications put out by our community development group and the research department.

Now, this work is also being conducted and amplified throughout the Federal Reserve System, and it is coordinated by the Racial Equity Learning Community, or RELC. That includes members of all Banks and staff members at the Board. CRPICA will be working with RELC to make sure that their efforts are not only successful, but widely known inside and outside the Fed and able to help our fellow citizens have the opportunity to participate in and to benefit from the recovery. Therefore, as we make our policy decisions, I hope we can remain cognizant of the disparate economic effect that is absolutely hitting our communities all across the country.

So, lastly, returning to the macroeconomy, let me sum up by noting that we are seeing some glimmers of very gradual improvement in certain segments of the Third District economy, and I anticipate a steady but not overly vigorous recovery beginning by perhaps the latter part of this month. But the virus has accelerated many structural changes in the economy, and it will take time for firms and consumers to adjust. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. It is 3:01 p.m. We're going to take a short break, and we'll resume at 3:20 p.m. sharp. Thank you.

[Coffee break]

CHAIR POWELL. President Bostic, please.

MR. BOSTIC. Thank you, Mr. Chair. I'm glad everyone's doing all right. Over this FOMC cycle, my team and I have devoted considerable effort to try to find elements of clarity in the fog of uncertainty that hangs over our nation. Through countless hours of meetings, discussions, and analysis of data, a few major punchlines have emerged.

First, consistent with an observation in the staff briefing, the relief have had a major positive effect. Second, while a large percentage of the jobs currently reported as lost are likely to return, permanent job losses will be sizable. Third, substantial downside risks remain. And, fourth, the recent bubbling over of long-standing frustration associated with systemic racism in American society, while much needed and a cause for long-run optimism, has the potential to further jolt the economy in the short run.

Let me tell the story behind each of these headlines. The introduction of the pandemic triggered a massive policy response that provided many forms of relief to the American economy. The evidence coming in suggests that these packages have achieved their objective. The staff briefing on financial developments today documented the positive effect of Federal Reserve policies.

Many Sixth District business contacts, including a number of minority-owned businesses, reported that Paycheck Protection Program support was instrumental in keeping them open and their payrolls close to normal. On the consumer side, data have clearly shown the positive benefits of the Economic Impact Payments and unemployment insurance benefits. As one example of this last point, use of rent and mortgage forbearance options has remained much lower than expected.

Regarding jobs, last week's jobs report offered some surprisingly positive news about employment and labor markets. And data from other sources also suggest the rebound is well under way. Transaction data from a major credit card network for the second half of May indicated that retail sales excluding autos returned to levels on a pace with a year-ago spending, a strong recovery from year-over-year spending drops of up to 30 percent in late March.

It is important to note, however, that spending remains very uneven across retail categories. Just as we saw a surge in grocery spending in the first half of March at the start of the coronavirus pandemic, we are now seeing a broader-based Harker effect: a surge in spending at home-improvement stores as the economy reopens. The spending is up 40 percent year-over-year for these stores. And Pat, I will tell you, I still have a few projects left at my house, so if you're looking for things to do, you can come down to Atlanta. We got work for you.

In contrast to the elevated spending in some sectors, spending on apparel, jewelry, restaurants, and lodging is recovering at a much slower pace and from a much deeper hole. Further, the gradual reopening has sparked a revival of economic activity in many locations. This is especially true during the Memorial Day weekend for so-called drive-to vacation destinations, such as the Gulf Coast and the Tennessee mountains.

A number of businesses in these tourism markets reported that they are already back up to full or nearly full capacity, with strong demand for overnight lodging rentals and campgrounds, and demand is particularly strong for casinos. Mississippi casinos took in 17 percent more during Memorial Day weekend compared with a year ago despite operating at 50 percent capacity. Of course, it may not be the most surprising news that casino patrons have come out in force, given that they are likely skewed toward the risk-taking side of the spectrum.

I interpret these as a sign that the recovery of lost jobs is under way. And I must confess that evidence that we may be past the trough has appeared sooner than I expected.

That said, the recent data have not materially changed my outlook. I'm still not expecting the trajectory of the recovery to be steep and believe many bumps may be ahead. The reason for this is growing evidence that many jobs will not be coming back. A national lender with a large small-business-loan portfolio reported that many of their smallest clients—businesses with less than 10 employees, which typically have very small margins for error—have closed for good, and that many of the remaining ones of that size are at great risk of closing. In addition, the COVID-19 crisis might be the tipping point for many larger firms that were struggling pre-crisis. We have already seen bankruptcies from a number of these firms, and I anticipate that we will see more in coming weeks.

We have also heard from contacts that many firms are actively engaged in exploring changes to their business models that may result in a reduction in the number of workers needed. This is akin to the structural changes that President Daly highlighted in her remarks. A majority of contacts described decisions about staffing levels as demand dependent, so the sluggish recovery of demand projected for many industries will likely force firms to adjust their staffing models as they seek to remain viable.

And we are also hearing an increasing number of comments that firms are unlikely to return fully to their pre-COVID-19 office staffing structure. The increase thus far in usage of work-from-home employment has been significant, and firms indicate that they plan to make some of these new arrangements permanent.

Survey data from the Survey of Business Uncertainty and the American Time Use Survey both indicated that about 5 percent of paid working days occurred at home before the coronavirus. But when businesses were asked in the May SBU what will work from home look like after the pandemic, they indicated a threefold increase in expected paid working days at home, moving from 5 percent to 15 percent.

Consistent with this survey evidence, one large organization in Tennessee with more than 6,000 employees noted that, given the success of having 60 percent of their highly skilled staff currently working from home, they believe that 10 to 20 percent of these jobs will be reclassified as permanent telework jobs. And a regional children's hospital and private ambulance service covering four southeastern states canceled a $10 million parking lot construction project and a $2 million office construction project as a result of shifting a sizable portion of employees to work-from-home arrangements.

So increased usage of work-from-home arrangements not only implies a significant change in the structure of the workplace, but also a potentially large decline in demand for commercial real estate. This does not bode well for construction and CRE loan portfolios. In addition to these structural shifts, I also see a number of downside risks that have the potential to further slow the pace of economic recovery. The first two risks relate to the government relief effort.

While initial relief programs have been largely successful, some potential beneficiaries were missed, including small businesses that did not have the administrative capacity to take advantage of the relief or have had negative past experiences with banks in their communities. We are hearing from nonprofits across the District that demand among low- and moderate-income populations for social services and financial assistance continues to increase at a dramatic pace. And while these nonprofits highlight their current stresses, they are even more worried about what type of support will be needed for basic needs when the current federal relief program ends in June and July.

When the direct payments are spent, the PPP program concludes, and UI benefits expire, there is a risk that the legs supporting the recovery will be kicked out if demand does not recover to a sufficient level to support business activity, and the economy will weaken from a second deceleration in demand.

Another downside risk is related to the coronavirus itself. I am concerned about how the virus will progress when economies are opening or fully back open. Now, President Rosengren kicked us off about this, but I'm pretty sure that among this Committee he is far from alone on this concern. A related concern is the effect of the coronavirus on the psyche of consumers and businesses. I continue to hear coronavirus concerns from a significant share of consumers and employers. When will their fears recede? What will trigger that calming down? Will it require a vaccine, or will it be both testing and contact tracing?

An additional limiting factor is that the economic hit on businesses, nonprofits, and municipalities to this point may constrain their ability to take the needed steps for testing and, ultimately, survival. As an example, a president of a midsize private university in our District highlighted the range of struggles that the institution is facing. It furloughed 40 percent of its staff, of which 10 percent have now been fired, and cut pay, including for executive leadership and tenured faculty.

Its survival in the fall depends on the revenues associated with on-campus classes, activities, and residential living. But this will require ensuring a safe return for all. This will necessitate campuswide COVID-19 testing at an estimated price tag of $1.1 million per semester. Right now, this is more than they can afford. So they are considering several strategies, such as using mobile apps for contact tracing and designating an on-campus housing facility as a quarantine facility so that they can possibly avoid a campus shutdown from a few positive tests. But it is not clear today whether the university will find a feasible COVID-19 campus model that allows them to continue operations.

A final downside risk to highlight relates to a tightening of credit quality standards. And as others have discussed this one, and I'm guessing more of you will, I will just say "Plus one" to all of that. Now, these downsides all existed before the race-based turbulence that has racked communities across the nation. As noted by President Daly, these protests, as well as the breakouts of occasional violence, also have the potential to adversely affect the fortune of businesses, families, governments, and nonprofits. So the ongoing pain may be compounded by these developments.

But that said, no one should interpret these remarks to mean that the turbulence is unjustified or that it might not ultimately be a long-term positive. Systemic racism has been and continues to be a weight holding down the economy in its own right. By constraining the opportunities of African Americans and other ethnic minorities, systemic racism diminishes the long-term potential of the economy. If the turbulence can trigger needed change and a reduction of those constraints, this country can wind up better off. In my view, the urgent call for reforms to create a more inclusive society and economy is an imperative we should not ignore or reject.

Now, I am pleased that the leaders and institutions of the Federal Reserve System have forcefully and directly declared their support of the principles underlying an inclusive society and economy and a commitment to be an agent of reform and change. And System-level efforts, like the RELC group that President Harker mentioned, are good examples of new ways that we can move in this direction. I look forward to working with each of you to make considerable progress toward this goal in the years ahead. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bullard, please.

MR. BULLARD. Thank you, Mr. Chair. Let me first say, I'm fully supportive of your proposed statement on George Floyd and nationwide protests. I appreciate your leadership on behalf of the Federal Reserve System on this critical issue. I think your statement will complement statements that you've made to the employees at the Board of Governors and that I believe all Banks have made to employees, and I'd echo Raphael Bostic here, and let's hope this time we can encourage reforms that will eliminate systemic racism in the United States.

Let me turn to my comments on the economy. As the staff analysis and discussion have made clear today, this shock—we need to be always reminded—is very unlike others that have buffeted the U.S. economy in the postwar era. Accordingly, we should be very careful not to analyze it in the same way as other shocks. Especially because the unemployment insurance program is being used to provide pandemic relief, interpretation of the measured unemployment rate requires considerable care in the current circumstance.

Normally, in a high-unemployment situation, only a relatively small fraction of the unemployed would describe themselves as "on temporary layoff." But, in the current circumstance, a very large fraction of the unemployed are describing themselves as on temporary layoff, at least for now, a stark contrast to ordinary recession dynamics.

This indeed bodes well for the chances of a swift recovery in the current situation, provided the economic and health policy response continues to be managed effectively. I continue to see the primary effect of the shock that we have encountered to be centered on the second quarter, which, by nearly all accounts, looks like it will be the worst quarter for real GDP growth of all time by a factor of 3 or 4. Let us hope that April was the worst month of this downturn.

I continue to see a gradual transition beginning in May and ending at the end of Q3. The end of the third quarter will be another checkpoint because, by that point, the economy will likely have adjusted as much as it can in the short term to the reality of the COVID-19 mortality risk and the steps that must be taken to manage that risk effectively.

Let me make just a brief remark on the 1957–58 pandemic. That pandemic was arguably worse than today's pandemic. The total number of excess deaths relative to the population looks like it was worse than what's projected today, at least by some models, I guess. So it was a big human tragedy, but it did not appear to cause medium- or long-term economic damage. The 1960s, in particular, turned out to be an outstanding decade for growth for the U.S. economy. So the idea that because there was a severe pandemic in 1957 and '58 meant that the entire 1960s was lost isn't what happened in economic terms.

I would also point out that pandemics have not been considered in the academic literature to be key macro shocks, at least in the empirical literature. Often we'd read the history of these periods, and the pandemic would not be mentioned. Many other things would get mentioned as influencing the macroeconomic dynamics, but not pandemics. They were pushed into the noise term in most empirical research. There's certainly a huge human tragedy, but I don't think that they've typically been major macroeconomic events the way this one has been.

Our goals in my mind are twofold and, I think, have been echoed here already today. Number one, support the financial sector to mitigate the risk of a financial crisis. If we get a financial crisis on top of the pandemic shock, we'll be in a much worse situation. And, number two, support the real economy to mitigate the risk of depression. We do have a "Depression" scenario in the Tealbook and elsewhere. If we get major business failures occurring over the summer and into the fall, it will be very difficult to get the economy back on track.

The policy response so far, in my judgment, has been very good. It has three parts: It has a health policy component, a fiscal policy component, and a monetary policy component. The health policy component has been simple. It is to ask workers in high-contact industries to stay home to mitigate health risk. At the St. Louis Fed, early in this crisis, we estimated that 47 million workers fit in this category and might be at risk. As of today, I believe about 43 million have tried to claim unemployment insurance or have claimed unemployment insurance over the weeks since the crisis began. We're asking these workers to invest in national health. We're deliberately slowing down the economy with the health policy. It should not be surprising that we get terrible data by ordinary metrics but good data from the point of view of trying to get the pandemic under control.

The second part has been fiscal policy, which, despite dysfunctional politics in the United States, has been very good, I think. The workers and businesses that have been asked to shut down need to be compensated for this, and we've tried to design programs through the fiscal channel to do this.

Among the most used are the unemployment insurance program, the PPP, and direct cash payments. I would say that this use of unemployment insurance to provide pandemic relief probably means that unemployment is not quite what it seems, and the staff analysis seemed to talk about this to some degree.

Also, the workers being kept on payroll through the PPP are also unemployed in an economic sense, but we're not going to count them. We're going to think of that as pandemic relief. So I think it becomes very hard to think about what is going on in terms of fiscal policy in traditional terms as if this is a traditional type of shock, which it is not.

I also think that the size of the fiscal package was about right. You know, very rough numbers would be about 10 percent of GDP. Most forecasters now are saying that they do not think that GDP will be 10 percent lower in 2020. So if our goal was only to provide insurance to displaced workers and firms, we have enough funds in the fiscal package. I know it does depend on exactly how you tally up these totals on these fiscal packages.

This is also not conventional stimulus. We're not trying, in my mind, to pull consumption into the second quarter. We would like people to actually not consume that much in the second quarter: Stay at home, lie low, and get the pandemic under control. Then later there would be more opportunity for conventional stimulus.

And, unfortunately, much of the popular narrative on this still calls what we're doing stimulus. It would actually be counterproductive to pull production into the second quarter when you're trying to get firms to cool it and stay home and not produce during this period.

The third part has been monetary policy—the Fed liquidity programs plus accommodative monetary policy by this Committee. In my view, the financial sector is holding up relatively well so far. I think there may be pockets for which you could make a case that that is not happening, but I found the liquidity metrics that we have very encouraging—again, at least so far.

I think the shutdown-style policy was appropriate, as the initial shock hit when the knowledge of the disease was very limited, the contagious effects were largely unknown, the deadliness was largely unknown, and those who would be most at risk were largely unknown. But the shutdown policy is a blanket policy that cannot be maintained very long.

Most business contacts that I talked to say that they can survive with no revenue for perhaps 90 to 120 days, but that there is essentially no pause button on the U.S. economy, and attempts to go too long with an inefficient-type policy of this sort risks a financial crisis, as I think it would become increasingly apparent that some firms can't pay their credit bills. It risks a depression scenario as many businesses start to fail, and I feel very strongly that if we get into a depression scenario, both outcomes will be worse: Health outcomes will be worse, and economic outcomes will be worse. So it's worse on all dimensions, and there's not really much question of a tradeoff there. So there is significant downside risk here, as many have emphasized.

But I'm going to give you hope for two solutions, which I think are occurring. Before I get to that, I want to say that I do not think it's appropriate to make policy counting on a vaccine. My reading of the possibility of a vaccine is that it could happen, but it also may never happen. There's been no vaccine against this type of virus in the past. It's inappropriate to rely on this as a channel, and I think we should be making policy assuming no vaccine, and I would go further and say no therapeutic, either.

Nevertheless, I think the economy is going to adapt in two different ways, so let me talk about that. The two solutions, I think, are ubiquitous testing and a risk-based stay-at-home policy. So let me talk about both of these. The ubiquitous testing is—I would point to other economists, like Paul Romer and Larry Kotlikoff and my colleague on this Committee, Rob Kaplan. I think there is some disconnect between the health-care community and the economist community on this issue.

I think that from an economist's perspective, the pandemic is a story about information economics, and we know from information economics that if information is asymmetric, the markets can break down completely. So that's exactly what happens here when two people try to trade, but they're unaware whether the other one has the disease, so they don't trade. The way to fix that would be to make it so that everyone knows exactly who's sick and who isn't sick, and the way to do that would be to test, basically, everyone all the time or, if you can't do that, then many people all the time. So that suggests a relatively simple solution, which is to subsidize test production. It's easier to say that than to do that, but with the kinds of money that we are throwing around at this problem, hundreds of billions of dollars or trillions of dollars, you can do a lot of things that wouldn't have been possible in other circumstances.

Also, I think, for economists talking about testing, testing could be any kind of simple test that would give you some indication of whether the person you're thinking about trading with has the disease. So, for instance, I think taking temperatures is a form of testing, which I think a lot of us are probably going to do at our Banks or are doing at our Banks. Or even asking people if they've been sick recently or if they've been near people that have been sick recently—even that is a form of testing.

So to the health-care world, that doesn't sound like a test, but from an information economics perspective, that's the way to gather information about whether the person you are about to trade with is likely to get you sick. Now, we'd like that to be even better. We'd like to have a really reliable and really quick way to tell whether the other person is sick, and that's why we should subsidize test production, create a pop-up industry, and saturate the economy with tests.

I think to the health-care world that sounds like a crazy idea, because they think of tests as something that are done in hospitals and need to be conserved and only the hospitals should be able to do these kinds of things. But, from an economics perspective, that isn't what we want.

We want to fix the information problem in the economy. The demand for simple widespread testing is overwhelming in the economy—overwhelming. Every single firm would like to do this. Every single family would like to do this.

So I think, because of that, a lot of this is going to occur anyway, regardless of what any policymaker says. The economy will simply start to produce tests of various kinds, as I've described, and will start doing it, and that is going to help us mitigate the spread of the disease and manage the mortality risk that we face that we did not face in the past when this disease was not among us.

Now, let me talk for a moment about another thing that I think is happening in the economy and that is encouraging for the future, which is risk-based stay-at-home. And here I would cite Daron Acemoglu and co-authors at MIT and their recent paper on heterogeneous households that are facing different risks from the disease.

A risk-based policy would be that different people are going to recognize that they're at risk of mortality risk from this disease, and they're going to naturally want to protect themselves. Initially, when the pandemic hit, you couldn't really do this, because you didn't have much information about what the disease was or who was going to be most affected, but every day that goes by we get more and more information about who's most at risk. Those people will naturally pursue stay-at-home policies.

Others who are much less at risk—and the risk does go down dramatically for younger people who don't have other conditions—will make their own decision about how much risk they want to take. But we can calibrate how much risk they will take by looking at accident risk. In the mortality tables, accidental injury is the third largest killer in the U.S. economy. With very round numbers, it's about 170,000 people per year, on par with the kinds of projections that are around for COVID-19 for 2020.

We take all kinds of actions to try to mitigate accidental injury and mortality risk in the economy, so that's evidence that the economy is perfectly capable of putting on seatbelts, driving cars with airbags, looking both ways when they cross the street. All these things are the kinds of things that you do because if you don't do them, you might get killed by accidental injury.

And the same thing will happen with COVID-19—you'll get all kinds of mitigating actions to cope with the risk that's out there in the economy. So it's very different once you get three months or six months or nine months past the initial pandemic. Initially, you're unsure what's happening. You're unsure what the disease is. You're unsure how contagious it is. You're unsure who is most at risk. But as time goes on, it becomes clearer and clearer as to what that is. People naturally take actions to protect themselves.

So households make their own risk-mitigation decisions. Firms make their own risk-mitigation decisions and try to provide safe workplaces and safe ways to provide their products. This is occurring in great detail all across the economy in many different ways. This isn't a matter of a government entity decreeing that this kind of thing should happen. This is a natural response of the economy to a new mortality risk that wasn't on the scene previously.

So the bottom line is that economic actors of all types are adjusting to the new mortality risk that has exploded onto the global economy in the past several months. As days and weeks go by, more is learned about the nature of this mortality risk and how it can be mitigated, as well as how goods and services can be provided safely in the face of this risk. Risk mitigation can be undertaken at the individual level as well as at the firm level, and the result will likely be higher output as well as less fatalities than the economy initially experienced during the March–April 2020 time frame.

And the bottom line of the Acemoglu paper is that this kind of response of the economy dominates the shutdown response. The shutdown response is a situation in which you have high fatalities and a poorly performing economy. This will be a highly or better-performing economy with less fatalities because of the individual insurance undertaken by individual firms and households in the economy. Thank you, Mr. Chair.

CHAIR POWELL. President Evans, please.

MR. EVANS. Thank you, Mr. Chair. My business and nonprofit contacts continue to grapple with unprecedented challenges and uncertainty. The effects of the shutdown have taken a great toll on the economy. And like in the rest of the country, people gathered in large numbers across the Seventh District to express their outrage at the killing of George Floyd and pervasive racism in America. In some places, peaceful protests were accompanied by violence and property destruction, and this has further intensified challenges for disadvantaged communities. I certainly agree with Raphael Bostic and Mary Daly that needed change is essential in order to address these injustices.

With states reopening, my contacts reported some tentative signals that the sharp downturn in activity may have reached a bottom. In the auto sector, production and sales rose last month. A major automaker noted they had become more optimistic when they first saw early May sales, and then the rest of the month they beat their positively revised expectations. Their latest outlook for 2020 has total vehicle sales of 12 million units.

In the heavy-equipment sector, one manufacturer reported mixed activity. Sales to agriculture are holding up well, while construction-related sales are badly hit. Supply chain disruptions coming from Mexico and India continue to pose challenges and risks. Still, the firm's overall employment is down just 4½ percent compared with last year. One reason the decline is so small is that they are keeping extra staff on hand to offset elevated absenteeism. And one of my directors who runs a large manufacturing conglomerate said they had been able to keep about 95 percent of their global capacity operational, but this has taken a significant effort.

Looking ahead, many manufacturers were gloomy. One heavy-equipment producer highlighted the problems in energy and a dearth of demand from public infrastructure projects, given the fragility of state and local finances. And a steelmaker warned about getting excited over a third-quarter pickup. Even with a large gain relative to Q2, they still expect their Q3 number to be down 20 percent from 2019 levels. Others echoed this sentiment.

Uncertainty was another common theme. Businesses are considering a wide range of economic and public health scenarios, including the potential for a second wave of the disease. The disparate effects across scenarios are causing many to defer decisionmaking. A few contacts said businesses were hoping to have more clarity about the recovery this fall and can make investment and employment adjustments then. They cautioned that these could be bad. For example, one airline executive reported that her firm would likely embark on significant layoffs in October.

Improved financial conditions have allowed some of my business and nonprofit contacts to lock in liquidity, providing some welcome flexibility. On a related note, our financial market contacts, as well as some from nonfinancial sectors, were united in their expectations that the Fed's corporate bond, municipal lending, and Main Street lending facilities would see little demand, given their current terms and conditions. Illinois, of course, is an exception. So at the moment, they don't see these facilities having a significant further effect on the real economy.

Several of my directors described how they see the relaxation of stay-at-home orders playing out in their communities. Uncertainty was an important theme here as well. Some are taking a cautious approach. But, frankly, others discussed activities that exceed what I would have expected based on public health recommendations. I think the reports highlight an elevated risk of intermittent surges in the virus.

One contact talked about universities' plans to bring students and major college football back to campus. That's got to be an important topic down in the Southeast—right?—with the SEC and the ACC. For example, Notre Dame is planning to have a football season with fans but perhaps limiting attendance to 30,000 rather than the usual 80,000. And our contact said they will attempt to prohibit tailgating. He was very skeptical of that. [Laughter]

Universities are planning to bring students back, and they expect them to follow social-distancing protocols. Some plan to start the fall semester earlier. The term would finish by Thanksgiving, so students would not have to return until February for a similarly compressed spring. So I suppose if they run into health challenges after Thanksgiving, they would run their course by February.

I am reminded of the saying "People plan, God laughs." Maybe this will work. Perhaps college students are more respectful of bureaucratic authority than I recall 40 years ago. I do worry, though, that a seasonally driven decline in infections in the spring and summer, along with a strong desire to return to normal, could fool many into making decisions that could be cause for regret. Then again, I could be wrong, and things could go better than I expect. There is tremendous uncertainty.

These themes also came up when I sat down with my staff to discuss Friday's stronger-than-expected labor market report and then to rework our SEP submission. By the way, I will reveal that I am SEP number nine. The May report showed that reopening is happening faster than we had anticipated. Like the Tealbook update, we think this largely reflects a shift in activity from Q3 into Q2. But we added somewhat more to our GDP projection for 2020 as a whole than the Tealbook update did.

My outlook for 2020 now has real GDP falling 7 percent and the unemployment rate ending the year at 9½ percent. In our forecast we assume that growth is held back by intermittent, localized virus outbreaks, which might be made worse by the faster-than-expected reopening. In this environment, many resources will be devoted to health and safety. We assume a vaccine becomes widely available as we move through 2022, allowing for a return to more normal operations.

I will take note of the comment that Jim made about, why should we assume that a vaccine becomes available? And I certainly agree that there's great uncertainty over that, especially given the experiences with different diseases and the flu and things like that. I think it just seems to be one of those assumptions that you need to take a stand on for the forecast, and then you can think about the risks beyond that. So I don't view that as a critical feature, as long as we're well positioned from a risk standpoint to deal with providing more accommodation if that's what we find we have to do.

We have the output gap closing to zero by the end of 2022. At that time, our forecast has real GDP roughly 1 percentage point above its level in 2019:Q4. The only reason the output gap is closed is because some previously expected trend growth over these three years has been permanently lost. Of course, many risks and uncertainties remain, and the recent social unrest and increased polarization are unlikely to be neutral factors for the outlook. I continue to see downside risks predominating.

For inflation, some of the extreme price declines in March and April are likely behind us. On the other hand, the effects of soft aggregate demand could take some time to show through to stickier prices. Putting these together, we have core PCE inflation for 2020 at 1.0 percent. In looking ahead, the downward pressure on prices from resource slack should diminish in 2021 and '22. If inflation expectations do not fall, this should support some modest increase in inflation in those years. Our forecast has core PCE rising 1.4 percent in 2021 and 1.6 percent in 2022.

This forecast assumes a very accommodative monetary policy and a well-communicated commitment by the Committee to achieve its symmetric 2 percent inflation target. Risks to the growth outlook, fragility in inflation expectations, the fiscal situation, and a number of other factors impart a great deal of uncertainty to this forecast. On balance, even with substantial monetary policy effort, we see the risks to our inflation outlook as tilted to the downside. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Barkin, please.

MR. BARKIN. Thank you, Mr. Chair. Like everyone else, I've found the swiftness and severity of this downturn distressing. But now, across the country, localities are in the process of opening up, albeit gradually. The key questions are how quickly demand and employment will return and how close we'll come to our previous path of output. On the first, while I hear recent strength in automotive and residential, overall I continue to think the recovery will be a slow one. And both data and our contacts suggest a real dichotomy between white- and blue-collar workforces and their pace of returning to the economy.

Workers with a college education have 7.4 percent unemployment, and 63 percent of them can work from home. They're spending less on travel and dining and saving more. But their isolation has made reengaging in personal commerce seem risky. In a recent Gallup poll, 73 percent of college grads said they required widespread testing to return to normal activities versus 54 percent for noncollege grads.

In contrast, workers with less than a high school degree have 20 percent unemployment, and only 23 percent can work from home. They've been present in the workplace, and many don't see engaging in commerce as taking as much risk as those who've been isolated. Based on card data, their spending has actually held up, to date, in part because they received fiscal payments and because they tend to spend what they make. They, of course, will face risks whenever fiscal support winds down.

Higher-frequency data detail the split. Debit card spending is stronger than that for credit cards, which skew higher end. Like President Bostic, as I dig into some of the categories; travel, fine dining, jewelry, and elective surgeries are categories supported by the wealthier and are among the laggards. In contrast, discount stores, casinos, and clothing essentials report stronger revenue recovery.

In our District, affordable destinations like Myrtle Beach were packed during Memorial Day weekend, as were reopened stores in more rural markets. Net, our growth forecasts are stronger in segments and in places with lower-income clientele and weaker for higher-end segments. And given, certainly, that I and my team have been in the stay-at-home camp, we're working hard to ensure we "de-bias" ourselves as we develop our perspectives.

Labor market dynamics will be complex, and, frankly, we struggled in forecasting unemployment. As economies reopen, blue-collar workers are being called back, and the May report was certainly encouraging. But employers are being cautious and finding rehiring a challenge, given health risks and foregone unemployment payment. PPP requirements have changed multiple times, which may help some businesses survive but could damp their near-term hiring incentive.

Finally, a large number of white-collar employers report they are planning layoffs now that they project a slow return to less than normal. So while we forecast a decline in unemployment, these dynamics will make this decline a gradual one. We did a COVID-19 survey of more than 1,000 employers in our District; about one-third of those firms report they will be running leaner operations upon returning to normal, with the modal time frame for “normal” in the range of 6 to 12 months. Some simple and, of course, over-assumptive math would suggest that their forecast supports the Tealbook, with end-of-year GDP down around 8 percent and unemployment around 9 percent. And our SEP is in the same range.

On the longer-term path, like the Tealbook and our survey, I see significant risk to future output. This downturn has exposed certain industries, like physical retail, nursing homes, cruise lines. Workforce participation may be impaired by health concerns and working-parent childcare gaps. Immigration is likely to slow. Productivity will likely be hurt by new health measures, like distancing in the workplace.

And uncertainty matters for investment, spending, and, consequently, output. And it’s just hard to imagine a more elevated uncertainty level across health outcomes, public health plans, level of fiscal support, global trade, global relationships, election outcomes, and unforeseen shocks, like the tragic events of last week. My SEP does have one note of optimism in that while it contemplates continued outbreaks of infection, it assumes hospitals have built in capacity to be in better shape to handle them, and consumers don’t choose to exit commerce again en masse. But, even with that assumption, it projects we don't return to 2019 real GDP levels and don't hit 4 percent unemployment until 2023.

It does see a spike in inflation in 2022 after the recessionary drop but doesn't choose to begin normalizing rates in the forecast period, thereby using that year as a chance to communicate on opportunistic inflation. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kaplan, please.

MR. KAPLAN. Thank you, Mr. Chair. Let me start close to home here and talk for a second about the energy business. It is now our baseline judgment at the Dallas Fed that oil demand will recover to approximately 90 percent of 2019 levels by the third quarter of 2020 and may approach close to 100 percent by the fourth quarter of 2021.

If that forecast is accurate, we would expect that the excess oil inventories that have been affecting this market are going to be worked off by no later than the second half of 2021. This assumes that OPEC gradually phases out their production cuts, and it causes us to believe that as we approach that excess inventory being worked off, it's reasonable to assume that we'll be continuing to approach $45 to $50 in terms of the oil price.

This is significant, because a number of things are going on down here. First, as we have said before, a number of producers are shutting in wells. Our contacts tell us that to reverse a shut-in—that is, put back online a producing well—they need a price of approximately $35. So while there have been a substantial number of shut-ins so far, we think they're now reversing.

Second, our contacts tell us that it takes about a $40-plus price of oil to convince people to take a drilled but uncompleted well—that is, one that never produced—and cause it to produce. Obviously, we're above $40 now. We think that is beginning to happen. Third, our contacts tell us that it takes a price probably above $50 to start a new well—that is, to create a new rig. Obviously, we're not there yet.

So, to us, all of these touchpoints help explain why we still expect shale cap-ex this year is going to be down almost 50 percent versus last year. Rig count is still going to fall 65 percent, because to drill a new rig you need $50 and above. And active completion crews will start to come back, but they'll still be down, we think, 80 percent.

Obviously, substantial layoffs will go with this. A number of firms will fail. Those that were leveraged service firms are not going to succeed here. But with all of that, as we've said before, we expect crude oil output in the United States to decline from about 12.8 million barrels a day in December to 10.8 million barrels a day by December 2020—that is, about 2 million barrels a day in production cuts.

But, actually, that's better than you might think, in that if you included the shut-ins, the production cuts would be much greater. So we think by the time you get to December of this year, almost everything shut in is back. And the reason production is down in the United States is primarily that the decline curve in shale is so significant that there just isn't enough new activity to replace the decline curve. But it sets the stage for production to probably start climbing again in 2021, and that's probably what we expect to happen.

Now, a lot of this depends on the course of the economy and the pandemic, and I'll go to our national outlook more generally. The Friday number was a welcome surprise, but at the Dallas Fed we're looking much more at the U-6 figures, which are stickier and in the low 20s and, for us, much more indicative of what we're hearing from contacts. And we're particularly struck by the rise in part-time workers, which is also consistent with what we're hearing from contacts, and I'll come back to that.

For much of May, we had extensive discussions with small businesses. Two months ago, they were talking about how to apply for the PPP. For the past three or four weeks, most of our discussions with them have been, "How do you convert a PPP loan into a grant?" And given that they have limited time, it was clear that most small businesses we talked to were quite intent on bringing back workers. Many of them actually did not keep workers on. They let them go, but they hired them back as much as possible, in order to get the loan converted to a grant.

And I will tell you, among banks and small businesses, they're still not sure exactly what the rules are, and the banks are not sure, but small businesses wanted to make sure they qualified. It is clear to us that many workers who've been brought back are not working full time. In fact, we think some who have been brought back and are not working full time, if they're working less hours, are still getting unemployment benefits. And we're hearing that fairly broadly. And if they are working full time, they're doing a much broader range of tasks than they did before, and they have probably taken pay cuts in terms of tips and bonuses, depending on the industry.

We also get the strong sense that this artificial PPP hurdle caused businesses to bring back these workers, but there's no doubt that most small business owners are actively scrutinizing their workforce. And as we get later in the summer and early in the fall and it becomes clear how good business actually is, they may well let some of these people go, but they'll do it in a way, again, that doesn't jeopardize their PPP—you know, their loan forgiveness.

This is consistent with what we're hearing from larger businesses. Most are telling us that, number one, the very first thing they've done is extend maturities and make sure they have plenty of liquidity. And in this regard, while almost none of them I talked to used the Fed program, they credit the existence of the Fed program with helping to improve market function so they could extend maturities, and they've done that broadly.

All of them are thinking about costs. Everything is on the table. As Raphael Bostic said, that doesn't just mean the right size for the business. It also means access to office space and how much are they going to use. And they're trying to figure out what is, really, the demand for product and services, and the most typical view on that is, they don't know yet. And they're not going to know until the fall, so it's clear to us there is going to be a gut check sometime in August, September, maybe October when they're going to be making very tough judgments. And some people who are currently employed may become unemployed at that point, depending on what the extent of demand is.

They are, obviously, cautious on cap-ex across the board. Some of them are starting to think about mergers and consolidations and other ways to create more cost cuts than they can do on their own to create synergies. There's no question that this situation is accelerating investment and technology replacing people in a broad range of businesses. There is also no question in my mind that, while the first step for most businesses was to extend maturities and basically increase their debt, there will be a second step for many, if they can stomach it: They are going to issue equity. And if equity prices stay high, they're going to find more ways to try to deleverage, I would think, and that might be a healthy thing. And we'll see that if—as that happens later in the fall.

The last comment I would make is, from here, what we're seeing broadly is that fiscal policy so far has done its job, and monetary policy has done its job. The key that most businesses we talked to are looking at and the key driver of the economy, I believe, is the extent to which consumers reengage in a broad range of behaviors as before, as many of you have said. And much of this depends on the perceived risk–reward.

To the extent there is widespread testing, contact tracing, and good mask and social-distancing procedures at workplaces and at places that people go to for commercial activity, I'm encouraged. I've been very positively surprised in this District by how willing people are to reengage in activities—going to restaurants, a number of people getting on planes, doing other things.

On the other hand, I've been negatively surprised by the lack of testing, the lack of use of masks, and the confusing information regarding use of masks, which, based on our work, we feel strongly would dramatically reduce the transmission of this disease, and we believe strongly is not well understood. And I think a lot of it gets to where, I think, Eric Rosengren started today.

It basically depends on local leadership. There isn't national leadership on this. And so what we're finding, even in the State of Texas, is that leadership is very uneven and practices are very uneven. There's a difference between what's being done in Dallas and what's being done in Houston, and it's not a positive thing. And we've talked to the governor about it, but our sense is, this is going on all over the country.

The only hopeful comment I will make is, if you're in a low-density state, like Texas, you can get away with some screw-ups or basically not doing this as well. And, we think, while Texas cases are rising, it will be manageable. We worry, obviously, if you're in a high-density city like New York City or in Boston or others, about the lack of a national effort. Hopefully, there's good local leadership, and I think there is.

But if we could get this right—and Jim Bullard talked about, if we could get this right, this is one of the reasons for optimism—this recovery may go better than we think. But, again, it depends on leadership. And, unfortunately, in this case, it's going to depend on local leadership throughout the United States as opposed to national leadership, because we don't have a national program. So that's my last comment. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President George.

MS. GEORGE. Thank you, Mr. Chairman. The 10th District economy appears to have stabilized somewhat since our previous meeting, and I would describe the sentiment of our contacts as cautiously less pessimistic. Rather than expecting a quick rebound, a new reality has set in that the return to normal will take longer, and that a fair number of small businesses will not survive.

Job losses within our region have been broad based but more concentrated in low-wage, service-oriented sectors, such as leisure and hospitality, in which job losses have disproportionately affected younger, Hispanic, and female workers. Despite the significant job losses, though, a number of contacts have noted that the Paycheck Protection Program has provided essential funding. However, as businesses begin to reopen, our contacts frequently note that they do not anticipate returning to pre-COVID-19 staffing levels based on the productivity they've realized with fewer workers during the shutdown as well as anticipated reduced demand.

District energy activity continues to decline. The number of active oil and gas rigs in the District fell dramatically to historic lows as firms announced well shut-ins to ease production levels. Most of our contacts do not expect oil and gas prices to pick up significantly in the near term and expect further declines in drilling and production.

Finally, weakness in the District agricultural sector continues. Although prices for some commodities have rebounded slightly, there is little prospect for improving producers' profit margins. Corn and soybean producers in the District completed planting amid favorable conditions this spring, but reduced ethanol production, slow growth in exports, and expectations for another large harvest have kept prices subdued.

In the livestock industry, roughly one-fifth of U.S. meatpacking plants with confirmed COVID-19 cases were located in the 10th District. Disruptions in the meat supply chain have slowed, but plants continue to operate at reduced capacity, which has weighed on livestock prices and increased retail meat prices. Meanwhile, farmland values have remained relatively stable, and the prospect of government payments offers some degree of support to farm finances.

Regarding the national outlook, incoming data since our previous meeting have confirmed that economic activity fell dramatically early in the second quarter. As state and local health authorities begin to ease restrictions, high-frequency indicators, such as cell phone tracking and work schedule software, point to modest tentative signs that economic activity is resuming. Still, the rebound in these indicators has been uneven across sectors, suggesting that, for many parts of this economy, the recovery will be tepid and perhaps incomplete.

Like the Tealbook, I have assumed that we will avoid a second outbreak of the virus, although this clearly remains a meaningful risk. In my SEP, I assume that the number of new cases in the United States remains close to its current plateau for some time, with voluntary social distancing and intermittent flare-ups limiting the extent of near-term economic recovery. As a result, I've penciled in a contraction in real GDP of about 6 percent this year, and I anticipate that it will take some time for this gap to close based on changes in the savings behavior of households and businesses and the prospects that some types of employment in certain sectors may not fully recover.

My forecast assumes that consumption will be constrained by ongoing concerns about activities requiring close physical proximity. In particular, food and recreation services, which accounted for a disproportionate share of the consumption decline during March and April, are likely to remain well below their pre-COVID-19 levels until most of the population feels safe from infection. The same may hold for health-care services, which alone accounted for more than 30 percent of the consumption decline. Absent this confidence, consumer spending is likely to be damped, with elevated levels of precautionary savings.

In response to the University of Michigan survey question on conditions for purchasing household durables, the share saying it was a bad time to do so because they expect bad times ahead soared to its highest level in the 70-year history of the survey. Business investment also faces considerable uncertainty in this environment, stemming from the course of the pandemic itself and its implications for the future composition and strength of demand as well as global trade, political uncertainty, and social unrest.

In addition, corporate leverage remains at historically high levels, and export demand is likely to remain depressed for some time amid the elevated level of the foreign exchange value of the dollar and the prospect of persistently weak foreign demand. Many of these headwinds confronting business investment will undoubtedly weigh on the labor market's recovery. Although the positive labor market report for May was certainly welcome, its signal is murky.

Ongoing questions surround the classification of respondents who were laid off as employed but absent from work, as well as the potential outcomes of the Paycheck Protection Program, which may have induced firms to rehire workers temporarily only to lay them off again in coming months. While I expect a measured decline in the unemployment rate in coming years, my SEP shows it ending 2022 close to 6 percent, with low levels of inflation.

Risk around my outlook for real activity and inflation remains skewed to the downside largely because of the unknown path of the virus and its related implications under different scenarios. Additionally, though in my outlook I assume that the U.S. economy will escape any meaningful period of deflation, the stability of inflation expectations will bear watching. Thank you, Mr. Chairman.

CHAIR POWELL. Thank you. Governor Bowman, please.

MS. BOWMAN. Thank you, Chair Powell. Although current economic conditions remain extremely challenging, there have been several positive developments in the intervening weeks since our previous FOMC meeting. Most importantly, the spread of COVID-19 appears to have slowed significantly, and more than half of U.S. states have begun lifting their lockdown restrictions.

Our policy interventions have contributed to a substantial calming in financial markets. Credit flows to businesses and households have picked up. Borrowing conditions and rates have eased in some sectors, and there are few signs of serious strains at the moment outside of small business and agriculture. I'm pleased that the Main Street Lending Program will soon become operational. And as we go forward, I'll be interested to see how the program is used by lenders and borrowers and the extent to which the credit needs of small and midsized businesses are met.

In addition to the improved credit flows, the May employment report was substantially better than most had anticipated and indicates that many individuals who had lost their jobs in March or April either returned to their jobs or found new employment in May. Even though the overall unemployment rate is still quite high, the broad-based improvements in payroll numbers in May are very encouraging. And as many have noted, several indicators of consumer spending have turned up in recent weeks and suggest that the large spending declines may be behind us.

For example, motor vehicle sales moved up in May, credit card payments data showed a notable increase, and cell phone data reveal that many are venturing away from their homes. It's possible that this increase in consumer outlays could mostly reflect households quickly spending their stimulus checks, in which case the recent improvements may be short lived. But I do believe that we are seeing some early signs of a lasting recovery in economic activity. The economy is reopening, and some of the most dire outcomes that sounded plausible only two months ago now seem much less likely.

In the agriculture sector, government payment programs included in the CARES Act will help ease short-term financial pressures, though long-term prospects for the sector remain stressed because of extremely low commodity prices, processing disruptions, and a significant decline in ethanol demand, as President George just noted.

Over the next few months, as restrictions on activity continue to ease, enhanced unemployment insurance benefits and stimulus payments will provide important and necessary financial support to many families. But I am concerned that the financial well-being of many families, especially those at the lower end of the income distribution, will be severely affected during this prolonged period of inactivity.

We know that early job losses have been heavily concentrated among the most financially vulnerable, including lower-wage workers, young people, women, and blacks and Hispanics. Unless the affected industries recover quickly and rehire these workers, even with the substantial support from fiscal policy, we will likely see more families unable to keep current on their mortgages, rents, car payments, credit cards, and other expenses.

Requests for mortgage forbearance, while not as high as many had feared, have continued to edge up in recent weeks. But this is tempered by the large number of these borrowers who remain current despite requesting forbearance. We also have seen increased indications that many families may be struggling to keep up with their rent payments.

I also remain concerned that without an immediate resumption in operations, small businesses will not have sufficient working capital to weather an even more prolonged period of lost revenues, especially those engaged in the seasonal tourist trade and related activity, or large events like sporting events and entertainment.

One business contact estimates that 30 percent of independent restaurants will close permanently. In her view, prior to the pandemic, there was excess capacity, and there may be a limited survival runway for these smaller chains and local restaurants. The same, she says, is true in retail and hotels, with hotels of the greatest risk likely on the budget end of the segment.

Despite the critical injections of capital from the PPP, the balance sheets of many small businesses remain impaired. The Census Bureau's latest pulse survey showed one-third of responding firms have less than one month of cash on hand, which is down from the roughly 50 percent share reported a few weeks earlier, but this is still a large figure.

I've also heard concerns, as President Kaplan noted earlier, from many lenders and borrowers about the requirements for PPP loan forgiveness. Loan volumes have dropped noticeably in the latest tranche of the PPP, and some speculate that the payroll retention requirements deter some firms from borrowing. Other business owners report that pay from employment does not compare with the enhanced unemployment benefits. If businesses can't survive to reopen, PPP funds will be of little help. But the recent legislative changes should help address many of these issues, and time will tell.

The potential for business failures and resulting defaults is also concerning. Additionally, the latest moves in equity prices seem out of step with realistic revenue expectations, which could have negative effects somewhere down the line. I still perceive a risk that financial pressures could reemerge and reignite the sense of panic that prevailed in March, but we now appear to be moving in a positive direction, awaiting progress in the timelines for easing stay-at-home orders and fully reopening the economy.

The staff have done great work to present several plausible paths forward. In my mind, the one that is most likely is broadly consistent with the "Early Moderation" scenario. If a second wave does occur, its effect could be focused in some limited geographic areas. And by that point, I expect we will have learned from our previous experience and found better ways to mitigate the spread of the virus than limiting the movements of the entire population. But the uncertainties surrounding this outlook are high. We could see additional flare-ups of the virus in some cities, and the potential for another round of broad school and business closures is not unrealistic, but we hope could be more targeted.

These are challenging times, and it's important that we're sensitive to the fact that lives and businesses are being severely affected. Not only are people concerned about their financial situations, but also about the recent and important broader social and law enforcement issues that have prompted demonstrations in many cities across the country. And, as many have noted before me, I'm also pleased that the Federal Reserve has shown leadership and supports diversity and inclusion within the System and the financial system as a whole.

As we continue to monitor developments carefully, we must be prepared to respond promptly and meaningfully to events as they unfold. This includes, of course, adjusting the stance of our monetary policy, if needed, in the coming months. In addition, we should remain observant to the changing conditions that financial institutions of all sizes are facing and be open to adjusting supervision as needed and as appropriate. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Governor Brainard, please.

MS. BRAINARD. Thank you, Mr. Chair. Following a dramatic decline in March and April, activity appears to have bottomed out and started to recover in May because of earlier-than-expected rollbacks of COVID-19 restrictions, and financial markets are buoyant. Nonetheless, the recovery remains hostage to the course of the pandemic, uncertainty is high, and the balance of risks is to the downside.

Data received since we last met have confirmed that activity plunged in March and April. Retail sales, motor vehicle sales, and manufacturing output all saw declines of historic magnitude. Aggregate projections have real GDP falling at a staggering annual rate, between 35 and 40 percent in the current quarter, following a 5 percent drop last quarter.

But the most recent indicators suggest activity has bottomed out and is starting to bounce back. Many states are rolling back mandatory social distancing earlier than we expected at our April meeting. The inflection was initially apparent in a few high-frequency indicators of mobility, restaurant dining, weekly motor vehicle sales, and non-food retail goods spending.

These early signs were given dramatic corroboration by the upside surprise of unprecedented magnitude in last Friday's employment report. The payroll employment increase of 2.5 million confounded market expectations for a decline of several million. Unemployment defied expectations with a 1.4 percentage point decline, despite a 0.6 percentage point increase in the participate rate. These developments are welcome, but they should not distract from a 13.3 percent unemployment rate, near its postwar highs, and a net decline in payroll employment of 19½ million.

On the other side of our dual mandate, inflation has receded farther below target, reflecting weaker demand along with lower oil prices. Both core and total PCE prices fell in

March and April, leaving the 12-month changes at 1.0 percent and 0.5 percent, respectively. Like Governor Clarida, I worry about a decline in inflation expectations.

By contrast, financial market sentiment is buoyant, with optimism about reopening and potential virus treatments more than offsetting concerns about weak data releases earlier in the period and renewed tensions between the United States and China more recently.

My discussions with market participants were notably upbeat, with most crediting the early and forceful response by the Federal Reserve and the Congress for the rapid restoration of market functioning and the improvement in risk appetite. The expansion and destigmatization of the swap lines are credited with the rapid normalization of dollar funding conditions abroad. Fed facilities are credited for the substantial improvements in the municipal bond market, in which spreads have come down and issuances resumed in the higher-rated segment of the market.

The Federal Reserve backstop is credited with supporting the record level of issuance in corporate bond markets, with corporations taking advantage of the improved conditions to pay down revolvers and shore up liquidity buffers to bridge an air pocket of between 18 and 24 months. The improvement has worked its way from investment grade into fallen angels and to high-yield more broadly, albeit to a lesser degree. Leveraged loan issuance is expected to improve more slowly and cautiously. There are some concerns that many CLO managers are already exceeding their limits on triple-C-rated debt, limiting their ability to absorb more in the event of downgrades.

While we have seen substantial downgrades so far and market participants anticipate further downgrades, particularly in the large triple-B segment, they nonetheless don’t anticipate much more selling due to the changes in the investor base. Though defaults have thus far been contained, it's too early to draw any firm conclusions, as forbearance may be masking some stresses.

With the S&P 500 index now well above 3,000 and the VIX below 25, market participants expressed some puzzlement over the buoyant tone in equity markets, especially given the elevated uncertainty surrounding earnings over the next few quarters and U.S.–China tensions. As Lorie Logan noted, the puzzle remains even after taking into account the decline in risk-free rates.

The Treasury yield curve has steepened noticeably, reflecting in part expected increases in issuance of longer-term securities as well as improved sentiment. A number of market participants raised questions about possible shifts in the demand for long-dated Treasury securities, the durability of their value as a hedging instrument, and whether they will play a diminished role in multi-asset portfolios.

In contrast to the highly leveraged corporate sector going into the crisis, which is likely to be an amplifier, the relatively low levels of leverage on household balance sheets, in comparison to during the Global Financial Crisis, could augur well for housing to play a bigger role in the current recovery, although consumer resilience will hinge centrally on the outlook for employment.

Even though the positive news and the most recent indicators and the notable improvements in financial markets over recent weeks provide reasons to hope for a checkmark-shaped recovery, the forward path of the virus and the economy remain extraordinarily uncertain.

Let me conclude by briefly reviewing the possible risks. On the upside, it's possible that the virus spread will remain contained despite the easing of social distancing under way. In that case, the rebound in activity could be relatively rapid, given that the economy entered the crisis on a strong footing, and the monetary and especially fiscal policy response has been timely and sizable. It also remains possible that testing and tracing, along with effective therapeutics or a vaccine, could be made widely available earlier than generally expected.

However, downside risks loom larger. Like many of you, I worry that current approaches to reopening may cause the virus spread to rise, given that the capacity for testing and contact tracing remain well below what public health experts prescribe. Rolling flare-ups or a second wave in the autumn may lead to the reimposition of strict social distancing or a sharp increase in voluntary social distancing, weighing on the recovery and possibly resulting in a further contraction—the dreaded "*W*." A second wave could reignite financial market volatility and market disruptions at a time of greater vulnerability. Moreover, persistent behavioral changes due to lingering concerns about infections could depress demand for a prolonged period and could change some sectors permanently, such as retail, higher education, or cruise lines. As Stacey Tevlin noted earlier, there could be persistent damage to the productive capacity of the economy from a protracted downturn, with a wave of insolvencies, depressed investment, destruction of intangible business capital, and long-term severing of labor force attachment.

Moreover, any of the U.S. scenarios could be exacerbated by foreign spillovers. As Beth Anne Wilson noted, the staff estimates that foreign real GDP will drop nearly 30 percent at annual rate in the second quarter after falling at an annual rate of more than 11 percent in the first. While the potential for a pan-euro-area fiscal response provides some reason for optimism, China's recent provocations in Hong Kong and the renewed escalation of tensions between the United States and China pose new risks to the outlook, and the outlook for many emerging markets remains fragile.

All told, my modal outlook is for activity to decline notably this year and recover only gradually over the following two years, with core inflation still below our 2 percent objective and employment short of its maximum through the end of 2022. As Mark Carlson noted, this is similar to the majority of SEP respondents. My modal outlook is premised on significant ongoing monetary and fiscal support, and I put significant weight on a more adverse scenario. Thank you.

CHAIR POWELL. Thank you. Governor Quarles, please.

MR. QUARLES. Thank you, Mr. Chair. The course of the economy over the next 12 months will depend on the decisions that federal, state, and local officials make in response to their assessments of the complex of occurrences that we might call the COVID-19 event. These decisions have evolved rapidly. They'll continue to evolve, and so I want to thank the Board staff and those throughout the System who've been ramping up their use of real-time data to track the unfolding economic toll.

My modal outlook, as the economists have taught me to say, is broadly in line with the Tealbook baseline. I think the welcome employment report last Friday indicated that the PPP is succeeding in helping many workers remain connected to their current employers. That's excellent news, but it didn't fundamentally alter my forecast. I'd already been expecting a somewhat less dire near-term outcome, reflecting faster-than-expected and more successful easing of social distancing—which is easy to expect out here in the Rocky Mountains—and increased dissemination of stimulus payments. For the trends in employment that the staff sees in ADP data, some spending indicators suggest further economic triage into June.

But my forecast for the second half of this year is a little less rosy than the Tealbook because of the lingering effects on businesses of governmental communications and response measures made over the course of the past three months. As noted throughout the Beige Book, employers are having trouble restaffing due to potential workers remaining concerned about the threat from the virus and the option provided by more generous unemployment benefits.

In addition, it remains to be seen how successful our efforts to preserve the viability of shuttered businesses have been, as many of you have noted. The staff are following survey data in which the share of businesses indicating that their operations will never return to normal jumped in the last two weeks of May to near 10 percent, and 33 percent of the sampled small businesses had less than a month of cash on hand as of mid-May. So I worry that, if staged and partial reopening plans aren't sufficient to stem losses, we could see an acceleration of business closures that would hinder the recovery.

Fundamental changes spurred by the COVID-19 event, again, as many of you have noted, could lead to semipermanent downshifts in employment, spending, and investment. We've heard anecdotes of accelerated automation, that telecommunication will alter spending in office demand, and that business travel could remain depressed.

Let me also say a few words about the way I'm thinking about the "Second Waves" scenario in the Tealbook. Here I'm more optimistic than the staff, echoing some of the comments that Governor Bowman made. We've expanded testing, improved treatment, and instituted less drastic but still useful mitigation strategies over the course of the past few months, so I'm hopeful that we can both continue to normalize activity and avoid results that would lead governments to reimpose stay-at-home policies, at least not nearly to the same extent that we've experienced in the spring.

I haven't changed my view on the long-run values of real GDP, inflation, unemployment, and the federal funds rate. I'm quite confident that we can move past this event and our response to it without having damaged the underlying potential of the economy or fundamentally altered relationships among output, employment, and prices.

The massive decline in labor force participation is, however, particularly worrisome, especially given the long and slow recovery in that particular measure after the financial crisis. The federal government's unprecedented fiscal response to the COVID-19 event will require consolidation at some point.

State and local government finances, even in well-managed places like Utah, are strained. The choices made to normalize those budget paths will affect economic incentives in the medium and long term.

The continued flow of credit will be critical to the recovery. Now it looks as though credit is flowing at acceptable terms to large corporations, in part because of our efforts to stabilize bond markets, as well as to households. We've so far taken solace in the willingness of banks to provide massive amounts of credit to their business customers under their existing credit lines.

But we also need to ensure that the supply of new loans to creditworthy borrowers remains adequate. Regulatory data for large banks show that, in the first quarter, the total amount of available credit to businesses, the sum of outstanding loans and unused credit lines, contracted slightly. And that's consistent with the tightening seen in the previous Senior Loan Officer Opinion Survey on Bank Lending Practices.

In the second half of May, outstanding loans to financial and nonfinancial businesses began contracting at the largest banks. Much of that probably reflected takeouts of prior drawdowns on backup credit lines by firms that have now issued bonds. But business loans have leveled off at smaller banks as well, which more likely reflects a pullback in new lending. For instance, our supervisory contacts indicate that demand for the Main Street credit facilities may be limited, in part because of our stated expectations that banks will follow normal underwriting processes, which they believe would lead to a pullback in credit. And in the Beige Book, there were many comments indicating that banks have stopped making business loans except for those guaranteed through the PPP. On the positive side, staff discussions with banks during Main Street outreach suggest that they remain willing to accommodate borrowers who have sound collateral, although at moderately more stringent terms than before.

Finally, later this month we'll release our stress test results, including a discussion of the robustness exercise and sensitivity analyses that we've undertaken to ensure that those results are viewed as credible and to inform any supervisory or regulatory actions we may consider. We should remain committed to ensuring that our banks will continue to be a source of strength in navigating this downturn. And, transparency being my watchword, I am SEP participant number three. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kashkari.

MR. KASHKARI. Thank you, Mr. Chair. I'll start with the local economy—further declines in all sectors of the Ninth District since our previous meeting, with widespread job losses, especially in the tourism and health-care sectors. The majority of construction firms are reporting projects canceled; construction was deemed an essential industry during our shutdown, but they're seeing their forward-looking projects canceled.

Sharp falls, obviously, in retail, eating, drinking, and lodging, with some modest pickup in the past month as lockdowns have eased. Protests related to police violence and related damage have kept many Twin Cities businesses closed for the past week. And there's emerging evidence of downward pressure on wages in construction and education. Flat and falling input prices in manufacturing, and housing construction has slowed, but home sales still appear quite robust.

So let's look forward. As everybody has noted, the virus is dictating the economy. So my baseline, what I put in the SEP, is for a second wave. And I was kind of surprised that it didn't seem in anybody else's SEP submission that their baseline was a second wave. I was surprised by that, because the Tealbook says it's equally plausible that you could have the baseline in the Tealbook or a second wave. So I was surprised that I was the only one who appeared to opt for the second wave.

Let me just tell you why I think a second wave is most likely, unfortunately. First of all, we're nowhere near herd immunity. The experts say between 5 and 10 percent of the U.S. population—maybe on the low end of that—has been infected and since recovered, and they think we need 60 to 70 percent. So this virus has a long way to go.

The virus is still highly contagious. You know, we had this conference, which you know about, bringing health experts together with economists. I thought Larry Summers had a good way of looking at it. He said that estimates are that R0—so, the average number of uninfected people that one infected person passes the virus on to—was around 2½ in the unmitigated spread of the virus in February. At the maximum lockdown in the United States, it was down around 0.8 or 0.9. Our lockdown in America was much less onerous than in many other countries. We are not that locked down, relatively speaking. And now we've been moving back. So what's R0 today? Probably somewhere in between, certainly north of 1.0; could be 1.2, 1.5, 1.75—hard to know. But there's no question the virus is still spreading.

And you're seeing mixed evidence around the country. In Texas, the virus is spreading, in California the virus is spreading, and in Arizona, the cases are going up. Here in Minnesota, the cases were going up, hospitalizations were going up, and ICU admissions were all going up when we declared our lockdown over. It was a curious time to declare the lockdown over.

And so, there may be some seasonality. It's getting warmer, finally, in Minnesota, and now, somehow, after we've relaxed our lockdown, things seem to be tapering off. But I worry that, if there is seasonality to it, we may be getting a false sense of comfort from that seasonality if things seem to go dormant over the summer, and then we're going to think that everything is fine. So, like Eric, the positive unemployment surprise on Friday is good news that some people are finding work again. But it may indicate that we're just relaxing the shutdown much quicker than we had expected, and it may well be setting us up for a reemergence of the virus.

Add to that, you know, the protests that we've discussed here, which are meaningful and important in driving social change. You're seeing thousands of people in close proximity with each other, which also could be contributing to future viral spread. So this could be setting us up for a second wave in the fall. In fact, again, I think that's my base-case scenario.

What would prevent a second wave in the fall? These are upside risks that would have to take place. Jim and Rob talked about widespread testing. We've talked about therapies or vaccines. You know, in early April, Harvard came out with a study and said we need 5 million tests a day by early June to open safely. It's now early June, and we've got 500,000 tests per day. We're at 10 percent of the mark. And they said we should be at 20 million per day by late July. We're nowhere close.

Could there be a breakthrough? Sure, but that would be an upside surprise, not a baseline—same thing with therapies and vaccines. Or maybe the virus will just find a way to burn itself out. That would just be wonderful if that were to happen. But, again, I can't make that my base-case scenario. My base-case scenario is 5 to 7 percent of Americans have been exposed to this, and we're somehow on our way to 60 or 70 percent. I hope it's through a vaccine and not through actually achieving herd immunity. That's why the second wave is my base case.

Let me just turn to inflation. I'll be brief. Like others have said, inflation has fallen far below our target. Core PCE on a 12-month basis is only around 1 percent. April saw the largest one-month decline on record. A lot of factors are pulling down prices—weak demand, but also low oil prices and the relatively strong dollar. High unemployment is likely to depress wage growth.

Inflation expectations as measured by financial markets have slipped since the COVID-19 crisis began. The five-year, five-year measure from TIPS is only around 1.56 percent. I anticipate inflation running significantly below target for an extended period, and I see significant risks that inflation expectations will continue to drift downward. So I'd be supportive of whatever action we can take to bolster inflation expectations.

The last thing I'll just say is, I agree with Mary on her comments about labor market slack and the natural rate of unemployment. This is why I asked a question of Stacey when they brought their natural rate up. I'll just confess, I was frustrated that it seemed like the Board staff is very reluctant to bring down the natural rate year after year after year of low inflation, low wage growth. We had 3½ percent unemployment, and the Board staff still thought that the natural rate was well above that. But they're very quick to ratchet it back up. And so I'm worried that once we get through this COVID-19 crisis, we're going to be on another multiyear journey of gradually ratcheting it back down. So thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Mester.

MS. MESTER. Thank you, Mr. Chair. And I want to thank you for including comments in your press conference on the Federal Reserve's fundamental values to treat everyone with dignity and respect, to create a culture of diversity, inclusion, and opportunity, and to foster efforts to reduce long-standing inequality in the country. Unfortunately, the reconnaissance that we've been doing in the Fourth District just shows very clearly that the pandemic is going to increase that inequality.

Our overall economic conditions in the Fourth District economy remain weak. In a survey of regional contacts taken the last week of May and after the Beige Book survey, fewer than 20 percent of respondents reported that output had either already returned to pre-pandemic levels or that they expected to do so over the next three months, and about 40 percent said they expected it would take at least a year to recover to that level. Those in professional and business services and transportation are the most optimistic, while manufacturers and those in construction and real estate are the most pessimistic. And one commercial real estate contact expressed concern about the viability of mall-like shopping centers that were already struggling to find tenants before the pandemic, given the trend to more online shopping. The strategy had been to devote more space to entertainment-oriented businesses, such as arcades and indoor mini-golf parks, but the pandemic now threatens the viability of these businesses and the success of that strategy.

Labor market conditions in the District remain weak. We don't have the regional employment data for May yet, so we don't know if they will show the same kind of improvement as in the national data. But our survey evidence indicates that firms have been slower to recall laid-off workers than they had originally intended to. One-half of the firms in our survey have laid off or furloughed workers. About one-third of the firms who laid off workers plan to rehire between 90 to 100 percent of those workers over the next three months, but only a slightly smaller proportion plan to call back fewer than 25 percent of those laid off.

More than one-fourth of District contacts have reported reducing product prices, although supply chain disruptions, particularly for beef, poultry, and pork, have led to some selected price increases. While some contacts noted that increased costs to comply with safety and social-distancing guidelines—including installing barriers, more frequent cleaning, and reconfiguring office and plant layouts—most did not see those costs as significant at this point.

Now, despite the continued weakness, there are some positive notes from the District. As shutdown orders in Fourth District states eased over the course of May, some activities picked up faster than contacts had expected, particularly in harder-hit businesses that rely more on customer traffic. Auto dealers saw sales increase in May after a sharp decline in April, although they don't expect sales to return quickly to pre-pandemic levels because of diminished demand from rental car companies. A national apparel retailer, which opened 15 percent of its stores toward the end of May, reported that in-store sales had outpaced projections and that returning customers appeared happy to be back. An owner of restaurants in Pennsylvania and New York reported that continued takeout activity and limited dine-in service had brought revenues up to about 75 percent of normal, and he said that that level was the level needed for those restaurants to remain viable businesses.

Turning to the national economy, I anticipate that the second quarter will show the most severe effects on the economy from the virus and the shutdown to help limit its spread. Second-quarter growth will be deeply negative. But, as seen in the District, there are some green shoots seen in the very high frequency indicators on spending, and estimates produced by the Board staff from confidential weekly data from ADP show that the number of employees actually being paid rose by more than 5 million from late April to late May. The employment report for May was a positive surprise, showing an increase in jobs in sectors that have begun to reopen and a decrease in the unemployment rate.

Now, as more and more regions and sectors of the economy reopen, rates of growth are going to look very good. I am reminding myself not to get blinded to the fact that we're digging out from a very deep hole and to think in terms of levels, at least over the next few months, as more of the economy reopens. For example, despite the unexpected decline in the unemployment rate in May, 21 million workers are unemployed compared with 6 million in February. That's about 1 in 12 Americans. In October 2009, the worst point in the last cycle, about 1 in 15 people were unemployed. The gain of 2.5 million payroll jobs in May is only a little more than one-tenth of those lost in March and April, and the number of payroll jobs is still 13 percent below February's level.

Macroeconomic forecasting is particularly challenging at this time. The outlook depends not only on the course of the pandemic, but also on how households and businesses respond to it and on the efficacy of policy actions taken to mitigate the effects and support the economy. And there are several plausible paths the virus could take and several plausible paths that the economy might take to respond to a particular path of the virus, depending on the actions of consumers, firms, and policymakers. So the level of uncertainty surrounding the forecast is very high.

Now, recent results from the daily online national survey of households that the Cleveland Fed has been running since early March suggest widely varying attitudes about both the pandemic and behavior. Half of the respondents think the pandemic will last a year or less, and, on average, this group says they are likely to eventually return to their pre-pandemic uses of bars and restaurants, public spaces, public transportation, and crowded events. The other half of the respondents expect the pandemic to last more than a year, and, on average, this group says that they will engage in these activities to a lesser extent than they once did even after the pandemic has ended. We are trying to investigate whether it's just general optimistic and general pessimistic groups that have these attitudes or whether there is something more specific to the view about the pandemic that explains those results.

My SEP forecast is conditioned on the following pandemic scenario. I am assuming that stay-at-home orders will continue to be gradually lifted over the summer, but some restrictions, including on the size of public gatherings, will remain in effect through the end of the year as testing and tracking capabilities successfully expand. Restrictions become more risk focused, some treatments will become available in 2021, and a vaccine becomes widely available in 2021:Q3. Epidemiologists tell us to expect periodic upswings in the number of cases until the vaccine is distributed. The issue is whether the health-care system can handle the upswing. In this scenario, I assume it can, and this means that the public remains comfortable engaging in activities despite the periodic increases.

Under this scenario, I anticipate that the trough will be in the second quarter, and that the economy will begin to recover in the second half of the year as states continue to relax restrictions and people begin to feel more comfortable reengaging in economic activity. Even so, some industries, including travel and leisure and hospitality, will be slower to recover than others, because even if people are permitted to resume some of their normal activities, they need to feel some reassurance that it's safe to do so.

With the shutdown phase ending, the economy enters the second phase, in which the recovery continues over the forecast horizon, with unemployment rates falling and inflation gradually rising with support from policy actions that help the economy avoid more persistent damage. Factors such as changes in consumer behavior, including shopping and dining preferences, household living preferences, firms' demand for office space, and the reestablishment of more robust supply chains, could all necessitate structural changes to the economy, which may take some time to work through.

Many firms will not be able to recover, especially those that were operating on narrow margins and with high leverage before the pandemic and where social distancing continues to limit capacity. While a significant number of workers who lost jobs during the shutdown period will be rehired, others are going to need to retool for jobs in different sectors. If 60 percent of the 22 million jobs lost are temporary, that means about 9 million are going to be more persistent.

So, in my view, the recovery will take some time and will need to be supported by accommodative monetary policy over the forecast horizon. In my projection, by the end of the forecast horizon, inflation is still running below 2 percent. And though there has been a significant decline in the unemployment rate, the economy has still not returned to maximum sustainable employment. Thus, I do not anticipate an increase in the funds rate will be appropriate over the forecast horizon.

Whether stronger forward guidance than what we have communicated so far will be required, and whether balance sheet policy will be required, will depend on the path of the recovery. Currently, market participants and the public already expect that the funds rate will remain low for some time, so there is no urgency to change our forward guidance. However, in my forecast I have assumed that the FOMC will clarify its forward guidance later this year in support of the recovery and the achievement of our dual-mandate goals.

I have also assumed that the Committee will transition from its program of asset purchases intended to smooth market functioning to purchasing longer-term assets to support the recovery. And I also assume there will be additional fiscal policy support in the form of support to state and local governments and further direct payments to households most affected by the pandemic shutdown. This aid is needed because much of the economic sacrifice that has been made in the interest of public health has been borne by the most vulnerable in our economy—lower-income and minority workers and communities and the smaller of the small businesses.

Now, even within the pandemic scenario that I have assumed, there are both downside and upside risks to my forecast. On the downside, the surprising May employment report may make further fiscal policy actions less likely even if they are needed. On the upside, the May employment report may mean that the underlying fundamentals are stronger and the recovery will be stronger than I projected.

But, overall, I see the risks tilted to the downside, in particular because there is a potential for a different pandemic scenario than what I have assumed. In this more severe virus scenario, cases rise fast enough this fall to put significant stress on the health-care system in some parts of the country. In this scenario, I think governors will find it actually hard to gain public support to reinstate the restrictions seen in the first shutdown, but people would likely voluntarily restrict some of their activity. This would result in sharp falls in spending with more permanent job losses, business failures, and credit defaults, and the virus may actually end up being worse because states are reluctant to reinstate the restrictions.

Now, there's also a possibility of an upside scenario. If there is faster progress on COVID-19 testing, contact tracing, and capacity in the health-care system, and if activity restrictions become more risk focused, the expected increase in cases in the fall would be less disruptive to economic activity, resulting in a stronger recovery. I put the greatest likelihood on the virus scenario on which I condition my forecast, with the more severe virus scenario somewhat less likely and the benign virus scenario the least likely of the three. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Vice Chair Williams, please.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. Incoming data have ranged from deeply discouraging to somewhat encouraging to outright inexplicable. And, in the final category, I would include the May employment report that was, of course, an enormous upside surprise.

In assessing recent data from high-frequency indicators of mobility to the traditional economic releases, I'm applying a relatively low signal-to-noise ratio to each individual data point. This reflects a lack of historical experience with many of these new high-frequency indicators, problems with mismeasurement when many businesses are shuttered and individuals are sheltering in place, as well as the unique nature of the pandemic and the public health response that limit the usefulness of many of our standard models and analytical tools.

I will pause to say, however, that one model we've had and used, which hasn't been mentioned today—I was surprised by this, so I'm going to mention it—has proven to be an incredibly good forecaster, and that is the inverted yield curve. So we inverted the yield curve last summer. We all said, "That didn't tell us anything." It was, "Well, we don't believe it, don't listen." The Board wrote memos: The yield curve is wrong. We got a recession in February. The yield curve has been an almost perfect predictor of recessions since World War II. And we can quibble about whether the yield curve knew that we were going to have a recession for these reasons, but, again, another out-of-sample data point. Okay, I know Stacey will punish me for saying that by sending a very extensive memo about why that claim was wrong.

Despite these caveats about reading the recent data, I think the signals we're getting do confirm that where state and local governments have eased restrictions and allowed their economies to partially reopen, the level of economic activity has bottomed out and is showing signs of starting to recover. Interestingly, we're seeing this not only in the U.S. data, but also in our neighbor to the north. According to the Labour Force Survey for Canada, which I am holding right here and, I admit, I read for the first time in my life, employment in Canada in May rebounded there after some provinces had begun to ease their restrictions and reversed about 10 percent of the employment losses and absences that were recorded in the previous two months. In fact, the parallels between what we saw in Canada over the past three months and in the United States are really quite eerie. The patterns of rebound by sector and region mimic those that were seen in the U.S. data. And I do think that there's some signal here and some credence to the view that the employment report that we saw for the United States was not just a fluke, since we're seeing very much the same pattern in another country right north of us.

Now, in the Second District, restrictions are being lifted later and more gradually than in many other parts of the country. So we're now seeing initial signs of stabilization in employment and activity, led by the manufacturing sector. In fact, I was serenaded by the beautiful music of construction crews and honking horns as I walked into the office this morning, something I had not experienced in three months, because they just started stage one of reopening New York City on Monday.

Despite signs of improvement, however, the level of activity remains very depressed. For example, based on data from Womply, revenues at New York small businesses are still

40 percent below January levels. That's twice the falloff that we see for the country as a whole in this measure.

Still, like the Tealbook, I expect a full return of contact-intensive activities, like dining out, travel, and attending public events, will take quite some time, extending well into next year. And that reflects the gradual relaxation of restrictions on occupancy and, importantly, the gradual adjustment to voluntary social-distancing behavior as well.

As a result, like many of you have said, the overall recovery of the economy will likely be long and painfully slow. Now, the sectors that will experience delayed returns of activity compose a larger share of employment compared with value-added, and, therefore, I expect the unemployment rate to actually come down relatively gradually—say, compared with an Okun's law calculation—despite what I expect to see as a pretty robust rebound in GDP growth starting in the second half of this year and extending to next year. Specifically, I see the unemployment rate ending this year at about 10 percent, declining to about 6½ percent by the end of next year, and only falling below 5 percent in late 2022. You can learn more about my outlook in the SEP submission, for which I'm participant number two.

Now, my forecast of a solid but gradual recovery hinges on a number of assumptions, and I lack much conviction that things will play out this way. It's predicated on staying in a relatively narrow path, with much worse outcomes on either side. On the one hand, if, out of fear of contracting the virus, people remain very cautious and avoid travel, dining out, and going to concerts and sporting events, this hesitancy will hold the recovery back. On the other hand, if people rush back without a care in the world, there is a greater risk of a substantial second wave to the pandemic, as many have mentioned. And these would, of course, have dire consequences, both in terms of the economy and human suffering. These are risks we do not control, obviously, but we must recognize them as we contemplate what the future might hold.

In addition to the uncertainties about the path of the virus, there are a number of other sources of uncertainty. And, looking forward, I see the risks predominantly to the downside. The first is fiscal policy. Government support to individuals and businesses has been critical in helping keep families and small businesses going. In my forecast, I assume there's a further round of fiscal actions to provide support for households, businesses, and state and local governments through the second half of the year. In the event that does not happen, there's much greater risk of layoffs, commercial rents not being paid and resulting stress in commercial real estate markets, and a wave of small business failures. Similarly, without fiscal relief, state and local governments will need to institute significant austerity measures that will slow the recovery. We saw this dynamic play out following the last recession, and cutbacks to the state and local governments slowed the recovery for several years.

Second, the global dimension of the pandemic poses particular risks. Weak global demand, supply chain disruptions, and geopolitical turmoil all threaten to be sources of additional downside shocks in coming years. Again, the recovery from the last recession is instructive when the euro crisis hit just as the global recovery was getting traction.

Finally, for the time being, I have not assumed any changes to the long-run fundamentals of the economy, the so-called stars. A key goal of our policy actions, along with those of other government agencies, has been to minimize the scarring effects of the crisis on the long-run health of the economy. Despite these extraordinary efforts, the medium-term risk to potential output and r^* are most likely to the downside.

In terms of the outlook for inflation, much like the Tealbook, I see core inflation coming in very low this year, around 1 percent, but then starting the gradual march toward 2 percent over the next few years. I see core inflation at 1½ percent next year and around 1¾ percent in the year after. The uncertainty around this forecast is particularly large, given the enormous supply and demand implications of the pandemic, and tilted to the downside, in line with the prominence of downside risk to the outlook for economic activity.

Now, a critical assumption in my forecast of a lengthy but eventual full recovery and a return of inflation to 2 percent over coming years is that monetary policy will continue to provide strong support for the economy both during the acute phase of the pandemic and throughout the recovery. I assumed that we use all of our policy tools to achieve our goals of eliminating shortfalls from maximum employment and inflation averaging 2 percent. In particular, I assumed that the target federal funds rate stays at the current level well past the end of the forecast horizon, and we use a combination of strong forward guidance and asset purchases in support of our goals. More on that tomorrow.

And the final thing I would just like to mention, Mr. Chair—I really appreciate having the videoconference set up the way this has. It's been a very long day, but it's been great to actually see people and interact a little bit. And I would like to thank Governor Quarles for not actually cooking, preparing some s'mores in front of us, which would have been very painful. [Laughter]

But I do have one concern that you should be aware of, and maybe this is something for Jim and Matt Luecke to look into. I just want to know whether Governor Bowman's cat has signed the information security forms, because, you know, we just want to make sure everybody's following the rules. [Laughter] Thank you, Mr. Chair.

CHAIR POWELL. Thank you, and thank everyone for your comments.

As we navigate these uncharted economic waters, we continue to be reminded of just how little we know and how much uncertainty there is about the outlook or even about the current position of the economy. A general expectation among forecasters has been that the shutdown would lead to an unprecedented contraction in the second-quarter economic activity as the virus is brought under control and the curve flattened. The contraction would then reverse as the economy reopened, beginning around the middle of the year. The third quarter would show growth returning at a rapid rate, but the recovery would struggle to reach pre-crisis levels of activity as people returned to certain kinds of activity only gradually and as a significant portion of the newly laid-off workers struggled to find jobs. This relatively positive path assumes that the pandemic subsides and doesn't resurge. A major resurgence would put us on a significantly worse trajectory.

Now, all of this has seemed sensible to me, although the timing and the magnitudes of the recovery are obviously highly uncertain. In that way of thinking about things, the May unemployment rate would have shown continued job losses as foreshadowed by still-high initial claims, the ADP payroll report, and other indicators. Instead, the May report will go on the books as the biggest data surprise in memory—the private sector adding 3 million jobs, offset by public-sector losses of about ½ million; employment gains were widespread, with the biggest gains in sectors that had been most affected in March and April; 1.7 million people returned to the labor force, the unemployment rate fell, and the employment-to-population rate rose.

A critical issue is how much signal to take from this surprisingly positive report. Is this just about timing, with jobs coming back in mid-May rather than June or July? Or does this report presage a shallower recession and a faster recovery? I do not know. And perhaps there is truth in both, as is often the case.

Nevertheless, as a practical matter, I think we are well served to lean to the first explanation, insisting on more evidence of sustained improvement. We should be very cautious about overreacting to one positive report. And it's good to hear many of you echo that, because a hint of premature celebration could threaten the hard-won gains in market function and sentiment that are now supporting economic activity by households and businesses.

This is well-covered ground, but the economy was at a near stand-still in March and April. The staff projects 35 percent annualized shrinkage in the second quarter—an all-time record, certainly, for any living person. Now, as the economy reopens, it's reasonable to expect a bottom, and that may already be happening. Social-distancing restrictions have eased across the country. People are venturing out more, and they're going further. Many businesses are resuming operations, though to varying degrees.

We see it in many of the softer indicators. Online bookings for restaurants are up off their "zero lower bound." Geolocation data show that more people are on the move, and we're seeing more trips to so-called nonessential retail stores. Applications for new businesses are up, and auto sales are up. Hotel occupancy is grinding higher, and TSA and company reports show that air travel is increasing. Freight rail measures are improving. Of course, there's no sense that all is well. These are early signs. The energy patch remains a weak spot, and state and local governments continue to cut jobs.

Moreover, the fiscal response so far has been both large, at 14 percent of GDP, and timely by historical standards. Data show that the stimulus checks and enhanced unemployment insurance are at least replacing lost income from wages. PPP is supporting small businesses and keeping workers on payrolls. In addition, our lending facilities have been supporting the flow of credit to households, business, and state and local governments.

It looks like the economy's moving in the right direction, and perhaps sooner than expected. But, as many of you have pointed out, while the job gains in May were a remarkable and positive surprise, the net changes since February remain shockingly bad. Using the household survey data, 21 million people are still unemployed. There are another 4.8 million who are actually unemployed but miscoded. And a sudden drop in labor force participation shows that there are another 4 million who are suddenly out of the labor force. Surely these people are overwhelmingly unemployed as opposed to having decided to spend more time at home.

The total size of the problem is close to 30 million workers, which is close to 25 million above, maybe 24 million above where we were in February. And I'll echo something I guess Loretta said earlier, which is, even if we do get outsized job gains, which seems likely, frankly, in the remainder of the year, it also seems quite likely that close to 10 million people will not find work quickly. And these are low-paid, low-wage service workers who deal directly with the public in parts of the economy that may not recovery so quickly. That's as many people as lost jobs in the entire Global Financial Crisis.

The problem that awaits us is really that problem. And I think it's one reason why I've been speaking up about fiscal policy. I do think we need to be keeping that in mind as we look forward. These are terrible numbers—the true unemployment rate being close to 20 percent. And we face a long and challenging road to full recovery, which is likely to occur only when people are confident that it's safe to reengage in a broad range of economic activities, and that could take a while.

What's more, with mandatory social distancing waning and rising impatience with these measures all over, there's a risk of local and regional spikes or even a national second wave of COVID-19. While the reimposition of a national shutdown seems very unlikely to me, even the lesser evil of a wave of regional spikes would likely mean a slower reopening and a loss of public confidence that it's safe to resume activity.

To wrap up, I continue to see that monetary policy will need to be highly accommodative for some time. Like almost all of you, I see the risks to growth as weighted to the downside and those for unemployment weighted to the upside. We all see the risks to inflation as weighted to the downside. And I'm close to the median forecast out there of a slow recovery of inflation.

Tomorrow at the press conference I plan to reiterate that we're committed to using our full range of tools to support the economy, and that we expect to keep the policy rate near zero until we're confident that the economy has weathered recent events and is on track to achieve our maximum-employment and price-stability goals. I will acknowledge the welcome May jobs report and some of the softer indicators as well, but I will be clear that there is no complacency on the part of the Committee, and that we remain strongly committed to using our tools to support the economy and believe that that will be necessary for some time.

I'm looking forward to our discussion tomorrow. And now, before we part, I will turn it over to Rochelle to introduce tomorrow's policy discussion. Over to you, Rochelle. Thank you.

> MS. EDGE.[6] Thank you, Chair Powell. I will be referring to the exhibit on page 55 of your briefing materials packet. With the federal funds rate at the effective lower bound, associated forward guidance in place, and substantial ongoing asset purchases, policymakers may judge that the current setting of monetary policy remains appropriate for the time being. Additionally, considerable uncertainty surrounds the economic outlook at present.
>
> Because a clearer assessment of the outlook would put the Committee in a better position to evaluate its policy stance and communications, you may see this meeting

[6] The materials used by Ms. Edge are appended to this transcript (appendix 6).

as an opportunity to discuss future potential policy actions, as you continue to assess how the coronavirus and associated economic policies are shaping your views of the outlook. In light of these considerations, only a single draft policy statement has been prepared for this meeting.

Against this backdrop, I thought that it might be useful for me to discuss what a couple of scenarios, currently seen by the staff as equally plausible, might imply for potential forward-guidance communications. I will draw on the optimal control simulations presented in the "Monetary Policy Strategies" section of Tealbook A and also reported in the memo that Matthias discussed this morning.

As noted in the top-left panel, optimal control simulations solve for the optimal path of the federal funds rate. In doing so, they rely on three inputs: a loss function that is intended to capture policymaker preferences; an outlook for the economy around which the simulation is performed; and a macroeconomic model that characterizes the relationships between the federal funds rate and other key variables, particularly those variables that enter the loss function.

For the simulations shown in the exhibit, I consider two different economic outlooks, the Tealbook baseline and the "Second Waves" alternative scenario; consider two different assumptions about policymakers' preferences; and use the FRB/US model. Both the Tealbook baseline and "Second Waves" scenario incorporate asset purchases made through June. Thereafter, the simulations present optimal paths of the federal funds rate, taking as given the evolution of the balance sheet as assumed in the Tealbook A baseline economic forecast.

The black solid lines in the middle row of the chart plot the paths of the nominal federal funds rate, unemployment rate, and core PCE inflation given in this round's Tealbook baseline. The blue dot-dash lines show optimal control results that obtain when policymakers consider it equally important to keep total PCE inflation close to the Committee's objective of 2 percent, to keep the unemployment rate close to the staff's estimate of the natural rate, and to avoid abrupt changes in the federal funds rate.

Under this loss function—called the "equal weights" loss function—the federal funds rate lifts off from the lower bound in the third quarter of 2022, with this date shown by the blue vertical lines. As summarized in the first row of the top-right table, liftoff occurs just after the unemployment rate reaches 5.2 percent—0.4 percentage point above the staff's estimate of its natural rate at that time—and just after core PCE inflation reaches 1½ percent. However, the equal-weights loss function may not precisely align with how policymakers weigh deviations from their maximum-employment and price-stability objectives. It may also fail to capture risk-management concerns, such as policymakers' desire to insure against the possibility that inflation expectations could drift lower as a result of the effective lower bound.

A loss function that assigns no cost to the unemployment rate being below its natural rate can be used to reflect some of these considerations even if it is not the true depiction of policymakers' preferences. This loss function, which places an asymmetric weight on the unemployment gap, is one that we frequently use for optimal control simulations in the Tealbook.

The red dashed line in the middle-left chart shows the path of the federal funds rate that—conditional on the Tealbook baseline—minimizes the asymmetric-weight loss function. The red dashed lines in the other two charts in the middle row show the corresponding paths of the unemployment rate and core PCE inflation. In this simulation, the federal funds rate lifts off from the lower bound in the third quarter of 2024, with this date shown by the red vertical lines. As summarized in the second row of the top-right table, liftoff occurs just after the unemployment rate reaches 3.2 percent and when core PCE inflation is 2.1 percent. These paths of unemployment and inflation bear a strong similarity to those that Matthias showed this morning when discussing a forward-guidance specification that sets a 2¼ percent threshold for core inflation. This similarity reflects the possibility that, in some circumstances, different forward guidance thresholds can correspond to different policymaker loss functions.

The charts in the bottom row of the exhibit report the results of the simulations conditioned on the May Tealbook's "Second Waves" scenario. The black solid lines plot the baseline paths of key variables for this scenario, while the blue dot-dashed lines show optimal-control results obtained under the equal-weights loss function. The blue vertical lines in this row of charts indicate the time of liftoff, which occurs in the third quarter of 2027. As summarized in the third row of the top-right table, in this simulation, liftoff occurs just after the unemployment rate reaches 3.3 percent and when core PCE inflation is 1.6 percent. For reference, the red dashed lines in the bottom row of charts report a similar simulation but with the loss function that places an asymmetric weight on the unemployment rate gap. The red vertical lines report the timing of liftoff.

Note that, as shown in the top-right table, for the same loss function, liftoff for simulations based around the "Second Waves" scenario occurs 5 to 5½ years later than for simulations based around the Tealbook baseline. In addition, liftoff occurs with unemployment rates that are 1¾ to 2 percentage points lower and inflation rates that are as much as 0.3 percentage point higher. These large differences in timing and outcomes highlight one of the challenges posed by the uncertainty that surrounds the economic outlook.

In discussing how the Tealbook's optimal control simulations can be informative regarding forward guidance, I have focused solely on liftoff timing and liftoff conditions. However, optimal-control simulations imply a full path of policy rates, which means that the policy rate path *after* liftoff is equally important. Hence, optimal control simulations can also help inform forward guidance regarding the path of the federal funds rate after liftoff.

Thank you, Chair Powell. That concludes my prepared remarks. Pages 56 to 60 of the briefing materials packet present the April 29 statement and the draft statement and draft implementation note. Thomas, Trevor, and I would be happy to take any questions.

CHAIR POWELL. Thank you, Rochelle. So, questions? Does anyone have a question? Jim Bullard.

MR. BULLARD. Thank you, Mr. Chair. Okay. I'm just trying to absorb this here. So the "Second Waves" scenario, if I'm reading this correctly, has unemployment going back to 14 percent in 2021, and yet the liftoff gets pushed way out. Am I reading this correctly? Four years relative to the no-second-wave scenario?

So you might say, okay, unemployment goes up to 14 percent, comes down, and goes back up. But now, somehow the recovery is way worse, I guess, is what you're saying. You can see this in the line in the—comparing the two middle graphs. The unemployment rate is much slower to come down in that scenario. So that's in the model, I guess?

MS. EDGE. I think there are two reasons why it's different. So the liftoff is about five to five and a half years later in the "Second Waves" scenario. I think two things are going on: It's both the path of the unemployment rate and then it's also the path of inflation.

So if you compare the Tealbook baseline and the "Second Waves" scenario, I think—so this is before one starts doing the optimal control simulations. I mean, the timing is for liftoff in the scenario itself. I think the timing difference is about three years later. This difference comes just from following the policy rule specification used in the Tealbook forecast, with the specification being that the policy rate lifts off after the unemployment rate falls below 4.3 percent. So I guess then there is an extra two years of liftoff-timing differences in the optimal control simulations, and so it's the unemployment rate path. But it's also that there is the lower inflation path in the second wave scenario.

MR. BULLARD. I see. Thank you.

CHAIR POWELL. President Barkin.

MR. BARKIN. Sorry. This might be a dumb question. Why, in the "Second Waves" scenario, does core inflation come back so quickly? Is that because of supply constraints, or is that because of an announced policy that increases expectations?

MS. EDGE. So, inflation comes back so quickly in the asymmetric-weights scenario because the unemployment rate does go pretty low. I mean, it's going down to unprecedented levels, below 2 percent in this scenario. The other thing is that this is being run with the version of the FRB/US model which has model-consistent expectations for asset prices and for prices and wages. So they are very forward looking and see the gaps in the unemployment rate relative to the natural rate for a long time in the future.

MR. BARKIN. So it anticipates our lengthy time at the lower bound and therefore increases inflation expectations, which then increases core inflation. Thank you.

CHAIR POWELL. President Evans.

MR. EVANS. Just because we spent some time on this, I thought it would—so, in the second wave, the unemployment rate goes up, it hangs up, and then it comes down slowly. I have no difficulty believing that in the economy. I just wonder, in the model, do you have bankruptcies? I mean, second time through—there must be a shocking number of businesses that can't survive that. They're fragile and all of that, and I would think that the financial fragility and other things would be pretty devastating. I don't know how directly that's taken into account in FRB/US or things, but you must have proxies, or maybe you have it exactly.

MS. EDGE. So—

MR. LAUBACH. I was just wondering whether maybe we should let Stacey or Bill weigh in on this particular question.

MR. WASCHER. Okay. So the answer is, it's part of our story. It's not explicitly in the model, but it's part of our story. And so we've built in a bigger negative shock from the second wave, because we do think that a second wave will cause more financial stresses.

MR. EVANS. Yes. No, that makes sense. I understand.

CHAIR POWELL. Further questions? President Daly.

MS. DALY. Sorry, I'm making everybody miserable, but I want to go back to Tom's question, Rochelle. So I understand how this works, that agents just expect this, and so they build it in. But what would it take to get the very positive outcome of inflation returning to our target in the second wave, which is arguably a way worse situation? How can we get that in no-second-wave? Because the simulations you've given us are a worse outcome on inflation with a better outcome on health. So what policy do we need to do to get the good outcome of the second-wave pictures on inflation?

MS. EDGE. The outcome in which inflation is coming back more rapidly is the asymmetric—

MS. DALY. Right. I was just curious. What would it take?

MS. EDGE. So, I mean, in the—

MS. DALY. If I've asked a stupid question, feel free to say so. But I just—I'm really sort of struggling with why we wouldn't want that good outcome in the first row of pictures.

MR. REEVE. President Daly, this is Trevor. I think you would want those outcomes very much. But I think, coming back to Rochelle's earlier comments in response to President Barkin, that is a feature of the model that really is leaning very, very heavily on the highly forward-looking behavior of price and wage setters that I think many of us find stretches the limits of credibility in the current environment. And so, in the Monetary Policy Strategies section of Tealbook A, which routinely features these simulations, we often have a paragraph or two on some of the caveats to the effect that the world may not quite work that way, especially in these unprecedented circumstances.

So if you did not have that degree of forward-looking behavior, then in order to ultimately generate inflation outcomes that get back to your 2 percent goal, you would actually need to engineer a much greater undershoot of the unemployment rate from its natural rate, right? You would demonstrate the achievement of the inflation goal through really tightening the real economy to a much greater extent than is evident in these very forward-looking models.

That's the feature of a lot of models, so it kind of is what it is. But it's something we do like to point out as something that you may not want to draw too firm of conclusions on and may not want to base your policy actions completely around that. I'm not exactly sure about the differences between the middle and lower panels, but I presume what matters a lot in this is the entire time horizon over which this optimization problem is being computed, which is leading to different paths of the variables in question.

MS. DALY. Thank you.

CHAIR POWELL. Governor Brainard, please.

MS. BRAINARD. I think just a quick clarifying question. As I understand it, the loss function has deviations on either side of 2 percent being equally weighted, and so that must be why we have that difference between the "Second Waves" scenario and the baseline scenario, right? It's actually a worse outcome. It's actually viewed as a worse outcome from a loss function that penalizes deviations on the upside and the downside. Is that correct?

MS. EDGE. Yes. So it's the same loss. It penalizes deviations equally. That's correct.

MS. DALY. Okay. That makes sense. So what I'm considering to be a good outcome is actually what the model considers to be a negative outcome. Got it. Thank you.

CHAIR POWELL. Which kind of raises the question, maybe we should put an asymmetric loss function on inflation. Anyway, interesting discussion. Further questions?

MR. CLARIDA. Mr. Chair, if I could—

CHAIR POWELL. I can't see you, Rich. Sorry. Go ahead.

MR. CLARIDA. Okay?

CHAIR POWELL. Yes.

MR. CLARIDA. Good. All right. If I could, just on this point, I think the real issue for us is that a lot of times these models assume away our biggest challenge. They assume inflation expectations begin well anchored and stay well anchored, notwithstanding the biggest hit the economy has taken in 80 years. And we get paid the big bucks to actually think about the case in which we actually want to run a policy that would keep them well anchored. So if I would editorialize, I'll leave it at that.

CHAIR POWELL. Further questions? [No response] Okay. That concludes our business for today. Thanks, everybody. That was great. I'm sorry that we won't be in the elegant West Court Café tonight, but one day soon we'll be back there. So we'll adjourn for today and resume at 9:00 a.m. tomorrow morning for the policy go-round. Everyone have a great night. Stay safe.

[Meeting recessed]

June 10 Session

CHAIR POWELL. Good morning, everyone. Welcome. Before we begin the policy go-round, let's hear from Stacey for a brief update on this morning's data. Stacey.

MS. TEVLIN. Good morning. This morning's CPI data came in a little softer than we'd anticipated. Both the total CPI and the core CPI fell 0.1 percent in May. So for core CPI, that brought the 12-month change down to 1.2 percent, and for total CPI, the 12-month change was just 0.1 percent. Both of these figures are about 0.1 percentage point lower than we projected.

In general, the declines continued in the same categories that we've seen in previous months, which are the ones that we think are most vulnerable to social distancing. I'm talking about apparel, lodging away from home, airfares, and car insurance. And then, in the meantime, we also saw another strong increase in food prices, though not quite as strong as in April. I would note that even though this was another month of decline in core—and that's unusual to see three months in a row—the decline was less pronounced than in April and May, so these categories appear like they may be close to stabilizing.

And then I guess, finally, I'd just say that, despite the pickup in economic activity in May, it doesn't seem like it has quite shown up in prices yet. So that's all I was going to say on the CPI.

CHAIR POWELL. Great. Thank you. Any questions for Stacey? [No response] Okay, thank you. Seeing none, we'll proceed to our policy go-round, and we'll begin with Governor Clarida, please.

MR. CLARIDA. Thank you, Chair Powell. I support the draft statement and directive as written. As I pointed out at our previous meeting, I do believe that our existing guidance on the pace and rationale for our Treasury security and agency MBS purchases does need to evolve, now that we have largely restored market functioning. This statement does so and in a way that will preserve our optionality to make more significant changes to our balance sheet policy later if we feel, after receiving more data on the economy, that this is warranted to help us best achieve our objectives.

From the Desk surveys and market commentary, it does appear that the pace of purchases that we are agreeing to today—roughly $80 billion a month for the Treasury security purchases—is in line with market expectations and should serve the aim of sustaining the improvement in market functioning and the transmission to broader financial conditions that we have achieved since the severe turbulence we experienced in March. Of course, it is difficult to know with any precision exactly what minimum level of purchases would be sufficient for these goals, but I suspect that that number is positive, and I support the Desk recommendation as embodied in the statement and the directive.

I also support the decision to leave the language on rate guidance and the balance of risks to the outlook unchanged. Although the reference to "medium term" resides in the balance-of-risks sentence in paragraph 3, it was immediately taken, after the April meeting, in markets as a form of guidance about the path of the policy rate. In any event, of course, as we've discussed, market pricing indicates essentially a zero chance that we will hike rates anytime over the next 18 months, and, of course, this comports with our SEP, which will be released this afternoon. Moreover, this is "big tent" language, which I view as a virtue in that it preserves our optionality to make more significant changes to our rate guidance later in the year if we feel at that time it is warranted to help us best achieve our objectives.

As I pointed out at our April meeting, our existing guidance—that rates are on hold until we're on track to achieve our objective—is serving us well today, but it may at some point need to be reconsidered. "On track," to me—and, I suspect, to others—is indicative of a forecast-based threshold, which, of course, would trigger rate hikes even if inflation at the time were below 2 percent. This, of course, was the situation that the Committee faced in December 2015. And I should say, at the time, as a Fed watcher, I supported that decision.

Given the empirical record of PCE inflation consistently falling short of our objective, there's a risk—and I think there's a real risk—that inflation expectations could continue to drift lower. And I would point out that, in the staff's estimate of expected inflation obtained from the TIPS market—and this is after adjusting for liquidity and term premium effects—sort of their pure read on expected inflation from TIPS for CPI inflation is running at about 1¾ percent, and that's down from about 2½ percent several months ago. So that metric has moved down a lot. And in such circumstances, we might choose to offer guidance, as we discussed yesterday, that rates are on hold until we actually achieve 2 percent inflation over some horizon. If we went down that road, I think it would be appropriate to refine and amend the consensus statement to empower that possibility.

But this is a discussion not for today, and I repeat that I fully support our decision in the statement and the directive. Thank you, Chair Powell.

CHAIR POWELL. Thank you. President Daly, please.

MS. DALY. Thank you, Mr. Chair. I support the statement as written. Our actions and policies are providing critical support in this challenging time. These challenges won't end anytime soon, and under almost any scenario for the virus, the economic recovery will require continued vigorous support to meet our dual-mandate goals.

Now, the optimal control simulations presented by Rochelle yesterday make clear the steep uphill climb we face. They document considerable economic headwinds and the forceful policy response that is needed to achieve full employment and price stability. In these simulations, at least the way I read them, we achieve 2 percent inflation in a reasonable time frame only if we aggressively respond to the unemployment gap and tolerate sustained, modest overshooting of our inflation target. Moreover, for this strategy to work, as embedded in the assumptions of the model we saw yesterday, businesses and consumers must believe that the Fed is fully committed to achieving the dual-mandate goals.

The discussions of these simulations only strengthened my view—and I will say what Governor Clarida just said—that we need to finalize our framework review and release a long-run consensus statement that clearly states our commitment to achieving 2 percent inflation on average. I know that's for another day, but I think it's an important thing for us to do, because it serves as a commitment that we will have a solid foundation for all of the policy actions we take as we have to fight the virus and the economic effect.

So, turning to those specific policy actions that I assume we're going to need to take, the SEP shows—and our go-round yesterday confirms—that few expect a quick withdrawal of monetary accommodation. And so far—and I would emphasize "so far"—the views of market participants are aligned and also expecting a long spell at the ELB. But, as many others noted yesterday and I did as well, markets can be fickle and erratic and have historically surprised us when they move out of alignment with our own sense of the future path of policy. So I would like to see us move to some form of outcome-based or state-based forward guidance in coming months that ties policy adjustments to specific mile markers toward our dual-mandate goals.

Of course, any forward guidance should be coordinated with a statement of our projected balance sheet actions. And here I agree with President Kashkari and Vice Chair Williams that our policy tools are likely to be most successful when we can communicate their use toward a single set of goals. Putting forward a unified package of policies will be more effective than one at a time and then having market participants and households not know how they're related. I think that's one of the reasons we've had such success with the ones we've released so far—that everything has been aligned, and we came with them collectively. In an ideal world—which I'm sure, Chair Powell, you dream of recurring again and again—our forward guidance, the SEP, and our lending programs and asset purchases would all be aligned to convey to markets, businesses, and households that we are committed to doing what it takes to return the economy to its pre-COVID-19 state as quickly as possible.

So let me say one final thing about speed. Over the decade preceding COVID-19, we learned that there is no immutable bright line between cyclical and structural. While it's true that hotel clerks don't become coders overnight, the labor market is much more flexible than we've given it credit for. With time and the right incentives, employers shift the requirements, and workers shift their skills. Our role is to provide the economic environment that creates opportunity and incentivizes these shifts. That's one of the key lessons that we took from the *Fed Listens* events. When the labor market is consistently good, employers increase their search efforts and take another look at the potential of applicants. The result is, less advantaged and dislocated workers get jobs, and growth becomes more inclusive. This ultimately, of course, boosts our potential output.

So, in sum, the support we have provided to the economy has helped carry us through the initial crisis. Now we have a short break to assess the effectiveness of our first response and the start of the reopening of our economy. But given the range of plausible outcomes, it is almost certain that we will need to do more to support a full economic recovery. And given that the risks remain tilted to the downside and we are constrained by the ELB, in my mind we should err on the side of doing more and doing it boldly and earlier rather than waiting and doing less later. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Rosengren, please.

MR. ROSENGREN. Thank you, Mr. Chair. I support today's policy option. While the data, given the pandemic, are noisy, there is a risk of persistently high unemployment and low inflation. Given the large misses on both elements of the dual mandate, the need for a highly accommodative policy is clear.

Treasury rates are already quite low, and even with the rise in rates accompanying the better-than-expected employment report, the five-year yield is below 50 basis points. While I strongly support forward guidance that promises to purchase securities over the next year, our biggest problem is no longer the levels of Treasury and MBS rates, but rather the interest rate spreads of risky assets relative to safe assets. The elevated risk spreads reflect the great uncertainty we are facing. If loan losses rise and more firms fail, as I expect, these spreads may widen even further.

Ideally, we could act like other countries and purchase more private securities to reduce the spreads. Given the Federal Reserve's legal limitations on open market operations, the elevated risk spreads need to be addressed with our 13(3) facilities. Over time, reducing spreads through our lending facilities may do more for the cost of funds that households and firms face than will substantial additional purchases of Treasuries. This is not to say we should not actively engage in QE, but rather we should be attentive to how we make our 13(3) facilities more attractive so that the low cost of funds translates into lower total costs for households and firms. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Harker, please.

MR. HARKER. Thank you, Mr. Chair. I support the statement as written. In terms of communicating our forward guidance, the tremendous uncertainty over how the economy will evolve and what the new normal will look like makes, to me, date-based forward guidance more attractive than outcome-based forward guidance for now. I understand, and I'm very sympathetic to, the arguments for an outcome-based approach. But I believe, for the time being, basing our policy rate path on thresholds that could be unattainable may not be the most sensible way of communicating the likely path of the funds rate.

Once we complete the monetary policy framework process and the consensus statement, I'd be open to revisiting this stance. But for now, I continue to support the statement that we remain at the lower bound for the foreseeable future and then leave the rest open ended until we revisit this later. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bullard, please.

MR. BULLARD. Thank you, Mr. Chair. We remain at or near the height of the initial phase of the crisis in economic terms, but past the initial phase in health terms. Q2 GDP growth is likely to be the worst in the postwar era by a factor of 3 or 4. Employment remains far below its levels at the beginning of this year. A large portion of these workers see themselves as on temporary layoff. This makes a lot of sense, given the nature of this shock and that many of these workers will likely return to work in the weeks and months ahead.

Downside risks, as the Committee emphasized yesterday, are very substantial. I put them in two broad categories—the possibility that the pandemic crisis morphs into a financial crisis and the possibility that widespread business failure leads to a depression. Avoiding these possibilities depends on risk management across the individual units in the economy at the household level, the firm level, and nonprofits. They need to find methods of protecting the most vulnerable people as well as possible while producing goods and services in the safest manner that they can.

This is occurring today and is a chaotic process, as should be expected in the middle of a crisis. However, firms, nonprofits, and workers have strong incentives to restore their revenue streams and simultaneously manage the COVID-19 risk. These entities manage other types of mortality risk every day, so, in principle, this can be done.

One lesson that we've learned already is that work from home is powerful. The U.S. economy is ostensibly shut down, but during the second quarter it will produce approximately 90 percent of what it produced when it was not shut down. Either this is mismeasurement or it's a miracle of the modern age.

Meanwhile, inflation is low, and inflation is expected to remain low. The policy rate is set at the effective-lower-bound level that we used for many years following the financial crisis. Expectations are for the policy rate remain low. Longer-term interest rates remain low. So the silver lining in the crisis is that we have a relatively easy decision to make today: Keep the rate where it is. And, accordingly, I support the draft statement.

I do not think that the story today about the economy is about monetary policy. I think it's all about the pandemic still and the evolution of the pandemic. It's like being in a war: In a war, the news from the front drives financial markets, and I think we're very much in a similar situation today.

Decisions, however, in the meetings ahead may become more nuanced, and we may want to return to the Committee's A-, B-, and C-style options, as it may be valuable to test with alt-A and alt-C how the Committee would provide different levels of accommodation as the economy continues to evolve in the third quarter.

I want to finish with just a brief comment on the inexplicable jobs report. Research at the St. Louis Fed by Max Dvorkin did suggest a substantial jobs gain in the May report, with more to come in June. For those who are interested, there is a blog post on this, all based on publicly available data. It used the Homebase data set, which is a real-time measure of employment. The correlation with CPS data is quite high, and that correlation was used to predict a large jobs gain in the CPS survey—uncanny accuracy, within a few hundred thousand of the actual number.

It shows a couple of things, I think that these new data sources may be very valuable in the current environment. It also shows that this shock is very different from other ones that we have experienced, and it's not a good idea to simply go back to other big shocks that have occurred in the past and assume that those are going to give you a good idea about how the economy is going to evolve this time around. I did think that the staff did a good job yesterday and in the Tealbook of incorporating some of these ideas, and I look forward to more of that.

Oh—and, finally, I do want to agree with President Daly. She suggested that we go ahead and finish the framework review. I think that is the intent. But I think it would now be a good time to go ahead and get that done. We can't let it linger too long, and I think there's probably a pretty good consensus about what we need to do around the table. So I'd encourage you, Mr. Chair, to push that forward. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Bostic, please.

MR. BOSTIC. Thank you, Mr. Chair. I fully support the draft policy statement as written. Given the tremendous uncertainty and prevalence of risks that remain, I think it is very premature to be adding anything along the lines of more guidance on future policy beyond what is in the statement draft. And this is in line with the view expressed by the Chair in yesterday's discussion.

The dot plots in the SEP will, of course, inevitably be interpreted as forward guidance. I will say that I actually would have preferred to have skipped the SEP this time around, though I'm not that uncomfortable with the narrative that, for now, the Committee perceives the modal case to be zero rates as far ahead as the eye can see.

I have no argument with calls to refine forward guidance and finish the framework review. Both are definitely needed. But I think that is best done after we have more clarity on the pathway of the recovery.

So, in my view, I think there should be three main messages coming out of this meeting. One, the environment is too uncertain to make reasonable projections about the path of the economy in the near term. Two, policy will be dependent on how the economic picture evolves. And, three, we will do whatever it takes to support the recovery.

I am in favor of resisting today the drumbeat for us to be more explicit about additional actions we might take down the road. But I would also resist any calls for speculation about what normalization might look like regarding the process and timing of winding down either the balance sheet expansion or the 13(3) facilities.

I think that the Chair's message that we think monetary policy is in a good place, that we will not be in a hurry to remove any support that currently exists, and that we will act as needed has been extremely useful. I would like us to stick to that message. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kaplan, please.

MR. KAPLAN. Thank you, Mr. Chair. I agree with the draft statement as written, and I support it. I'm mindful that current policy rates are low and are expected to remain low for some time, and, obviously, the SEP will reinforce that. I'm also mindful that Treasury yields along the curve are relatively low, which suggests to me that there's limited scope at this point to do a lot to lower Treasury yields from here and provide more monetary accommodation, at least today.

As long as this health-care crisis continues to be the primary driver of the weight on activity, I think monetary policy has a role to play, but it's not as important as what the Fed is doing in providing, through its 13(3) programs, liquidity to businesses, households, municipalities, and the financial markets. And maybe echoing a little bit of what President Rosengren said, I think the action may be more with the 13(3) programs in the near term and medium term than with doing substantially more in terms of buying Treasury securities. I also think fiscal policy, as we've said publicly, is critical to prevent this health-care crisis from morphing into a broader economic crisis.

Having said all of that, as the health-care crisis recedes and we get more clarity on what these recessionary dynamics are in the economy that are preventing it from returning to potential, it will be important to provide sufficient policy accommodation through both forward guidance and the balance sheet. Forward guidance and asset purchases, I believe, should be used at some point to make sure that shorter- and long-term interest rates remain low and employment and inflation are well on their way back to meet our objectives.

As we go through the next few months, what I'm wrestling with is the risk that we don't do enough versus the risk that, in some areas, we do too much. And also, I'm mindful—and I share this view with my team on this—that while there are risks to the downside, I think there are also substantial upside possibilities, and I want to make sure we're balanced in our approach and don't get so pessimistic that we justify doing maybe more than we should. So, what's the worry I have about that? Monetary policy accommodation at this stage, I think, is not free. It could well encourage undue risk-taking, and it's hard to believe that in June of this year we're talking about that. But I'm already seeing risks of that here, so I'm just mindful of it.

There's a risk of keeping "zombie" companies from getting restructured, which would be better for the companies, better for the workers, and better for the economy. And I think there's some question about whether that's happening sufficiently.

I'm also concerned that if we overdo it, it will discourage or mute dynamism. So my own view will be to try to take a balanced approach and, in some areas of our monetary policy, even be restrained. But I do think the key tools in middle of the action right now are these 13(3) programs as well as our forward guidance. And there'll be time later, as we get more clarity, to give more guidance on what we're going to do on our balance sheet. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Barkin, please.

MR. BARKIN. Thank you, Mr. Chair. Uncertainty is high today on multiple dimensions, including the path of the virus, the response of our public health officials, the fiscal path forward, and the reactions of consumers and firms. In that context, I do worry the memo's positioning on future asset purchases might be a bit premature. I recognize that it doesn't make an explicit commitment to QE, but it does set a minimum level of purchases that could be taken that way. The world could evolve in many ways, and I'd prefer to wait to make commitments until the path is clearer. Instead, I would have maintained the previous language focusing on levels as needed.

Looking forward, I like the language the Chair proposed yesterday for our forward guidance when we decide it's time to make it clear. The key for me was expressed well by President Bullard and, earlier today, by President Harker—to pick a state you can achieve. I believe the Chair's proposed statement balances well both sides of our mandate without getting so numerically specific as to overcommit us to a target we might not achieve.

The experience over the past 10 years convinces me we can support the economy's return to maximum employment. Frankly, I'm not as confident that forward guidance will move inflation, and the experiences of Europe and Japan don't reassure me. And, as I said yesterday and President Kaplan just outlined well, overcommitment has costs, including excess leverage, reach-for-yield behavior, and market volatility. So I'd support a formulation like the one you described.

Finally, I'd emphasize that in the current environment, the key is to unfreeze businesses from their uncertainty. Our Main Street facility is targeted explicitly at that need. And, as Presidents Rosengren and Kaplan just said, our highest value now is in those kinds of facilities—in launching them successfully, messaging their value, and optimizing their terms for appropriate uptake—and I look forward to that. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Evans, please.

MR. EVANS. Thank you, Mr. Chair. Monetary policy is in the right place for now, and I support the statement. Yesterday's discussion brought many issues into focus for me. I'd been tempted to remain complacent that monetary policy has already done much, and the difficult challenges blocking robust economic recovery require fiscal policy and public health safety responses. As you have emphasized, Mr. Chair, fiscal policy is better positioned to directly support unemployed households and provide grants and relief for enterprises that were sound in January and can be again later this year and in 2021.

But Neel raised an important point when he asked how much monetary accommodation was actually being provided in the form of lower nominal rates versus r^*. For the longest time, the clearest indicator of this to me was in the inflation experience and the path forward. When the FOMC continually underruns our inflation objective, we are too restrictive.

Now, my complacent attitude coming in was to just say that this is premature to worry about low inflation when the level of economic distress is so high and its path forward is also unclear. That may be right. The 13(3) programs have been important and helpful, but with the recent unemployment news and widespread business reopenings, more paths to lower unemployment seem likely than I thought at our previous meeting.

And there are greater second-wave risks, too. The likelihood of inflation running below 2 percent for years during a time of strong recovery is an enormous risk for our dual-mandate credibility. This would be despite all of the great and innovative market functioning support that the Fed has supplied during this crisis.

I think we will need to clarify our forward guidance on policy rates by our September meeting. Perhaps initial forays into greater explicitness start off more qualitatively in September and are sharpened by October. We still have much ground to cover before we have an agreement—at least it seemed from yesterday's discussion and this morning's.

John Williams pointed out that our current yield curve builds in substantial expectations for further asset purchases this year. I think we will need to keep in mind that the market has expectations for further asset purchases with our forward guidance, and our alternative policy choices must navigate communicating that in a way that convinces the public that we're committed to a very strong further policy accommodation, perhaps in a different form than they expect and different from what we've provided before. But to be successful, I think the answer to Neel's question before too long must be: "Yes, we are providing bountiful accommodation in order to ensure that we actually overshoot 2 percent inflation sooner rather than later"—which, in the previous cycle, was never.

My "takeaway" from yesterday's discussion is that we will struggle to agree on the right forward-guidance parameters or asset purchases that convey a sense of abundant accommodation. Will we really say we will keep the funds rate at the ELB until inflation gets to 2 percent? Maybe we get to 2 percent inflation easily, but our simulations warn it may be uncomfortably low, with lower-for-longer rates. And it's easy to imagine financial stability concerns being raised early. That was the case in 2013, for sure.

Will we be willing to call out an unemployment rate publicly that we will also continue with until it is achieved? When I asked Chair Janet Yellen why we couldn't just extend our 6½ percent unemployment threshold to 6 percent back in March 2014, when we were on the doorstep of 6½ percent, she asked me what I would do if we stalled at 6.2 percent—keep the funds rate at the lower bound forever? So the FOMC immediately dropped the threshold forward guidance in March 2014 and muddled along on the dimension of not describing how long the funds rate would be at zero. And asset purchases, tapering, and delay became our only tools of action.

Once we start looking at weaker wage growth and high unemployment, we're going to have higher natural rate estimates cloud our longer-term judgment. That was my "takeaway" from the answer to the question I asked yesterday. And there will be questions of, how low can we go? That will return.

I could go on, but you get the idea. There are details we need to figure out.

Let me end with one more observation of further work we need to do. As we contemplate further asset purchases and the size of our balance sheet increases, we need to face up to the fact that we have different views on the appropriate size of the SOMA balance sheet. Or are we all just uncertain of the appropriate size? Unless we are pretty much indifferent or resigned to piling up trillions more in assets if needed to get inflation to 2 percent, our distaste for such large QE accommodation will limit all of our monetary effectiveness.

When we talked about round-tripping the balance sheet previously, we're including in our policy strategy the notion that these boosts to prices will not be permanent. Taking this to their logical conclusion, prices won't be going up at all if investors expect that, at the end, you'll unwind all of this.

There is a literature that looks at the additional monetary dimension that comes from communicating badly the endpoint of the balance sheet adjustment. I think of Auerbach and Obstfeld in their 2004 paper and their discussions of another reason why the Bank of Japan wasn't providing accommodation even when they thought they were. I think we need more staff work and a Committee discussion on that issue, too.

So for today, Mr. Chairman, I support the statement, and I say, let's keep going with our policy discussions at our next meetings. I agree we still need to get to an updated long-run framework in which we agree on our inflation objective. I prefer overshooting, allowing for that, and clarifying what we mean by "maximum employment" and "employment shortfalls." Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President George, please.

MS. GEORGE. Thank you, Mr. Chairman. I support today's decision to maintain the current stance of policy. The Federal Reserve has taken numerous actions to support the economy and to facilitate access to credit. With the federal funds rate near zero and other emergency policy measures in force, these actions are appropriately aimed at supporting market functioning and providing accommodation to aid in the economy's recovery consistent with our goals.

At the same time, while I support the statement, the language in paragraph 5 may leave too much ambiguity around the rationale for our continued asset purchases. With market functioning having largely returned to pre-pandemic levels, it might be unclear to the public why we would plan to increase our holdings of Treasury securities and agency securities at a monthly pace that exceeds the LSAP programs adopted during the financial crisis. Pending more specific guidance on the framework guiding these purchases, the market is likely to set its own expectations for what we should be doing and why. And once market expectations are set, we can find ourselves in a position of feeling obligated to ratify those expectations or, at least, not disappoint them terribly. I think we'll be well served to clarify our position in the coming months.

To date, we've explained the purchases as aiding market functioning. It would be my preference to not transition casually into QE4. If or when we launch an LSAP program to provide additional accommodation, I think it would benefit us to have a clear announcement and a distinct policy, as others have noted. Since previous studies have shown that much of the benefit of LSAPs has come from an announcement effect, we may risk undermining some of the potential benefit of this tool by implementing it in dribs and drabs.

Finally, continuing large purchases of Treasury securities without a clear framework or rationale, coincident with the tremendous increase in issuance by the Treasury, could give rise to questions about our independence. The sooner we tie our purchases back to economic conditions, the less it will appear that fiscal deficits are being financed.

As the economy's reopening progresses, we should get more clarity about the effect of the actions we've taken as well as the effect of fiscal stimulus. I'm also realistic that the extraordinary uncertainty about the path of the pandemic over the second half of the year and the economic outlook will require a fair amount of patience and wisdom as we navigate the likely long-lasting implications of the virus.

As lockdowns are lifted with varying levels of ongoing restrictions, I anticipate that labor market data and other measures of activity will be difficult to interpret. After flattening out in May, it's likely that real indicators will show strong growth, particularly in the third quarter, even as the level of activity remains depressed. As we assess our policy in that environment, the question is less likely to be whether the economy is headed in the right direction, but rather whether we judge that the pace is fast enough or requires an additional nudge from monetary policy. A desire to achieve our objective sooner rather than later will necessarily involve judgments about costs and benefits of the alternative policy strategies we discussed yesterday.

Even before the coronavirus shock, the pace of investment had been disappointing for some time. Trade policy uncertainty was partly, though perhaps not entirely, to blame. Now, I imagine, investment may take another hit as firms adjust to the new elements of uncertainty introduced by the virus. And at the same time that investment is weak, desired savings could be high.

In that context, it will be challenging to judge whether additional monetary policy actions can be effective. As we review our policy options later this year and consider the need for additional accommodation, keeping a close eye on inflation expectations as well as the pace and nature of this recovery will be key. Thank you.

CHAIR POWELL. Thank you. Governor Bowman, please.

MS. BOWMAN. Thank you, Chair Powell. I support the statement as currently written. The policy actions we've taken since March have helped improve the flow of credit to many households and businesses. I'm encouraged by the declining use of many of our emergency facilities as financial markets have become functional again.

The pandemic-related closures of large swaths of our economy, however, along with extraordinary social-distancing measures, have taken an extremely heavy toll on employment and business and household spending. While I'm optimistic that we'll be able to avoid the worst-case scenarios discussed in the Tealbook and elsewhere, I continue to see the risks to our economy as tilted to the downside, including the risk that recent gains in financial asset prices will prove fleeting.

On the whole, I see our current policy stance as appropriate while we continue to assess economic and financial conditions in coming months. Further, I like the optionality that paragraph 5 of the statement provides, and I'm looking forward to our discussions in upcoming meetings of other policy actions that we might consider if the economy needs additional support. Thank you, Chair Powell.

CHAIR POWELL. Thank you. Governor Brainard, please.

MS. BRAINARD. Thank you. Activity is in the very early stage of turning around after an unprecedented plunge, and considerable uncertainty clouds the path ahead. So it is appropriate to maintain our current posture for a few months before shifting from stabilization to support for demand.

With activity resuming somewhat earlier than anticipated, we should have a better sense of the tone of the recovery by our meeting in September. In addition, we should have vital information about some important unknowns. In particular, the outlook will be influenced by how the Congress addresses critical fiscal decisions, given the July fiscal cliff associated with the expiration of the expanded size and eligibility of unemployment benefits and the delayed tax filings that will affect state and local financing needs.

Today the critical objective is to convey a commitment to providing the steady support that the economy will require for an extended period. It will be important to demonstrate that while we welcome the news in May's payroll report that 2.5 million Americans returned to work, we do not see that as providing any grounds for changing course in light of the 26 million Americans who remain out of work and the 6 million who've left the labor force since the COVID-19 shock.

The SEP will help convey that message. The large majority of respondents expect the federal funds rate to remain at its lower bound, with core inflation below our 2 percent objective and employment short of its maximum, through the end of the forecast horizon. And many respondents noted they put significant weight on a more adverse scenario possibly associated with rolling flare-ups or a second wave of infections.

For today's meeting, market participants have high confidence in the Federal Reserve's willingness to act, given our record to date. This is confirmed in the statement's reiteration that we will use the "full range of tools" to support the economy. It is vitally important to make our 13(3) facilities as broadly available as we can in order to avoid the costly insolvencies of otherwise viable employers and the associated damage to the economy—a point noted by Presidents Rosengren, Kaplan, and Barkin.

The continuity in the forward-guidance language and on the pace of asset purchases will be read as extending our commitment to doing what is necessary while we develop a more enduring and comprehensive program of support for the recovery. The level of purchases should be consistent with expectations coming into the meeting. The careful change in rationale for asset purchases provides appropriate transitional language while preserving optionality to introduce a more material change in the context of a comprehensive program.

By September, we should be far enough along on our long-run strategy review to provide the overarching objective that will guide our program of accommodation and the tools to achieve it. Although my own thinking is still evolving, I currently anticipate that a three-pronged program is likely to prove most powerful: flexible average inflation targeting that would imply inflation rising moderately above 2 percent for a time to make up for the persistent undershoot; minimizing shortfalls, rather than deviations, of employment from its maximum; and conditioning forward guidance, front-end yield curve control, and back-end asset purchases on the achievement of those goals. In my view, this approach is vital for re-anchoring inflation expectations firmly at 2 percent, as noted by Vice Chair Clarida and Presidents Daly and Evans.

In the absence of critical, contingent forward commitments, market participants are prone to overreact to economic surprises, prompting excessive volatility and premature financial tightening, as happened at critical moments in the recovery from the GFC at considerable cost. Thank you.

CHAIR POWELL. Thank you. Governor Quarles, please.

MR. QUARLES. Thank you, Chair. I support the proposed statement as written. The damage to the economy that has been done by the measures taken to respond to the virus is deep. Extraordinary times continue to call for extraordinary measures.

Relatedly, let me reiterate my support for all of the other actions that the Federal Reserve has taken to support financial market functioning and the flow of credit. The 13(3) facilities, as well as the temporary regulatory relief that we provided to banks to ensure that they continue to use their capital and liquidity buffers to fund economic activity, are critical aspects of our support and necessary complements even as we have monetary policy accommodation turned up full throttle.

I think the continued focus of the draft statement on the role of asset purchases in supporting market functioning is appropriate in this highly uncertain environment, in which changes in the statement language could be overinterpreted. Moreover, limiting the guidance to state that we'll maintain the rate of purchases over coming months maintains our flexibility to recalibrate forward guidance and asset purchases at a time, I hope, in the near future when conditions are not evolving quite so rapidly. For instance, we have appropriately spent a lot of time in the past two days focused on the potential downsides of "*W*" and "*L*" scenarios, but last Friday's employment report shocked markets to the upside. And this reminder that uncertainty can resolve in our favor likewise puts in stark relief why a data-dependent policy commitment would generally be superior currently to a calendar-based policy.

The staff presentation on policy tools yesterday laid out the effects of some inflation and unemployment thresholds that will help us in calibrating our forward guidance and in sizing an LSAP. I'm looking forward to additional analysis of potential thresholds and purchase amounts, and I expect that we'll be refining the options in that space for the next meeting. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. President Kashkari, please.

MR. KASHKARI. Thank you, Mr. Chair. I support the action in today's meeting and the statement as written. We have real challenges in achieving both sides of our dual mandate. Inflation continues to run low, there's massive slack in the labor market, and it's going to be hard to close both of those. Obviously, the first order is getting the health policy right. There's great uncertainty, as we've discussed, there. I think we're playing an important role in stabilizing financial markets and ensuring access to credit. And I support the actions that the System has taken over the past few months.

I am, as I mentioned yesterday, quite concerned about inflation continuing to slip below target and inflation expectations becoming unanchored. And I'm just going to reiterate something I said yesterday—that I don't think we're providing much accommodation today, maybe if any. I'd love to see staff analysis on that. Sometimes I think we all just say, "Well, it's highly accommodative monetary policy." It's highly accommodative just because the federal funds rate is low relative to history. I don't think it's highly accommodative relative to estimates of long-run r^* or, certainly, short-run r^*. And I think that's important that we keep reminding ourselves of that, and that's why I support putting together a package of very strong forward guidance, potentially yield curve control, and further asset purchases—all anchored on a state-based inflation threshold.

It's interesting to me—we've got this massive unemployment and low inflation, and I think we're already seeing "green shoots of hawkishness" emerging, which are concerns about what if we can't achieve our inflation goal? If we anchor ourselves to a 2 percent inflation threshold, what if we can't get there? We've already anchored ourselves to a 2 percent inflation threshold—we've already declared that's our goal. So are we going to just give up on that and say, "Well, we're going to miss—we don't want to try really hard and miss, so we're not going to try and miss"? I just don't think that that's a credible position for us to be in. I think we should be doing whatever we can to actually achieve the inflation goal that we have adopted, and we've said that this is our true north—that we're going to go do it. So let's go try to do it.

And then some comments today about asset prices and financial stability—and I've said this in previous meetings: If we can't achieve our inflation goal of 2 percent, that probably means that we're not providing much accommodation, and that probably means that r^* is very low. And someone needs to explain to me the difference between reaching for yield—or how do you tell the difference between markets reaching for yield and markets pricing in a low interest rate environment for the long term?

I would argue that the asset prices that we see are a reflection of a low-r^* environment, and that's the very reason why we're struggling so much to actually achieve our inflation target. So this is a topic that I would welcome having a very serious deliberation on as a Committee. Thank you.

CHAIR POWELL. Thank you. President Mester, please.

MS. MESTER. Thank you, Mr. Chair. I support maintaining our current policy stance today as proposed. Stay-at-home restrictions are easing, and the economy is moving into a new phase. The second quarter is likely to be the trough, and the economy will begin to recover in the second half, but the shape of the recovery will depend on the path of the virus and our ability to handle its spread through testing, contact tracing, treatment, and risk-based restrictions; on the behavior of households and businesses; and on the effectiveness of policy actions.

At this point, I think we can continue to watch how the reopening of the economy is affecting economic activity, labor markets, and inflation. My SEP submission is probably the closest it's ever been to the median forecast. I'm not saying that's a good or bad thing. But, as we discussed yesterday, there is great uncertainty around our forecast.

As the shutdown continues and the economy moves into a recovery phase, Federal Reserve policy will have to move into a new phase as well. The Fed's policy actions so far have been intended to support the smooth functioning of financial markets, thereby supporting the flow of credit to households and businesses. They, along with fiscal policy actions, offered a bridge of economic relief during the shutdown to limit more permanent damage. But even as the economy reopens, in my view, it will take quite some time for economic activity and job growth to move toward more normal levels.

I anticipate that we will see a rise in firm failures over the second half of the year and into next year even as the overall economy recovers. Real estate markets could be stressed. Some workers will find it hard to transition into new jobs. Additional fiscal policy to aid states and municipal governments and direct payments to households will be needed to support the recovery. Federal Reserve policy will need to segue from providing relief during the shutdown to providing monetary accommodation in support of the recovery and the return to our dual-mandate goals of price stability and maximum sustainable employment.

Our current guidance that interest rates will remain low at the effective lower bound for some time has been generally understood by the general public and market participants. Our SEP path will reinforce this guidance, so I don’t see a compelling reason to change the statement’s guidance at this meeting. However, I do anticipate that we will need to clarify the guidance later in the year.

I also anticipate that asset purchases will also need to continue, and that the Committee will need to adjust its communications to characterize these purchases as providing accommodation rather than more narrowly supporting market functioning. However, that can also wait until we have more information on the shape of the recovery over the next few months, more analysis has been done on whether we should add yield curve control to our policy toolkit, and we have put together the coherent and consistent package of policy actions we’ll want to take and the strategy for clearly communicating that package to make it most effective. With the culmination of our framework review coming soon, I agree with President Evans that we have a real opportunity for aligning our strategy, actions, and communications for maximum effect.

Regarding today's statement, I did have some concern about linking the improvement in broad financial conditions to policy measures even if we say policy is only part of the reason. I can imagine there might be reversals in financial conditions, particularly equity prices, if it turns out that the reopening was premature or news of vaccines was too optimistic. I wouldn't want the reversal to be attributed to policy action or inaction on our part. If we want to cite policy, I would have preferred to focus more narrowly on the improvement in market functioning and the flow of credit to households and businesses rather than broader financial conditions. However, others don't share that concern, and I can support today's statement as written.

One final point. Yesterday's discussion of Rochelle Edge's charts illustrating the optimal control exercises brings up something I've mentioned at earlier meetings and that others have mentioned as well—namely, that the Committee should have a discussion of our loss function. Economists use a symmetric quadratic loss function because there are micro foundations for it. In DSGE models, a welfare-based loss function is well approximated by the familiar symmetric quadratic loss function that penalizes both positive and negative deviations of employment from its natural rate and inflation from its target. So that loss function is an appropriate simplification to use within the models to optimally achieve our monetary policy goals.

But our framework review discussions, including the *Fed Listens* events, have brought up questions about why one would care about undershooting the natural rate of unemployment. And yesterday's discussion centered on why one would care about overshooting inflation by a moderate amount. Questions like this seem part and parcel of the discussion of appropriate goals within our framework discussions. Changing the goal to say "average inflation" does not necessarily mean changing the loss function. Treating undershoots of the unemployment rate differently from overshoots may be one way to think about incorporating mismeasurement of the natural rate.

I think that there are a lot of issues to think about here, and I'd welcome a discussion about the underpinnings of the quadratic loss function, a review of the literature that uses alternative loss functions, and how our policy decisions and model parameters might change should we adopt an alternative loss function. Thank you, Mr. Chair.

CHAIR POWELL. Thank you. Vice Chair Williams, please.

VICE CHAIR WILLIAMS. Thank you, Mr. Chair. I support the statement as written. I'd also like to thank President Kashkari for emphasizing the importance of *r**. That leaves me free to talk about other things today.

But your point—although I'm not a fan of short-run *r**, in thinking about whether policy is accommodative, I think that's really model dependent. The bigger point is that a very low *r**, long-run *r**, which is shown in surveys and is shown in market pricing, does mean that, even with a zero interest rate, our monetary policy is not as accommodative as you might think based on historical levels of interest rates. So I think that's a really important point to keep in mind when we think about how accommodative policy is.

Now, we're dealing with a highly uncertain situation. Honestly, it's fortunate that we're not trying to put together a definitive package of monetary policy actions today when the future is so unclear. Rather, we should take some time to get the diagnosis right and the treatment plan in order.

And I'm glad that we'll be able to bring the framework review to closure this year and, I hope, soon. The new framework will be critical to our policy actions and communications as we strive to bring the economy back to maximum employment and inflation averaging 2 percent.

The economic outlook is largely dependent on the path of the pandemic, with much of the country—in fact, much of the globe—still under significant social-distancing measures. Under these conditions, our actions so far are appropriately focused on stabilizing the financial system and supporting the flow of credit. Massive asset purchases and the timely design and implementation of liquidity facilities have helped unclog bottlenecks in credit supply and restore market functioning. This has contributed to dispelling some of the tail risks and restoring order to financial markets. In line with the FOMC statement, we will continue to do our job with both confidence in our tools and humility about the scale of the disruption that we're seeing.

And it's worth repeating that a full recovery will be measured in years, not months or quarters, and the risks are overwhelmingly to the downside. I was struck by yesterday's discussion, in which I felt—or at least I heard similar comments from everyone around the table. This is why it will be important in coming meetings to move beyond the short-run considerations and focus—lock, stock, and barrel—on how to best use our full arsenal of monetary policy tools to shepherd the economy to maximum employment and 2 percent inflation once the health crisis subsides.

Now, this will be a long road, and we'll need to set out with perseverance and clarity of purpose. As we embark on this journey, we'll need to make clear that our monetary policy actions and communications are not expressed or viewed as emergency or extraordinary measures but are part of our overall longer-run strategy to achieve our dual-mandate goals.

Right now, market expectations may not be too far from our own, but the market response to the labor report, with two- and three-year yields moving up, demonstrates the risk that, as the economy improves, markets may prematurely expect a tightening of policy, to the detriment of the economic recovery. This was a significant problem in the early stages of the previous recovery, when market participants expected that we'd be raising rates in a year or so despite very high unemployment. The use of strong forward guidance addressed that problem then, and in the current episode, our words and actions will be vital to maintaining financial conditions supportive of a strong recovery and 2 percent inflation.

When I look at the SEP—with an unemployment rate currently at 13.3 percent; a median unemployment rate at 9.3 percent at the end of the year, 6½ percent next year, and 5½ percent the year after; and inflation underrunning our target each consecutive year—I mean, it is hard for me to think about how monetary policy could be doing too much in this circumstance. I think the risks are really that we won't be able to do as much as we would like to do, given the lower bound and given the limitations on the ability of monetary policy alone to stimulate the economy.

I agree with my colleagues that it's a whole package of policy measures. Whether it's monetary policy, the 13(3) facilities, fiscal policy, or health policies; all of these have to work together for us to see the economic recovery that we want to see. But I do think it's important that we do everything we can with our tools that we have, as we promised, to support a strong economy returning to maximum employment and inflation averaging 2 percent. I think that's our primary challenge and the one that we should be focused on.

And the last thing—I'll just pick up on a theme yesterday that I heard, and this is not a criticism of the staff at all. I mean, they're trying to deal with the fact that we have enormous disruptions to the economy in the current quarter and next few quarters. I do feel that using the term "natural rate of unemployment" to describe what's happening in that period as a significant rise in the natural rate is not helpful for our discussions. For all of us who went through this for the past 10 years, conflating maybe short-run factors that affect the labor market with longer-run kinds of disruptions to the labor market became a problem, in which a number of people started thinking, "Well, unemployment is high, so therefore it must be the natural rate of unemployment that's high."

So, again, this is not about how the staff is approaching it. I think they're approaching it very thoughtfully and carefully and in a sensible way. I just think that we need to watch our own use of the terminology. When we say "natural rate of unemployment," it's more helpful to think about that as a longer-run or sustained shift in the underlying fundamentals of the labor market.

And here I just would agree completely with President Daly and how she talked about that. We did a lot of research on the issues of the structure of the labor market, Beveridge curves, mismatch, and all of those issues. And what we found from the previous recession is that, as long as we can restore a strong labor market and as long as we can restore jobs, the natural rate of unemployment doesn't need to be higher. In fact, as we saw, we were able to bring the unemployment rate down to 3½ percent—very inclusive growth in jobs and higher wage growth. We were able to do that even though, at the time, we'd had the worst recession of our lives.

So I just would caution all of us to remind ourselves where we were back in January and February. It does seem like a long time ago. But we were in an economy that was growing over 2 percent and had an unemployment rate of 3½ percent. I know inflation didn't get to our target, but we were pretty close. We can get back to that. We've proven we were able to do it last time.

We can do it again and, I think, just keep that memory—it wasn't that long ago—that our economy can be in that place and that we can get there. That's just my "takeaway" from much of the discussion today. Thank you.

CHAIR POWELL. Thank you. And thanks to all for your comments. I'll just mention a couple of things. First, as I think I've said to most of you, if not all of you, I do intend to return to the Statement on Longer-Run Goals and Monetary Policy Strategy imminently, with the idea toward finalizing that. That's the first thing.

The second thing is, I also do think this next meeting is likely the one at which we should return to the traditional A-B-C structure of the policy statement. So I think it's very likely that we'll do that, because we will be, I think, starting to think seriously in seven weeks about exactly what the possible ways to clarify our forward guidance and the purpose of our asset purchases, et cetera, will be. I do think the time is coming for that. I think a number of you have said that. I think that'll be in the minutes, and therefore I may—something like that may come out today at the press conference.

In any case, thank you again. And 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 the interest rates on reserves, discount rates, and other matters. Jim?

MR. CLOUSE. Thank you, Mr. Chair. The vote will be on the monetary policy statement and directive to the Desk as they appear on pages 3 through 5 of Rochelle's briefing materials. And I'll call the roll.

Chair Powell	Yes
Vice Chair Williams	Yes
Governor Bowman	Yes
Governor Brainard	Yes
Governor Clarida	Yes
President Harker	Yes

President Kaplan	Yes
President Kashkari	Yes
President Mester	Yes
Governor Quarles	Yes

MR. CLOUSE. Thank you.

CHAIR POWELL. Okay. 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 actions with respect to the interest rates on reserves as set forth in the implementation note included in Rochelle's briefing materials?

MR. CLARIDA. So moved.

CHAIR POWELL. May I have a second?

MS. BRAINARD. Second.

CHAIR POWELL. Without objection. Thank you. Next up, we need to approve the corresponding actions for discount rates. May I have a motion from a Board member to approve establishment of the primary credit rate at 0.25 percent and establishment of the rates for secondary and seasonal credit under the existing formulas specified in the staff's June 5, 2020, memo to the Board?

MR. CLARIDA. So moved.

CHAIR POWELL. May I have a second?

MS. BRAINARD. Second.

CHAIR POWELL. Without objection. Thank you. Our final agenda item is to confirm that our next meeting will be on Tuesday and Wednesday, July 28 and 29. And that concludes this meeting. Thanks very much, everyone. Be well, be safe, and I look forward to speaking with you and ultimately seeing you soon. Take care. Thanks.

END OF MEETING