Monetary Policy in Word and Deed

Loretta J. Mester
President and Chief Executive Officer
Federal Reserve Bank of Cleveland

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Introduction

I thank the Shadow Open Market Committee for inviting me to speak today. The SOMC is known for fostering an active exchange of diverse views on the economy and monetary policy, with the aim of contributing to better policy decisions. I believe robust policy discussions and deliberations are very constructive, and I am looking forward to the question-and-answer portion of this session. To help frame that discussion, let me start with a review of economic developments and my perspectives on monetary policy. The views I present will be my own and not necessarily those of the Federal Reserve System or of my colleagues on the Federal Open Market Committee.

Jane Austen is often (erroneously) credited with having written: "It isn't what we say or think that defines us, but what we do." That sentiment is only partially true in monetary policymaking. It is true in the sense that a central bank will lose its credibility with the public if it merely says it is committed to 2 percent inflation but does not take action to bring high inflation down. In this case, high inflation could become embedded in people's view of the economy and affect their behavior in ways inconsistent with price stability, making it much harder for the central bank to achieve its policy goals. But the quote does not fully apply to monetary policymaking because how and what policymakers communicate are very important in aligning the public's expectations with policy actions, and this alignment can make these actions more effective.

The FOMC's policy actions and communications have contributed to discernible progress on inflation. As we calibrate policy to finish the job, both word and deed will continue to be important. This is particularly true because the economic environment is quite uncertain. The events in the Middle East are still unfolding, adding uncertainty to what was already an uncertain geopolitical environment. The Israel-Hamas War is a human tragedy. It is too soon to determine the full economic and financial market ramifications of the war for the global economy, but they will need to be considered as we chart the future path of monetary policy to achieve our dual mandate goals.

Over the past three years, the pandemic and its aftermath have been a major source of uncertainty.

When the pandemic hit, the economy shut down in March 2020, and fiscal and monetary policymakers took aggressive actions to support households and businesses, ensuring that credit continued to flow and limiting lasting damage to the economy. When public health statistics began to improve in May 2020, the economy began to reopen. But it was not business as usual. Spending patterns had shifted from services to goods early in the pandemic and have only gradually been shifting back to pre-pandemic trends. Many people decided to leave the workforce when the pandemic hit and only gradually decided to rejoin. The participation rate of workers between the ages of 25 and 54 has now surpassed what it was in 2019, but the overall participation rate is still below its pre-pandemic level. Remote work became much more common. This led to changes in the demand for housing, and sales of new and existing single-family homes surged in 2020 and 2021. In addition, supply chains were disrupted, making it much harder for firms to keep up with the demand for their products.

The changes in spending patterns, workforce participation, housing demand, and supply chains that arose during the pandemic are in many ways still shaping the economy. They led to a situation in which demand in both product markets and labor markets became out of balance with supply. Those imbalances occurred in an environment of accommodative fiscal and monetary policy, which helped to sustain the significant increase in inflation that started in 2021. Russia's invasion of Ukraine in February 2022, another ongoing human tragedy, added to inflationary pressures, spurring higher prices for oil, food, and other commodities. In 2022, headline inflation reached levels not seen in 40 years, running 7 to 9 percent, depending on the measure.

Economic Developments in Response to Monetary Policy

When inflation began moving up in April 2021, the FOMC communicated in its post-meeting statements that elevated inflation largely reflected factors that the Committee expected would be transitory. By December 2021, the FOMC's view had changed and it no longer referred to inflation as transitory. In January 2022, the FOMC said that with inflation well above 2 percent and a strong labor market, the Committee expected it would soon be appropriate to raise the target range for the federal funds rate.

Financial conditions tightened in reaction to this forward guidance. Following through on its guidance, the Fed took action by raising the fed funds rate by 25 basis points in March 2022 and has now raised the fed funds rate by a cumulative 5-1/4 percentage points. We are also reducing the size of the Fed's balance sheet by allowing assets to roll off in a systematic way according to the plan announced in May 2022. This balance-sheet reduction is also firming the stance of monetary policy through its effect on the term premium on long-term bond yields.

The tightening of monetary policy has led to a broader tightening in financial conditions and, in response, aggregate demand has begun to moderate. At the same time, supply chain disruptions have improved and imbalances between supply and demand are easing. While demand has moderated, economic activity has been considerably more resilient than most forecasters, including FOMC participants, were expecting. Consumer spending makes up about 70 percent of GDP. It has been increasing at a solid pace, supported by strong income growth and the still-elevated savings accumulated during the pandemic. Bankers in the Fourth District report there has been an uptick in usage of home equity lines of credit and credit card debt, suggesting that some households have exhausted ready balances. Delinquencies on consumer loans have also edged up, although they are still at historically low levels. As savings balances normalize and credit conditions remain restrictive, consumer spending is expected to moderate.

Businesses have slowed their spending on equipment and software this year, and it is expected to continue to moderate given restrictive credit conditions. In the housing market, activity has slowed but the longer-term shortage of available housing has meant less of a slowdown than one would have expected given that the 30-year mortgage rate is near 8 percent. The shortfall in housing supply has kept rents and house prices high.

In response to the evolving picture, FOMC participants' projections of economic growth this year were revised up in September.[1] Earlier in the year, FOMC participants projected that growth would be well below trend in 2023. In September, the median projection was that growth will be a bit over 2 percent, which is somewhat above trend. Still, growth is expected to slow to below trend next year as tighter credit and financial conditions and waning fiscal support for households weigh on spending.

Labor market conditions also paint a picture of moderation and resilience. Firms have reduced their job postings and more people are coming back into the job market. Firms report it is easier to find the workers they need. Still, labor market conditions remain quite strong. The unemployment rate is low, at 3.8 percent. Job growth has slowed over the course of the year, but the strong reading in September and revisions to the July and August data suggest the slowdown has been less than once thought. Payroll gains averaged about 300 thousand per month over the first three months of the year compared with about 270 thousand per month on average over July through September. Restrictive financial conditions should help to continue to moderate labor demand, bringing demand into better balance with supply. The unemployment rate is likely to move up somewhat as this rebalancing occurs, but I expect overall labor market conditions to remain solid.

Despite strong job growth in September, wage pressures are easing by some measures. Our business contacts expect wage increases to be less over the coming year than last year, except for workers with hard-to-find skills. But at 4 percent, expected wage increases are higher than before the pandemic and well above the level consistent with 2 percent inflation, based on current estimates of trend productivity growth. Wage-price dynamics can be quite complicated. An open question is whether inflation leads wage growth or whether it is the other way around. One wage Phillips curve model from the Cleveland Fed suggests that inflation leads wage growth, with the model attributing much of the high wage growth

[1] Four times a year, the FOMC summarizes Committee participants' projections of output growth, the unemployment rate, inflation, and the associated appropriate policy path. For the September 2023 Summary of Economic Projections, see https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20230920.htm.

since the pandemic to the passthrough of higher inflation.[2] On the other hand, other research from the Cleveland Fed that uses data from our business survey finds that firms are highly attuned to wage costs when setting prices.[3] My conclusion is that we need to continue monitoring both wages and prices to assess whether inflation is moving down in a sustainable and timely way to our longer-run goal of 2 percent.

Inflation

Inflation has been running well above the Fed's goal for more than two years, and it is still too high. That said, it is important to acknowledge the discernible progress that has been made on inflation even while the overall economy has remained relatively strong. As of August, the headline PCE inflation rate is running at 3-1/2 percent, which is half of its peak rate in June of last year. The underlying measures of inflation, including the core, median, and trimmed-mean measures, have also moved down from their peaks. The progress is easier to see when you look at the price changes over shorter time horizons, such as three-month or six-month annualized inflation rates. But the CPI report for September is a reminder that we cannot count on the progress continuing at the same good pace we have seen in recent months. The larger declines in inflation have come in goods prices. Inflation in housing services, measured by rents and the imputed rents for owner-occupied housing, has begun to come down, but the recent CPI inflation report suggests that the adjustment could be gradual. The most stubborn part of the index has been inflation in core services excluding housing. This component, which makes up about half of the consumption basket, has shown little improvement over time.

[2] See Martin DeLuca and Willem Van Zandweghe, "Postpandemic Nominal Wage Growth: Inflation Pass-Through or Labor Market Imbalance?" Federal Reserve Bank of Cleveland, *Economic Commentary*, No. 023-13, August 14, 2023. (https://doi.org/10.26509/frbc-ec-202313)

[3] See Keshav Dogra, Sebastian Heise, Edward S. Knotek II, Brent Meyer, Robert W. Rich, Raphael S. Schoenle, Giorgio Topa, Wilbert van der Klaauw, and Wändi Bruine de Bruin, "Estimates of Cost-Price Passthrough from Business Survey Data," Federal Reserve Bank of Cleveland, Working Paper No. 23-14, June 2023. (https://doi.org/10.26509/frbc-wp-202314)

In my view, it is important to guard against becoming complacent if it takes longer and longer to achieve the Fed's 2 percent goal. When inflation persists at levels above our goal of price stability, the price level is moving up faster than we would like and households and businesses are having to pay those higher-than-desired prices. In addition, high inflation distorts investment decisions, imposing longer-run costs on the economy.[4] In my view, the risks to the inflation forecast remain tilted to the upside. Oil prices are up, on net, since July and may pass through to other core prices. In addition, gasoline prices are higher than at the start of the year and are particularly prominent for households that have to fill up their cars or trucks once or twice a week. Rising gasoline prices could begin to make consumers think inflation will be rising again. I don't expect that this is going to move inflation back up to the very high levels we saw last year, but it could stall the progress we have seen over the past few months.

A distinguishing feature of this high-inflation episode compared with those in the 1970s and early 1980s has been the fact that despite high inflation rates, medium- and longer-term inflation expectations have remained reasonably well-anchored in a range consistent with the Fed's goal of 2 percent inflation. There could be several reasons for this, but one likely factor is that the Fed now has an explicit numerical longer-term inflation goal of 2 percent. In addition, over this episode, we have communicated our commitment to achieving this goal, and we have taken actions to support this commitment. Our communications have been an important policy tool, reinforcing the actions we have taken and making them more effective by anchoring inflation expectations. Ensuring that the public views the commitment as credible can reduce the costs of disinflation. Indeed, research indicates that the disinflation that then-Fed Chair Paul Volcker had to engineer in the 1980s was costly in terms of cumulative output losses not only because the Fed had to tighten monetary policy enough to get inflation down from high levels, but also because the Fed had to make the public understand that it would not abandon its commitment to price stability as inflation started to come down. Regaining credibility was important in moving the public's

[4] L'Huillier Bowles and DeLuca discuss some of the channels through which high inflation can affect economic welfare and impose longer-run costs on the economy. See Jean-Paul L'Huillier Bowles and Martin DeLuca, "The Long-Run Costs of Higher Inflation," Federal Reserve Bank of Cleveland, *Economic Commentary*, No. 2023-17, October 17, 2023. (https://doi.org/10.26509/frbc-ec-202317)

expectations about inflation down with inflation.[5] During the current episode of high inflation, in addition to communicating our commitment to price stability, we have aligned our policy actions with that commitment. Appropriate words and deeds will continue to be crucial as we finish the job. This brings me to monetary policy.

Monetary Policy Calibration

At its September meeting, the FOMC decided to maintain the target range of the fed funds rate at 5-1/4 to 5-1/2 percent and to continue to reduce the Fed's securities holdings. In determining the extent of additional policy firming that may be appropriate, the FOMC will be assessing incoming economic and financial developments, as well as the cumulative effects of the tightening done so far, since we know that monetary policy affects the economy with a lag. The economic projections released by the FOMC in September indicated that the median participant thought that another rate increase would be appropriate this year and that monetary policy would likely have to be held sufficiently restrictive for a while in order to get inflation back down to 2 percent. This is consistent with my own reading of economic conditions, the outlook, and the risks to the outlook.

But whether the fed funds rate needs to go higher than its current level and for how long policy needs to remain restrictive will depend importantly on how the economy evolves relative to the outlook and how the risks are changing. To guide my policy views, I will be carefully assessing incoming evidence to determine whether the economy is evolving as expected. Risk management considerations are becoming increasingly important as we set monetary policy in a way that balances the costs over time of potentially over-tightening vs. under-tightening monetary policy. Tightening too much would slow the economy more than necessary and entail higher costs than needed to get inflation back to our goal. Tightening too little would allow high inflation to persist, with short- and long-run consequences, and would necessitate a much longer and more costly journey back to price stability.

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[5] Marvin Goodfriend and Robert G. King, "The Incredible Volcker Disinflation," *Journal of Monetary Economics* 52, pp. 981-1015, 2005. (https://www.bu.edu/econ/files/2011/01/GKcr2005.pdf)

There is always uncertainty around the outlook, but uncertainty is higher in the current environment. In addition to upside risks to inflation, geopolitical uncertainty has risen, with implications for financial markets, oil prices, and global demand. The slowdown in the Chinese economy, the possibility of an extended UAW strike, and the potential for a government shutdown later this year all pose some risks around the outlook. The structural changes to the economy since the pandemic, including changes to the labor market and supply chains, also complicate the picture. Indeed, our models are trained on past data, but the pandemic was unprecedented and that has complicated forecasting. Post-pandemic, it has become even more important to look at several models, examine different scenarios, and collect real-time information from regional contacts to inform policymaking.

Lags and Stance

As the FOMC has communicated, two important considerations for calibrating monetary policy going forward are how much of the past tightening is yet to transmit through the economy and how restrictive monetary policy is. Monetary policy transmits to the broader economy by affecting overall financial conditions, but the magnitude, speed, and duration with which it affects the economy vary with the nature of the shocks that have hit the economy and other aspects of the economic environment.[6] It is possible that the Fed's use of forward guidance has sped up the transmission of monetary policy to the broader economy, affecting financial conditions before the actual changes in monetary policy have occurred.[7] For example, tightening in financial conditions occurred several months in advance of the first Fed rate increase in March 2022. Other research suggests that even controlling for the increased use of forward guidance and balance-sheet policy, the lag in the effect of monetary policy on inflation shortened in the

[6] Romer and Romer provide estimates of the effects of contractionary monetary policy shocks on real GDP, the unemployment rate, and inflation in various tightening cycles. See Christina D. Romer and David H. Romer, "Presidential Address: Does Monetary Policy Matter? The Narrative Approach after 35 Years," *American Economic Review* 113, 2023, pp. 1395-1423. (https://doi.org/10.1257/aer.113.6.1395)

[7] See Stefania D'Amico and Thomas B. King, "Past and Future Effects of the Recent Monetary Policy Tightening," *Chicago Fed Letter*, Number 483, September 2023. (https://doi.org/10.21033/cfl-2023-483)

post-2009 period.[8] On the other hand, there is a large volume of outstanding corporate debt and commercial real estate debt that will need to be repriced at higher interest rates over time. This suggests that past changes in monetary policy may be felt for some time to come in the economy. Since the lags vary across cycles, the benchmark against which "shorter" or "longer" is evaluated is not well defined; so a definitive conclusion about the length of the lag in this tightening cycle will remain elusive.

A second policy consideration is the stance of monetary policy. While monetary policy is currently widely viewed as restrictive, the resilience the economy has shown in the face of high interest rates has underscored the difficulty of knowing precisely how restrictive policy is partly because of the uncertainty about the level of the neutral real interest rate, so-called *r*-star. In economic models, the longer-term neutral real interest rate is determined by the long-run growth rate of consumption and, therefore, output, and is influenced by the trend rate of productivity growth, the growth rate of the labor force, and the demand for safe assets, among other factors. Before the pandemic, estimates showed that the longer-run neutral rate in advanced economies had been declining for more than two decades, reflecting the aging of the population, changes in risk preferences, and slower productivity growth.[9] But in the aftermath of the pandemic, estimates of the short-run neutral rate rose; whether the increase will persist is an open question. Projected longer-run fiscal imbalances are unlikely to be sustainable, and the government will need to respond with some combination of increased borrowing, reduced benefits, increased taxes, and program restructuring. In the meantime, higher projected U.S. fiscal deficits, requiring higher government debt issuance, will put upward pressure on the neutral rate. If new technologies like generative AI produce significant productivity gains, this would also put upward pressure on the longer-

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[8] See Taeyoung Doh and Andrew T. Foerster, "Have Lags in Monetary Policy Transmission Shortened?" *Economic Bulletin*, Federal Reserve Bank of Kansas City, December 21, 2022. (https://www.kansascityfed.org/research/economic-bulletin/have-lags-in-monetary-policy-transmission-shortened/)

[9] See Loretta J. Mester, "Long-Run Trends and the U.S. Economy," afternoon central banker keynote address, The Global Interdependence Center, Central Banking Series, Dublin, Ireland, May 16, 2023 (https://www.clevelandfed.org/collections/speeches/sp-20230516-longer-run-trends-us-economy), and Loretta J. Mester, "The Federal Reserve's New Monetary Policy Strategy," remarks at the 6th Annual Monetary and Financial Policy Conference, Money Macro and Finance Society, London, U.K. (via videoconference), October 21, 2020. (https://www.clevelandfed.org/collections/speeches/sp-20201021-federal-reserves-new-monetary-policy-strategy)

run neutral rate.[10] Countervailing those effects are the continued aging of the population in advanced economies and investor demand for safe assets. I think the jury is still out. I have not yet raised my estimate of the long-run equilibrium interest rate but will consider doing so depending on how the economy evolves.

In light of the cyclical and structural uncertainties and the need to balance risks, policy decisions will need to be guided by actual progress on our dual mandate goals, in particular, whether the rate of progress we have seen on inflation in recent months is sustained and whether labor market conditions remain healthy as they moderate. Because the outlook and balance of risks can change, policymakers will need to be nimble in order to appropriately calibrate policy in the midst of such changes. This will require us to carefully monitor economic, banking, and financial market developments.

Higher long yields

One such recent development is the tightening in financial conditions since our September FOMC meeting. Restrictive monetary policy is intended to tighten financial conditions, but the increase in the nominal 10-year Treasury yield since the last meeting was larger than expected and reflects several factors. Like the Fed, market participants have revised up their expectations for growth this year. They have also likely taken on board the communications from the FOMC that monetary policy is likely to remain restrictive for some time based on the outlook for inflation and employment. Both of those factors suggest a higher expected path of short-term real interest rates and therefore higher longer-term yields. Rising term premia, the compensation that investors require to hold longer-term debt, have also contributed to the increase in Treasury yields. The New York Fed's estimate of the term premium on 10-year Treasuries, which had been in negative territory since mid-2021, turned positive toward the end of

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[10] Current estimates suggest that trend productivity growth remains relatively low, in the 1 to 1.5 percent range. See the website https://sites.google.com/view/james-a-kahn-economics/home/trend-productivity-update, which provides the latest estimates of trend productivity growth based on the model in James A. Kahn and Robert W. Rich, "Tracking the New Economy: Using Growth Theory to Detect Changes in Trend Productivity," *Journal of Monetary Economics* 54, September 2007, pp. 1670-1701. (https://doi.org/10.1016/j.jmoneco.2006.07.008)

September.[11] The recent focus on the U.S. fiscal situation, which will likely necessitate higher issuance of Treasury debt, likely contributed to the rise in the term premium. One factor that does not appear to have contributed to the rise in yields since September is inflation expectations, which have remained relatively stable. If sustained, the increase in longer-term yields will help to moderate demand, and as one of the financial conditions we monitor, it will be one of the factors I consider when evaluating the appropriate path of monetary policy going forward.

Phases of Monetary Policy and Communications

Regardless of the decision made at our next meeting, if the economy evolves as anticipated, in my view, we are likely near or at a holding point on the funds rate as we accumulate more information on economic and financial developments and assess the effects of the tightening in financial conditions that has already occurred. I think it is useful to think of monetary policy during this tightening cycle in phases, although the shifts from one phase to another depend on the evolution of the economy.

Phase one: How fast to raise the policy rate

During the first phase of this tightening cycle, the monetary policy narrative centered on how fast we should raise the policy rate. We began with a 25-basis-point increase in March 2022, then moved the funds rate up by 50 basis points at our next meeting, and then followed with 75-basis-point increases at each of our next four meetings. We then slowed rate increases, with a 50-basis-point increase at the December 2022 meeting and a 25-basis-point increase at the first meeting of this year. Over this phase, the Committee communicated that it anticipated that ongoing increases in the funds rate target would be appropriate.

[11] See Treasury Term Premia, Federal Reserve Bank of New York. (https://www.newyorkfed.org/research/data_indicators/term-premia-tabs#/overview)

Phase two: How high to raise the policy rate

At that point, the policy narrative entered a second phase, which centered on how high rates would have to go. The policy language changed to signal that the FOMC would be assessing the extent to which additional policy firming may be appropriate. If the economy evolves as expected, I believe we are nearing the end of this phase.

Phase three: How long will monetary policy need to remain restrictive

The narrative would then be entering a third phase focused on how long monetary policy will need to remain restrictive. Getting away from the meeting-to-meeting guessing game of will they or won't they increase the funds rate would seem to add some beneficial stability allowing firms and financial markets to absorb the increases in the pipeline. But communicating how the FOMC is thinking about the economy and monetary policy in this policy phase will be a challenge because it requires some nuance. The FOMC is committed to returning inflation to our 2 percent goal, and we would not be content with inflation settling in at a level above our goal. But as we travel the last mile of getting inflation back to 2 percent, the balance of risks to our dual mandate goals will continue to shift and it is important that the public understand that the commitment to price stability doesn't mean ignoring the maximum employment part of the mandate or deliberately taking actions to drive the economy into recession for the sake of achieving price stability as soon as possible. The balance of risks will change over time, and the Fed will continue to calibrate its policy in pursuit of both goals.

Given the outlook, I anticipate it will be appropriate to keep the funds rate at its peak for some time. Some commentators have suggested that this will result in a passive tightening of policy as inflation moves down. Essentially, they are measuring the real fed funds rate as the nominal funds rate minus actual inflation, which is backward looking. A better measure is the nominal rate minus expected inflation, which is forward looking. While I expect year-ahead inflation expectations to move down as inflation declines, this may take some time, and maintaining the nominal funds rate in order to achieve that decline in inflation expectations is appropriate. Indeed, the projected decline in inflation is

conditioned on maintaining restrictive monetary policy. A failure to do so could jeopardize achieving that decline.

Phase four: Reducing the fed funds rate and moving monetary policy toward a more neutral stance

Eventually, policy will enter a fourth phase, in which it is appropriate to begin reducing the fed funds rate and moving monetary policy toward a more neutral stance. Given the lags with which monetary policy affects the economy, monetary policymakers will need to be forward looking and begin reducing the funds rate when inflation is still somewhat above our goal. At that point, it will be important for the FOMC to communicate that the Fed is not abandoning its 2 percent target and is not content with inflation remaining persistently above target. Rather, the message will be that the Fed is more confident that inflation is on its way back down to 2 percent so less policy restraint is needed.

Longer-term improvements in communications

Longer term, I believe communications could be more effective if the FOMC's post-meeting statement provided more information on the Committee's economic outlook, its view of the risks around the outlook, and its evaluation of progress on its goals. Doing so would give the public a better sense of the FOMC's reaction function. This would be particularly helpful in uncertain times, like today, when it is important to maintain some policy optionality. Policy decisions should be guided in a systematic way by how the economy is evolving relative to our outlook, as well as the shifting risks around the outlook. But because the economy could evolve differently than expected, we need to preserve some policy optionality. This "systematic optionality" is different from setting monetary policy in a discretionary manner in which the policy reaction function is changing. A fuller post-meeting statement would help the public understand this difference and give them a sense of how the FOMC is likely to react if some of the risks are realized or new risks emerge.

Lastly, when uncertainty is high, as it has been during and since the pandemic, scenario analysis, as advocated by SOMC members Mike Bordo, Andy Levin, and Mickey Levy, can be a helpful guide to

monetary policymaking and communications.[12] The FOMC does look at alternative scenarios and alternative interpretations of intermeeting economic developments as part of our meeting preparations, which can help us avoid "group-think" and be better prepared if the economy evolves differently than anticipated. But recasting our SEP submissions to incorporate participants' views of potential salient scenarios rather than focusing only on the modal outlook could be quite helpful, especially in uncertain times. I essentially did this with my SEP submissions during the pandemic. In this period, forecasting how the economy would evolve was particularly challenging given the uncertainties about the course of the virus and how households and businesses might respond. Indeed, in March 2020, given the immense uncertainty to the outlook, the FOMC refrained from collecting and publishing the SEP. When the SEP resumed in June 2020, I began formulating my outlook conditional on different scenarios on the path of the pandemic and our success at containing it. This approach gave a clearer picture of my view on the economy as distinct from my views on the course of the disease. A similar type of scenario analysis for different kinds of uncertainty would not be too difficult to incorporate into the SEP, and it could form a basis for policy communications that preserve optionality without suggesting that policy is being set in a discretionary manner.

To conclude, word and deed are important monetary policy tools. And the Fed will be using both to achieve its dual mandate goals of price stability and maximum employment. This concludes my prepared remarks. Thank you for your attention. I look forward to our discussion.

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[12] Michael D. Bordo, Andrew T. Levin, and Mickey D. Levy, "Incorporating Scenario Analysis into the Federal Reserve's Policy Strategy and Communications," National Bureau of Economic Research Working Paper 27369, June 2020. (https://www.nber.org/papers/w27369)