



# GETTING MONETARY POLICY BACK ON TRACK

EDITED BY

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# TOWARD A MONETARY POLICY STRATEGY

# 12

## The Monetary-Fiscal Policy Mix and Central Bank Strategy

*James Bullard*

### Introduction

US monetary and fiscal policy response to the pandemic created too much inflation. To eliminate the excess inflation, the monetary-fiscal response must be countered by returning to the prepandemic policy mix that delivered low and stable inflation. I will argue that this is already happening. The fiscal stimulus is receding, and monetary policy has been adjusted rapidly in the last year to better align with traditional central bank strategy. Accordingly, the prospects for continued disinflation are good but not guaranteed.

### The Fiscal-Monetary Response

Think of the pandemic as a global war that induced large-scale deficit spending combined with accommodative monetary policy (Hall and Sargent 2022; Bullard 2023a). The spirit of the macroeconomic policy response to the pandemic was to err on the side of too much rather than too little. This could be thought of as risking a high-inflation regime, as the monetary authority did not attempt to offset the inflationary impulse unleashed by the fiscal authority.

Figure 12.1 portrays monetary and fiscal policy responses to the pandemic. Deficit spending was used for transfer payments to disrupted workers and businesses. This shows up at the aggregate level as a sharp increase in personal savings relative to trend

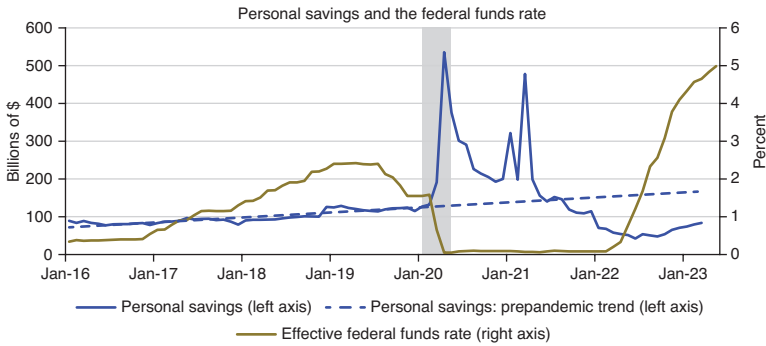


FIGURE 12.1. Personal Savings and the Federal Funds Rate.

The monetary and fiscal response to the pandemic shock. The gray shaded area indicates a US recession.

Sources: Bureau of Economic Analysis; Federal Reserve Bank of New York; author's calculations. Last observations: March 2023 and May 2023.

(Abdelrahman and Oliveira 2023). Fiscal action of this magnitude is unprecedented in US postwar macroeconomics. Meanwhile, the monetary policy reaction to the pandemic was to lower the policy rate sharply, accommodating the deficit spending.

In macroeconomic historical context, this combination of policies often leads to substantial inflation. Table 12.1 reports various measures of underlying inflation—that is, measures of inflation that downplay the most extreme price movements—from the Atlanta Fed's Underlying Inflation Dashboard.<sup>1</sup> The inflationary effects of the monetary-fiscal response are apparent in the elevated readings for all the measures in April 2022. The inflation has also been persistent—the last column shows that five of the nine underlying inflation measures are higher today than a year ago. Core personal consumption expenditures (PCE) is the measure preferred by the Federal Open Market Committee (FOMC); it is now 4.6%, down from 5% a year ago. However, all these measures would be down if a clear disinflationary path were established in the US economy.

TABLE 12.1. Various Measures of Underlying Inflation.

The inflationary effects of the monetary-fiscal response are apparent in the elevated readings for all the measures in April 2022, and inflation has remained persistent. Figures are year-on-year percentage changes.

Measure of Underlying Inflation	April 2022	March/April 2023
Core CPI	6.1	5.5
Cleveland Fed median CPI	5.4	7.0
Cleveland Fed trimmed-mean CPI	6.2	6.1
Atlanta Fed sticky CPI	4.9	6.5
Core PCE	5.0	4.6
Market-based core PCE	4.9	4.7
Dallas Fed trimmed-mean PCE	3.9	4.7
San Francisco Fed cyclical core PCE	6.3	7.9
Cyclically sensitive inflation	5.5	6.7

Source: Federal Reserve Bank of Atlanta Underlying Inflation Dashboard. Last observations: April 2023 (CPI-based measures) and March 2023 (PCE-based measures).

## The Switch to Disinflationary Policy

According to the literature, what is now required is a switch back to the prepandemic monetary-fiscal regime that featured inflation near its target. Sargent (1982)—one of the best papers of twentieth-century macroeconomics—shows how inflation ended *on the day* that monetary and fiscal reform occurred in four hyperinflationary economies after World War I. These are dramatic examples of how a credible change of regime happening at the same time for monetary and fiscal policy can end even very high inflation with little or no other macroeconomic consequences. Although the current US monetary-fiscal regime change is not happening all at once, it is happening nonetheless.

With regard to fiscal policy, the fiscal impulse has been fading, and personal saving is now below the prepandemic trend line. However, these effects have not dissipated completely, as the area above the trend line in figure 12.2 is still more than \$400 billion larger than the area below the trend line.

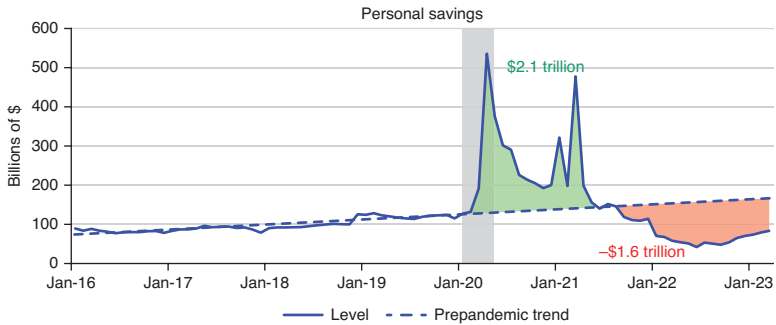


FIGURE 12.2. Personal Savings Trends.

Excess savings are diminishing but have not yet dissipated. Savings in excess of the prepandemic trend added up to about \$2.1 trillion, whereas savings are currently below trend for a cumulative shortfall of about \$1.6 trillion. The gray shaded area indicates a US recession.

Sources: Bureau of Economic Analysis; author's calculations. Last observation: March 2023. See Abdelrahman and Oliveira (2023) for details.

## Sufficiently Restrictive Monetary Policy

On the monetary policy side, we have to switch to a sufficiently restrictive monetary policy more consistent with the prepandemic policy. I will assess whether monetary policy is sufficiently restrictive by looking at the recommendations of Taylor-type policy rules.

Monetary policy rules are useful because they provide an explicit recommendation for the value of the policy rate given current macroeconomic conditions. Taylor-type rules have been evaluated in a large amount of literature and have been argued to characterize close-to-optimal monetary policy in commonly used macroeconomic models. The literature also takes “long and variable lag” effects into account. Policy rules help pin down different arguments about the appropriate level of interest rates.

A Taylor-type monetary policy rule (Taylor 1993 and 1999) with generous assumptions will give us a minimal recommended value for the policy rate given current macroeconomic conditions. Less generous assumptions will give us an upper bound for a desirable

target range for the policy rate. The recommended “zone” is the area between the lower and upper bounds. I will ignore balance sheet policy in these calculations.

I will consider the following rule:

$$R_t = \max [R^* + \pi^* + \varphi_\pi(\pi_t - \pi^*) + \min(ygap_t, 0), 0]$$

where  $R_t$  is the recommended policy rate;  $R^*$  is the real interest rate;  $\pi^* = 2\%$  denoting the inflation target;  $\pi_t$  is inflation measured from one year earlier;  $\varphi_\pi$  describes the reaction of the policymaker to deviations of inflation from target; and  $ygap_t$  is the output gap. The term  $\min(ygap_t, 0)$  is meant to capture that the FOMC’s “policy decisions must be informed by assessments of the shortfalls of employment from its maximum level.”<sup>2</sup> The max operator reflects the zero lower bound on the nominal interest rate. The output gap,  $ygap_t$ , can be constructed by applying Okun’s law to deviations of the unemployment rate,  $u_t$ , from the median Summary of Economic Projections (SEP) longer-run value,  $u_t^{LR}$ :

$$ygap_t = -2(u_t - u_t^{LR})$$

Given that the unemployment rate is below the median SEP longer-run value, the last term in the rule is currently equal to 0.<sup>3</sup>

In the first version of the Taylor-type rule outlined above, I use the most generous assumptions (those that tend to recommend a lower value of the policy rate). These assumptions are:

1. The Dallas Fed trimmed-mean PCE inflation rate is used as the inflation rate.
2. An approximate prepandemic value for the real interest rate ( $R^*$ ) is  $-50$  basis points.
3. The relatively low value of 1.25 is used for the parameter describing the reaction of the policymaker to deviations of inflation from target.

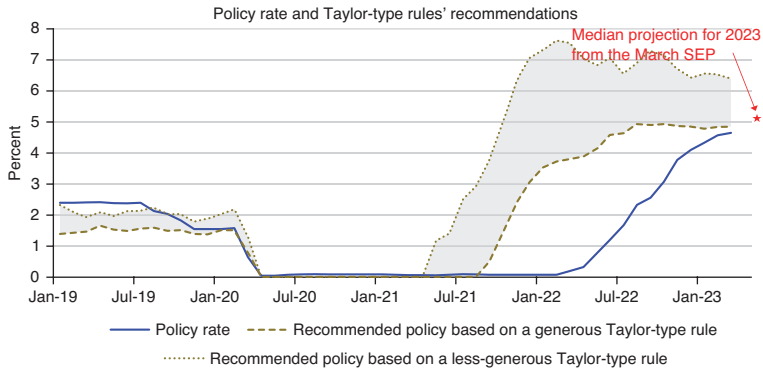


FIGURE 12.3. Policy Rate and Taylor-Type Rules' Recommendations.

The sufficiently restrictive zone for the policy rate spanned 4.85% to 6.40% in March 2023. The actual policy rate in May 2023 was 4.99% (average of daily values up to May 10).

Sources: Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve Bank of Dallas; Federal Reserve Bank of New York; FOMC's March 2023 SEP; author's calculations. Last observations: March 2023 and May 2023.

For a less generous specification, I use:

1. Core (excluding food and energy) PCE inflation as the inflation measure.
2. A higher value for the real interest rate ( $R^*$ ) of +50 basis points.<sup>4</sup>
3. A parameter value describing the reaction of the policymaker to deviations of inflation from target that is closer to the literature standard of 1.5 (see Taylor 1993 and 1999).

Figure 12.3 portrays the recommended zone for the policy rate, as well as the actual policy rate. Monetary policy settings were about right prepandemic, as shown in the figure. Monetary policy was behind the curve in 2022, i.e., the actual policy rate was below the zone (Bullard 2023b). However, monetary policy is now at the low end of what is arguably sufficiently restrictive, given current macroeconomic conditions. Note that the zone itself can move in reaction to incoming data.



The policy rate was adjusted only partially toward the recommended policy rate during 2022, a phenomenon referred to as “policy inertia” in the literature. In my view, inertia involves a judgment by the FOMC concerning the pace of adjustment and its possible risks, weighed against the gains from returning the economy as quickly as possible to the balanced growth path with 2% inflation. Inertia has not been included in the calculations here, as the desire has been to locate a recommended level of the policy rate independently of the judgment call on policy inertia.<sup>5</sup>

## The Prospects for Disinflation

So far, core PCE inflation has declined only modestly from the peak levels observed last year. However, an encouraging sign that the switch to prepandemic monetary-fiscal policy is working comes from market-based inflation expectations. As illustrated in figure 12.4, these expectations were near 2% in the first quarter of 2021, before any inflation had appeared or was widely expected. After moving higher in the last two years, inflation expectations have now returned to levels consistent with 2% inflation.

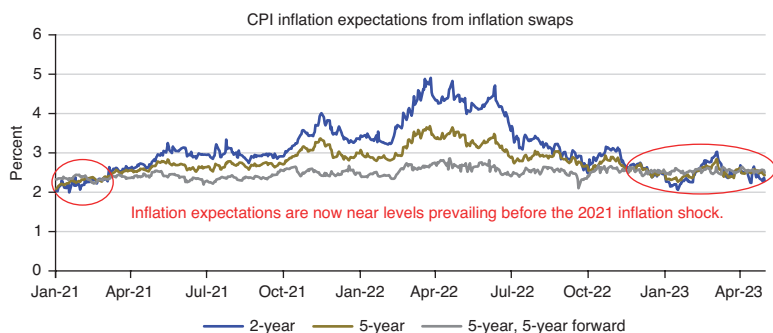


FIGURE 12.4. CPI Inflation Expectations from Inflation Swaps. Inflation expectations have returned to levels consistent with the inflation target. Sources: Bloomberg; author’s calculations. Last observation: May 11, 2023.

## Conclusion

The monetary and fiscal policy response to the pandemic created too much inflation. Historically speaking, we know that the combination of monetary accommodation and fiscal stimulus creates a lot of inflation across many times and places, typically in the aftermath of wars. To bring inflation back under control, we have to return to the prewar or prepandemic monetary and fiscal policy. I have argued this is happening. The fiscal stimulus, on the dimension that it matters for this issue, is receding, and monetary policy has been adjusted rapidly. Therefore, I think the prospects for continued disinflation are reasonably good.

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### Notes

1. Available at <https://www.atlantafed.org/research/inflationproject/underlying-inflation-dashboard>.
2. See FOMC (2023).
3. The March 2023 unemployment rate was 3.5%; the median longer-run unemployment rate in the March 2023 SEP was 4.0%.
4. According to the March 2023 SEP, the median longer-run value for PCE inflation is 2.0%, while the median longer-run value for the federal funds rate is 2.5%. This implies a longer-run value for the real rate of 50 basis points.
5. See Papell and Prodan (2023) for an analysis of the role of policy inertia.

# 13

## On the Assessment of Current Monetary Policy

*Philip N. Jefferson*

Good afternoon, everyone. Thank you to the organizers for inviting me to speak. It is a pleasure to be here. I welcome hearing diverse views on how to best conduct monetary policy, and this conference is certainly providing an invigorating debate on that topic.

Before I begin, I want to address quickly some news from this morning. I am deeply honored by the trust President Biden and Vice President Harris have shown me with the nomination to be the next vice chair of the Federal Reserve Board of Governors. I am humbled by this extraordinary opportunity and thankful to my colleagues, friends, and family for their support.

Turning back to the conference, as I join this debate, let me remind you that the views I will express today are my own and are not necessarily those of my colleagues in the Federal Reserve System.

The title of the conference, “How to Get Back on Track: A Policy Conference,” is potent. Its intent and ambiguity are striking. First, the title presupposes that US monetary policy is currently on the wrong track. Second, the web page for this conference advances a puzzling definition of the phrase “on track.” How so? According to the Hoover web page, “A key goal of the conference is to examine how to get back on track and, thereby, how to reduce the inflation rate *without* slowing down economic growth” (emphasis added).<sup>1</sup> As this audience knows, there are macroeconomic models that permit disinflation with *no* slowdown in economic growth, but the

assumptions underlying these models are very strong.<sup>2</sup> It's not clear, at least to me, why such a strict metric would be used to assess real-world monetary policymaking. Third, the definition of "on track" in the title contrasts with more commonplace definitions such as "achieving or doing what is necessary or expected," as offered by a standard reference such as the Merriam-Webster dictionary.<sup>3</sup> My view is that this commonplace definition provides a more practical lens through which to assess real-world policymaking.

Against this semantic backdrop, I will begin my remarks with my perspective on the current inflation and economic situation. Then, I will consider credit conditions in response to the recent bank stress events. Next, I will offer some normative thoughts about strategic monetary policymaking in highly uncertain environments. Finally, I will argue that if you are willing to widen your lens to include a more commonplace definition, then it is possible to conclude that current monetary policy is, in fact, "on track."

Current inflation is still high. Figure 13.1 illustrates this point. Personal consumption expenditures (PCE) inflation, the black line, stands at 4.2%, and core PCE inflation, the red line, stands at 4.6% for year-end March 2023.

Overall, news on inflation so far this year has been mixed. The good news is that food and energy prices both fell in March, and total PCE inflation slowed to 4.2% from 5% in February. Since peaking in June 2022, inflation has declined about 2.75 percentage points—with nearly all the step-down explained by falling energy prices and slowing food prices. The bad news is that there has been little progress on core inflation.

To understand why, I find it useful to separately analyze three large categories that together make up core PCE (figure 13.2): goods excluding food and energy, the red line; housing services, the black line; and services excluding housing and energy, the blue dashed line. The drivers of inflation in each of these sectors differ somewhat, and understanding the different causes and how they

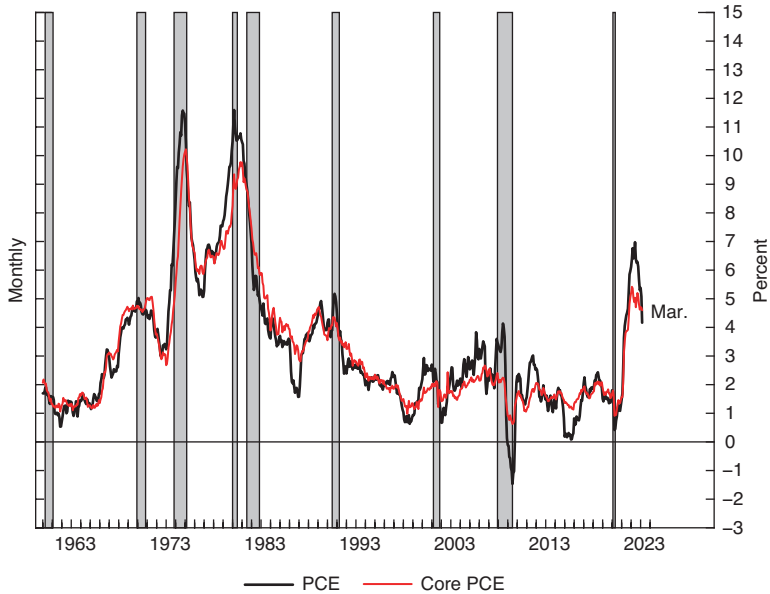


FIGURE 13.1. PCE and Core PCE Inflation.

Notes: Twelve-month percentage change in the personal consumption expenditures (PCE) price index. *Core* refers to the price index excluding food and energy. The gray shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. The nine shaded recession periods extend from April 1960 through February 1961, December 1969 through November 1970, November 1973 through March 1975, January 1980 through July 1980, July 1981 through November 1982, July 1990 through March 1991, March 2001 through November 2001, December 2007 through June 2009, and February 2020 through April 2020.

Source: Bureau of Economic Analysis, Personal Consumption Expenditures Price Index.

affect the different components can help predict the future course of inflation.

Core goods inflation, the red line in figure 13.2, has come down since its peak of 7.6% in February 2022, but the most recent news has been discouraging. Outside of used motor vehicle prices, which fell unexpectedly in March, disinflation in core goods prices is occurring at a slower pace than expected. Supply and demand imbalances in the goods sector seem to be resolving less quickly than expected. Core housing services inflation, the black line in

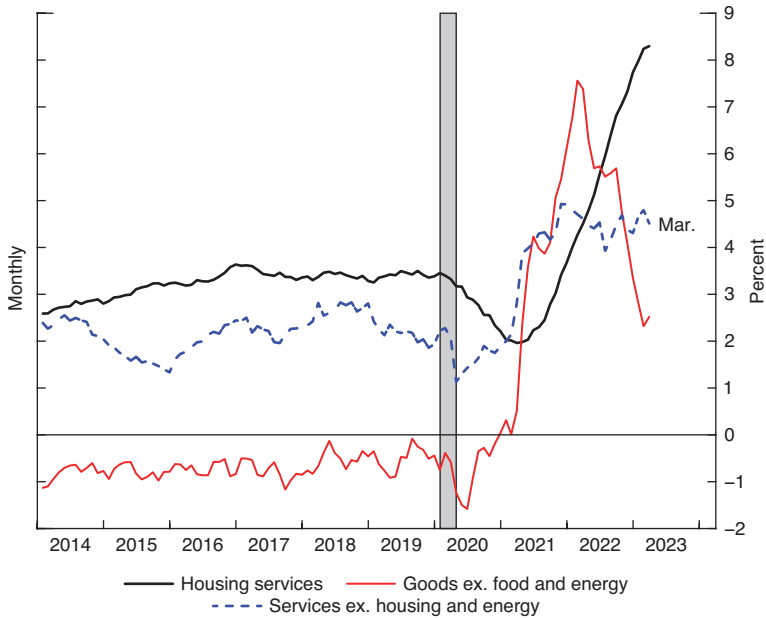


FIGURE 13.2. Select Components of Core PCE Inflation.

Notes: Twelve-month percentage change in select categories of the personal consumption expenditures (PCE) price index. The gray shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research. The shaded recession period extends from February 2020 through April 2020.

Source: Bureau of Economic Analysis, Personal Consumption Expenditures Price Index.

figure 13.2, surged over the past couple of years as demand in the housing sector underwent a major shift during the pandemic. The latest monthly readings have started to slow, though that is not yet evident in the twelve-month changes shown here. The recent slowing was presaged by a flattening out of rents on new leases to new tenants since the middle of last year. In contrast, core services excluding housing inflation, the blue dashed line in figure 13.2, has not shown much sign of slowing.

Turning to labor markets, the April 2023 employment report data continue to point to a strong labor market amid improvements in labor supply, with the prime-age labor force participation

rate exceeding its prepandemic level. Wage growth has continued to run ahead of the pace consistent with 2% inflation and current trends in productivity growth. Wage gains are welcome as long as they are consistent with price stability. Over the twelve months ended in March 2023, the employment cost index (ECI) for total hourly compensation for private-sector workers rose 4.8%, down only a little from its peak of 5.5% last June.

Despite strong growth in consumption spending, gross domestic product (GDP) grew modestly at an annual rate of 1.1% in the first quarter of 2023 as inventory investment slowed down substantially, similar to the below-trend pace of growth in 2022. Looking ahead, last quarter's growth in consumer spending seems unsustainable. Indeed, after rising very steeply in January 2023, consumer spending ticked down in February and was flat in March. Moreover, I expect slower consumer spending growth over the remainder of the year in response to tight financial conditions, depressed consumer sentiment, greater uncertainty, and declines in overall household wealth and excess savings.

The tightening in financial conditions we have seen in response to our monetary policy actions is likely to be augmented by the effects on credit conditions from recent strains in the banking sector. The US banking system is sound and resilient. The Federal Reserve, working with other agencies, has taken decisive actions to protect the US economy. Nevertheless, it is reasonable to expect that recent stress events will lead banks to tighten credit standards further.<sup>4</sup> Even though it is too early to tell, my view is that these incremental credit restraints will have a mild retardant effect on economic growth, because the recent bank failures were isolated and addressed swiftly by aggressive macro- and microprudential policy actions.

Nevertheless, I acknowledge that there is significant uncertainty around the amount of tightening of credit conditions in the coming year in response to the bank stress and the magnitude of the effect that tightening might have on the US economy. Therefore,



there is some downside risk that the incremental effect of the credit shock is larger than I expect.

The pandemic aftermath, geopolitical instability, and banking sector stress have contributed to a highly uncertain economic environment. Additionally, the numerous postpandemic “surprises” in inflation, employment, and economic growth suggest that the underlying structure of the US economy may be in flux. More simply, the data-generating process for the postpandemic US macroeconomy is less clear.

Due to the proximity of the pandemic and its unprecedented disruptions of economic and social activity, there are currently insufficient postpandemic data to identify the parameters and stable relationships that characterize the possible new structure of the economy. Given this observation, what is a reasonable monetary policymaking strategy? The answer to this question is likely to be different for each monetary policymaker.

I want to share with you a few strategic principles that are important to me. First, policymakers should be ready to react to a wide range of economic conditions with respect to inflation, unemployment, economic growth, and financial stability. The unprecedented pandemic shock is a good reminder that under extraordinary circumstances, it will be difficult to formulate precise forecasts in real time. Our dual mandate from Congress is especially helpful here. It provides the foundation for all our policy decisions. Second, policymakers should clearly communicate monetary policy decisions to the public. Our commitment to transparency should be evident to the public, and monetary policy should be conducted in a way that anchors longer-term inflation expectations. Third—and this is where I am revealing my passion for econometrics—policymakers should continuously update their priors about how the economy works as new data become available. In other words, it is appropriate to change one’s perspective as new facts emerge. In this sense, I am in favor of a Bayesian approach to information processing.

While these principles do not constitute a complete monetary policymaking framework, I think they are useful when thinking about the features of such frameworks.

By way of concluding, I would like to return to the question of whether current monetary policy is “on track” but allow for the wider defining lens of “achieving or doing what is necessary or expected.” The national unemployment rate was 3.6% in March 2022, when the current monetary policy tightening cycle began. Today, after 500 basis points of tightening the policy rate, the national unemployment rate stands at a near-record low of 3.4%. At its recent peak, total PCE inflation was 7% in June 2022. Currently, it is 4.2% in March 2023. Is inflation still too high? Yes. Has the current disinflation been uneven and slower than any of us would like? Yes. But my reading of this evidence is that we are “doing what is necessary or expected” of us.

Furthermore, monetary policy affects the economy and inflation with long and varied lags, and the full effects of our rapid tightening are still likely ahead of us. We are balancing the directives of the dual mandate given to us by the US Congress. This is not an easy task in these uncertain times, but I can assure you that my colleagues on the Federal Open Market Committee and I take it quite seriously and with great humility. It is in this sense that I believe that we are well “on track.”

Thank you.

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### *Notes*

1. See this conference’s web page at <https://www.hoover.org/events/how-get-back-track-policy-conference>.
2. Estimates of the cost of disinflation depend on the model used to measure it. Classical models, in which rational expectations play a dominant role in determining the cost of disinflation, show low cost, while Keynesian models, in which slack in the economy is needed to reduce inflation, show high cost. See, for example, Sargent (1983), Croushore (1992), Goodfriend and King (2005), and Tetlow (2022) for a comparison of the cost of disinflation across macroeconomic forecasting models.
3. See the definition for “track” at Merriam-Webster, <https://www.merriam-webster.com/dictionary/on%20track>.
4. The April 2023 Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) shows that banks, especially small and midsize banks, reported further tightening in credit standards on loans to businesses and households over the past three months, following widespread tightening in previous quarters. The April 2023 SLOOS is available on the Board’s website at <https://www.federalreserve.gov/data/sloos/sloos-202304.htm>.

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## **The Fed Should Improve Communications by Talking about Systematic Policy Rules**

*Jeffrey M. Lacker and Charles I. Plosser*

### **Introduction**

The Federal Reserve is facing the most challenging inflationary surge in more than a generation. Inflation began to rise in the second half of 2020 and has remained elevated well above its long-run target of 2%. The price index for personal consumption expenditures (PCE) rose 6.0% for 2021 and 5.3% for 2022.<sup>1</sup> These are the highest rates seen since the end of the Great Inflation in the early 1980s.

After more than a year of asserting that the elevated inflation would be short lived, the Federal Reserve began tightening in March 2022, and the stance of monetary policy shifted dramatically. By December 2022, the Federal Open Market Committee (FOMC) had raised the federal funds rate target by 400 basis points to a range of 4.25 to 4.50% and had begun shrinking the balance sheet.<sup>2</sup> The monetary policy outlook changed as well. The median federal funds rate deemed appropriate by FOMC participants for the fourth quarter of 2023 was 4.6% in September 2022 and 5.1% in March 2023, up from 1.0% in September 2021. Many FOMC participants have explicitly stated their resolve to reduce inflation, even at the cost of weaker economic activity and job markets. Several have emphasized that stopping short of bringing inflation back down to the target in the interest of ameliorating the short-term costs would be more costly in the long run.

Bringing inflation back to the Fed's 2% target will require reducing spending growth and cooling off the labor market. At the time of this writing, May 2023, that process has only just begun. Signs of slowing are apparent in housing markets and, to a lesser extent, in consumer spending. Nevertheless, much of the fight against inflation remains ahead. Despite the decline in job openings in recent months, the labor market is still generally quite tight, with unemployment rates and initial claims still low. Wage rates are still advancing at inflationary rates. Consumer and business expectations for inflation over the next year or so remain elevated, and inflation is showing a breadth and persistence that it lacked when the surge began.

While near-term inflation expectations are relatively high, increases in measures of expected inflation at longer horizons have been more modest—a relatively bright spot in the economic outlook. The stability of longer-term inflation expectations suggests that consumers and firms believe the FOMC will likely bring inflation back down to near its 2% target within a few years. It is unclear, however, how well the public understands what might be required to achieve that goal. Financial market projections for the path of the federal funds rate have risen significantly since early 2022 as inflation readings persistently exceeded expectations and the FOMC raised its projections. And yet, in the summer of 2022, market participants, for a time, priced in a Fed “pivot” to easing for the first half of 2023, anticipating that weakness in real activity would, in turn, induce an early policy reversal. It was a misperception that FOMC participants sought to dispel in public communications, including Chairman Jerome Powell's succinct and forceful statement of resolve at Jackson Hole (Powell 2022).

Speculation about a “pivot” to a less restrictive policy outlook reemerged after public statements by FOMC participants before the November 2022 FOMC meeting seemed to suggest reducing the rate of increase in the federal funds rate target from 75 basis points per meeting to 50 basis points. The statement issued

following that meeting included new forward guidance language that was taken as signaling *both* a reduced pace of tightening and a generally less restrictive medium-term policy path than had been anticipated.<sup>3</sup> Bond and equity prices rose quickly on the statement's release, consistent with market participants viewing the policy outlook as more accommodative. Chairman Powell pushed back forcefully at the press conference after the meeting, taking pains to separate the pace of rate increases from the question of how high the Fed would ultimately raise the policy rate, stating that the latter was higher than had been thought at the September meeting. He emphasized that "we have some ground left to cover here and cover it we will."<sup>4</sup> Financial markets reversed course.

The gyrations in public perceptions of the Fed's likely policy course were the result of significant gaps in the FOMC's communications and could have been avoided. While the committee foreshadows the future level of interest rates participants view as likely to be appropriate in its quarterly release of the Summary of Economic Projections (SEP), it has provided only vague guidance on the *determinants* of the ultimate level interest rates will reach. The November FOMC statement stated it intends "to attain a stance of monetary policy that is *sufficiently restrictive* to return inflation to 2% over time." (emphasis added) By itself, this provides no analytical guidance at all and places tremendous weight on the indeterminant qualitative phrase "sufficiently restrictive."<sup>5</sup>

Fed officials generally define "restrictive" as an interest rate setting above "the neutral rate," but some have struggled to coherently convey the meaning of "neutral." At times, the neutral federal funds rate has been identified with the median longer-run projection of 2.5% for the federal funds rate in the FOMC's SEPs. For example, after the July 2022 FOMC meeting, Chairman Powell stated that the committee believed that the federal funds rate target (then 2.25 to 2.50%) was "at" neutral in this sense.<sup>6</sup> But the interest rate that moderates the incentive of businesses and consumers to delay or

advance spending is clearly the *ex ante* real interest rate—that is, the nominal rate minus the expected inflation rate.<sup>7</sup> The neutral or “natural” rate that divides expansive from restrictive policy is thus a real, inflation-adjusted interest rate.<sup>8</sup> A 2.5% longer-run federal funds rate, with a longer-run inflation projection of 2.0%, thus delivers a neutral real federal funds rate of one-half. When inflation is running over 5%, 2.5% is decidedly not a “neutral” rate setting but is instead quite expansionary. Federal Reserve Bank of New York president John Williams corrected the record in an interview with the *Wall Street Journal* one month later.<sup>9</sup>

In the months following the committee’s introduction of the phrase “sufficiently restrictive,” the media and financial markets devoted considerable attention to deciphering its meaning. Fed officials are regularly asked about what level of the federal funds rate they view as sufficiently restrictive. To what principles should they look for their assessments of when to pause rate hikes? How should they explain their assessments? How should they respond to complaints they are “overdoing it” or are risking inflation becoming “entrenched”? How should they convince the public that they have indeed raised rates to a level sufficient to bring inflation down to their 2% target?

Fortunately, there is a well-established framework in monetary economics that provides much-needed guidance. Systematic monetary policy rules, such as those proposed by John Taylor relating the Fed’s interest rate settings to measures of inflation and real activity, can capture the patterns of policy response that have successfully reduced inflation in the past. They are grounded in historical experience and performance across a range of compelling economic models, and thus, their prescriptions provide sound guidance for monetary policy. In 2014, one of us (Plosser 2014) publicly called for the Federal Reserve to take a step toward a more systematic policy framework by regular public reporting and discussion of the likely behavior of interest rate policy based on a few

Taylor-style rules. The Federal Reserve began reporting on such rules in its semiannual *Monetary Policy Report* (MPR) to Congress in July 2017. The Federal Reserve, however, almost never references the prescriptions emanating from these rules in its regular communications to the public about policy.<sup>10</sup>

The FOMC can and should routinely reference the implications of such a range of monetary policy rules when publicly discussing the likely future path of interest rates. This would not require taking the step of committing to any one particular rule. Policymakers could simply note that the successful pursuit of the Fed's mandate is likely to require policy settings that are broadly aligned with the magnitude of various rule prescriptions. Talking about policy rule prescriptions in this way would guide public expectations about how high interest rates might need to rise to restore price stability and how that path is likely to depend on incoming data. Policy rule prescriptions provide an empirically grounded basis for estimating what level of interest rates will be "sufficiently restrictive." Also, referencing policy rules would provide a benchmark to dampen the perception that Fed policy decisions are arbitrary or motivated by distributional considerations or political pressures. Greater use of policy rules in communications, thus, could bolster the credibility of the Federal Reserve's resolve and thereby reduce the costs of disinflation.

## Systematic Monetary Policy Rules

Since John Taylor's seminal paper proposing simple rules as a method of encapsulating the conduct of monetary policy over time, a large research literature has studied the properties of various versions of such rules (Taylor 1993; Taylor and Williams 2010; Teryoshin 2023). In particular, research has examined how policy has behaved in the past and looked for versions of policy rules that delivered successful outcomes in practice and across a range of empirically grounded models of inflation and real activity.



While there are a variety of desirable policy rules, they share a few basic properties. One is that the policy rate rises more than one-for-one with inflation, a feature known as the “Taylor principle” (Taylor 1999; Woodford 2001). The intuition for this result rests on two ideas. One is that expected inflation often closely tracks lagged inflation, so increases in realized inflation typically signal commensurately higher expected inflation. The other is that the interest rate net of expected inflation (the *ex ante* real interest rate) summarizes the stance of monetary policy since it represents the incentive to substitute away from current spending by delaying outlays. When inflation rises, spending restraint is called for; thus, real interest rates should rise. Thus, the policy rate—which is a nominal interest rate—should increase by more than the increase in expected inflation—otherwise, real interest rates fall, and consumers and firms have an enhanced incentive to spend more to avoid imminent price hikes. This is what happened in 2021; real interest rates fell significantly as the Fed held the federal funds rate near zero while inflation and expected inflation rose.

Another property of successful rules that is important for success is that the policy rate should respond to a measure of real resource utilization, rising when activity is relatively strong (for example, when unemployment is low) and falling when activity is relatively weak (for example, when unemployment is high), all else constant (Goodfriend and King 1997). This property reflects the fact that strong real activity is associated with heightened pressure on aggregate supply, in which case it is desirable to raise real interest rates to encourage consumers and firms to postpone spending, and vice versa when real activity is weak.

A wide range of research has shown the value of simple monetary policy rules that embody these principles (Taylor and Williams 2010). These rules perform well in a wide variety of models and are often more robust than a rule that is fully optimal in a specific model. Such rules capture the behavior of central banks during

periods of good economic outcomes fairly well, such as during the Great Moderation. During periods of poor performance, such as the Great Inflation of the 1960s and 1970s, central bank behavior deviates from the principles underlying good rules. For these reasons, many economists have urged the Federal Reserve to make greater use of such monetary policy rules in the formulation and communication of monetary policy (Levin 2014; Plosser 2014; Taylor 2017; Hetzel 2019; Ireland 2020).<sup>11</sup> In fact, the Federal Reserve's semi-annual *Monetary Policy Report* to Congress routinely includes a section discussing the prescriptions of several specific policy rules in the current environment.<sup>12</sup> Prescriptions of these monetary policy rules are routinely compiled and have been shared with committee participants before each FOMC meeting since 2004. And Chairman Powell has noted that the committee is aware of policy rule prescriptions, but their influence on policy is seldom publicly discussed.

However, by its own account, the Fed diverged significantly from policy rule prescriptions in late 2021. In the Fed's June 2022 MPR, all versions of the Taylor rule are shown prescribing lift-off for the federal funds rate target in the second or third quarter of 2021 and a federal funds rate ranging between 4% and 7% for the first quarter of 2022.<sup>13</sup> The reason reflected not just the increases in inflation but the rapid fall in the unemployment rate from the peak of 14.7% in April 2020 to 6.0% by April 2021. Thus the FOMC found itself far behind the curve in confronting inflation, necessitating the rapid response witnessed since the spring of 2022.<sup>14</sup> Papell and Prodan (2023) compare real-time Taylor rule prescriptions to the FOMC's policy settings and economic projections from September 2020 through March 2023; they also demonstrate how far behind the Fed was in late 2021 and early 2022.

The FOMC has rapidly raised the policy rate as it recognized that it was far behind the curve. As a result, the gap is shrinking between the prescriptions of systematic policy rules and the actual policy stance. We can see this in table 14.1, which displays

TABLE 14.1. Policy Rule Prescriptions Using March 2023 FOMC Economic Projections.

Federal Funds Rate	Q4 2022	Q1 2023	Q4 2023	Q4 2024	Q4 2025
Taylor (1993)	8.42	7.24	4.15	2.88	2.28
Taylor (1999)	8.79	7.69	3.85	2.50	1.90
Taylor (1999) with core inflation	7.51	7.38	4.30	2.65	1.90
Median FOMC projections			5.10	4.30	3.10
Actual federal funds rate	3.65	4.51			

Economic Data and Projections	Actuals	Median FOMC Projections			
PCE price index*	5.69	4.86	3.30	2.50	2.10
Core PCE price index*	4.84	4.65	3.60	2.60	2.10
Unemployment rate	3.60	3.50	4.50	4.60	4.60

Note: FOMC projections for the average federal funds rate for the fourth quarter of 2023, made in March 2023, are below the prescriptions of representative Taylor rules, under the assumption that economic data on inflation and unemployment are consistent with FOMC projections.

\* Year-over-year percentage change

Sources: FRED, Federal Reserve Bank of St. Louis; Federal Open Market Committee, Summary of Economic Projections, March 22, 2023 (authors' calculations).

prescriptions for the federal funds rate over the next two years from three widely investigated policy rules: Taylor's 1993 and 1999 rules and Taylor's 1999 rule using core inflation instead of headline inflation.<sup>15</sup>

The reported calculations use the median projections for inflation and unemployment from the FOMC's March 2023 Summary of Economic Projections. The average federal funds rate for the first quarter of 2023 is well below the range of these policy rule prescriptions, indicating that the Fed is still catching up to where policy ought to be.

As Chairman Powell emphasized in the lead-up to the December 2022 FOMC meeting, the medium-term path of the federal funds rate is more important than the size of the rate increase at any specific meeting.<sup>16</sup> Looking ahead to the fourth quarter of 2023, the median federal funds rate projections from the March 2023 FOMC meeting are higher than the prescriptions of policy rules

shown in table 14.1. Recall that the federal funds rate projections are based on median participant projections for inflation and unemployment. FOMC participants projected a relatively rapid decline in inflation for 2023. Specifically, the median projection for the four-quarter percent change in the price index for personal consumption expenditures falls to 3.3% as of the fourth quarter of 2023 from 5.7% for the fourth quarter of 2022. For the core version of that index, the four-quarter percent change is projected to fall to 3.6% versus 4.8% for Q4 2022. As a result, the policy rules also would be expected to decline from their peak, and all three versions of the Taylor rule do so.

Alternative assumptions about the course of inflation and unemployment lead to different policy rule prescriptions. If we instead assume, for example, that inflation persists through the end of 2023 at the four-quarter rate registered for the first quarter—holding the projected unemployment rate path the same as in the March 2023 SEPs—we get higher recommended policy paths, as shown in table 14.2. Since inflation has proven surprisingly persistent over

TABLE 14.2. Policy Rule Prescriptions with More Persistent Inflation.

Federal Funds Rate	Q4 2022	Q1 2023	Q4 2023	Q4 2024	Q4 2025
Taylor (1993)	8.42	7.24	6.49	4.08	2.28
Taylor (1999)	8.79	7.69	6.19	3.70	1.90
Taylor (1999) with core inflation	7.51	7.38	5.88	4.15	1.90
Median FOMC projections			5.10	4.30	3.10
Actual federal funds rate	3.65	4.51			

Economic Data and Projections	Actuals		Alternative Projections		
PCE price index*	5.69	4.86	4.86	3.30	2.10
Core PCE price index*	4.84	4.65	4.65	3.60	2.10
Unemployment rate	3.60	3.50	4.50	4.60	4.60

Note: The prescriptions of representative Taylor rules for the fourth quarter of 2023 are higher than FOMC projections under the assumption that inflation does not fall.

\* Year-over-year percentage change

Sources: FRED, Federal Reserve Bank of St. Louis; Federal Open Market Committee, Summary of Economic Projections, March 22, 2023 (authors' calculations).

the past year, continually exceeding the FOMC's projections, this would appear to be a plausible scenario.

In this persistent inflation scenario, the three policy rules recommend a federal funds rate between 5.9 and 6.5%—2 to 2.5 percentage points *higher* by the fourth quarter of 2023 than in the more favorable inflation scenario envisioned by the FOMC. The March 2023 SEP median federal funds rate projection, at 5.1%, lies well below these three prescriptions. While the March SEP projected policy path is in line with or a bit above the systematic policy rules under the assumption that inflation subsides rapidly in the coming year, more persistent inflation could necessitate a significantly higher rate path. Systematic policy rules provide a transparent and well-grounded method of conveying the way in which the policy path responds to economic outcomes.

If, in addition to inflation proving more persistent than the FOMC projected in March 2023, the unemployment rate failed to rise as sharply as it envisioned, policy rules would prescribe even higher federal funds rate paths. Table 14.3 shows the implications of assuming that disinflation occurs one year later than the FOMC projects, as in table 14.2, *plus* the unemployment rate remains at 3.5% through the fourth quarter of 2023.

In this scenario, these three policy rules recommend a federal funds rate of between 7.2 and 7.7% for the fourth quarter of 2023. Again, systematic policy rules provide a transparent and well-grounded method of conveying how the policy path responds to economic outcomes.

The shift in policy rule prescriptions in response to alternative assumed paths for inflation and unemployment illustrates how useful it would be to reference such rules in FOMC communications. As forecasts of future inflation and unemployment vary with incoming data, policymakers could point to such rule prescriptions as indicative of how the outlook for the policy rate path might need to evolve. Indeed, data received between the

TABLE 14.3. Policy Rule Prescriptions with Persistent Inflation, Tight Labor Market.

Federal Funds Rate	Q4 2022	Q1 2023	Q4 2023	Q4 2024	Q4 2025
Taylor (1993)	8.42	7.24	7.24	4.15	2.28
Taylor (1999)	8.79	7.69	7.69	3.85	1.90
Taylor (1999) with core inflation	7.51	7.38	7.38	4.30	1.90
Median FOMC projections			5.10	4.30	3.10
Actual federal funds rate	3.65	4.51			

Economic Data and Projections	Actuals	Alternative Projections			
PCE price index*	5.69	4.86	4.86	3.30	2.10
Core PCE price index*	4.84	4.65	4.65	3.60	2.10
Unemployment rate	3.60	3.50	3.50	4.50	4.60

Note: The prescriptions of representative Taylor rules for the fourth quarter of 2023 are much higher than FOMC projections under the assumption that inflation does not fall and unemployment does not rise.

\* Year-over-year percentage change

Sources: FRED, Federal Reserve Bank of St. Louis; Federal Open Market Committee, Summary of Economic Projections, March 22, 2023 (authors' calculations).

September and November 2022 FOMC meetings led to upward revisions in inflation forecasts. In the press conference following the November 2022 meeting, Chairman Powell said that he believed the projected federal funds rate path would have been higher had one been compiled.<sup>17</sup> If market participants had been conditioned by past FOMC communications to connect, even loosely, the expected federal funds rate path to a range of policy rule prescriptions, the confusion and whipsaw movements in financial asset prices on the afternoon of November 2, 2022, might have been avoided. The FOMC would not have had to place so much weight on the phrase “sufficiently restrictive.” Policy rule prescriptions would provide a natural reference point for what the FOMC means by that phrase. They would also provide a quantitative sense of how policy is “data dependent.”

One last point deserves emphasis. The notion that making use of monetary policy rules requires handing over interest rate settings

to a specific algebraic formula for setting the federal funds rate is a straw man. In the current circumstances, such a claim serves to preserve discretion and evade discussion of the magnitude of policy tightening that is likely needed to restore price stability. The FOMC could make much greater use of a range of monetary policy rules in public commentary about future policy without turning the federal funds rate over to an algorithm. The goal would be not to make pinpoint promises about the future path of rates but to convey likely paths, the associated uncertainty, and dependence of the path on the evolution of the economy.

### The Case for Referencing Monetary Policy Rule Prescriptions in FOMC Communications

The Federal Reserve should make more extensive references to systematic monetary policy rules in communicating about monetary policy. Doing so would have been particularly constructive in the current tightening cycle, which began in March 2022. For example, in public speeches, testimony, and press conferences, Fed speakers should have pointed to rule prescriptions for the federal funds rate path under plausible near-term paths for macroeconomic variables. They could have noted that such prescriptions are derived from historical evidence on how the Fed responded in the past when it successfully reduced inflation. They could have noted that success in restoring price stability would likely require an FOMC response in line with the prescriptions of such rules. In this way, Fed speakers would be providing a transparent scientific grounding for how high and how rapidly the Fed might have to raise interest rates. Individual policymakers could cite particular rules they find compelling or desirable on methodological grounds, just as they do now with regard to particular price indices. But there is no need to select a personal favorite; they could simply cite the prescriptions from the representative collection of rules included in the MPR to Congress.<sup>18</sup>

## Bolster Credibility

Public reference to rule prescriptions in discussing the monetary policy outlook would yield a number of benefits. First and foremost, it would help bolster the credibility of the Fed's commitment to price stability. Fed officials have made a special point of conveying their resolve to ensure that inflation returns soon to its 2% target, even if that means some economic hardship. Perhaps the major risk to the economic outlook in mid-2022 to late 2022 was the possibility that the Fed might come to be seen as not maintaining that resolve in the event that the economy actually does slip into recession. Overall, labor market conditions are still exceptionally tight, despite emerging pockets of weakness. But when labor market conditions weaken, as they must if the Fed is to slow spending enough to get inflation back under control, calls will emerge from many quarters for the Fed to suspend its fight against inflation and forestall a contraction. Indeed, we are already seeing complaints that the Fed is running the risk of "overshooting" or "overdoing it." Since monetary policy operates famously with "long and variable lags," current data alone will not say whether Fed policy has overshot or undershot.

The FOMC will likely decide to stop increasing or start reducing the federal funds rate before twelve-month inflation actually has returned to target. Doing so will immediately raise the question of how the committee decided to stop where it did. The choice runs the risk of appearing relatively arbitrary unless the committee can provide a compelling rationale. The rhetoric of "risk management," describing monetary policy as balancing perceived probabilities of various future developments, is vague and opaque and leaves it open to second-guessing. The compelling guide to monetary policy is the historical evidence of what has led to successful disinflations in the past—exactly the information that is encoded in monetary policy rules. Anchoring communication about a policy pivot in



systematic policy rules will reduce the risk of compromising the Fed's credibility.

On the other hand, resisting premature calls for easing will be essential to avoiding the stop-go policy pattern of the 1970s, in which recessions prompted policy easing before inflation had fully subsided. As the public came to understand this propensity, inflation became more entrenched and harder to suppress. Indeed, several FOMC members, including Chairman Powell, repeatedly have noted that while the current policy tightening does run a risk of inducing a recession, that risk is preferable to allowing inflation to persist, necessitating even more costly action down the road. Monetary policy rules also capture how the Fed avoided overresponding to weakening economic activity during regimes in which policy was relatively successful. Again, aligning policy with such regimes can help the Fed navigate a recession without sacrificing credibility.

Bolstering the Fed's credibility can, in turn, reduce the costs of restoring price stability. Reducing doubts about the Fed's commitment would reduce uncertainty about inflation at longer horizons and thus keep longer-run inflation expectations better anchored. Expectations of imminent disinflation would also dampen pricing pressures in the short run, helping the Fed's cause. Well-anchored inflation expectations would reduce the likelihood that the Fed needs to take costly measures to re-establish its credibility.

### Clarity about the Policy

The relatively small increase in measures of longer-run inflation suggests that at present, consumers and firms believe that the Fed is likely to follow through on its commitment to do what is required to bring inflation back down to target within a few years. And yet a lack of clarity is apparent regarding what it will take. As noted earlier, the expected interest rate path has fluctuated significantly over the

last year, inducing significant swings in financial asset prices, as markets conjectured an early Fed easing next year in response to weakening economic activity. At present, the public seems to be operating without a clear understanding of the principles governing how high rates will need to go to accomplish the Fed's avowed objective. To better anchor its expectations, the Fed should direct its attention to the historical evidence on the characteristics of successful monetary policy practices and the implications for the likely magnitude of tightening required by the current inflationary surge. Explicitly referencing the prescriptions of systematic monetary policy rules can do that.

### Transparent Data Dependence

Another benefit of framing monetary policy by referencing monetary policy rules is that it would convey the way the policy rate path is likely to vary with incoming economic data. Fed officials often describe their policy as “data-dependent” without providing much information on just how the policy will vary with future data. The outlook for inflation has varied significantly in recent quarters, but the Fed has struggled to convey to the markets how the federal funds rate path will likely be affected. Indeed, in his contribution to this conference, Mickey Levy (see chapter 11) documented the magnitude of the upward revisions to the Fed's inflation projections during this tightening cycle and the accompanying revisions to the federal funds rate outlook. The Fed initially projected a relatively rapid disinflation but has had to revise its outlook as inflation proved more persistent than expected. The projections of the federal funds rate path have been revised upward as well. When inflation first emerged in 2021, the FOMC could have prepared the public for scenarios—reasonably plausible at the time—in which inflation fails to subside as rapidly as it projected.<sup>19</sup> The Fed could have cited systematic monetary policy rules that imply that all else equal,

the federal funds rate would be correspondingly higher. Framing monetary policy in terms of historically successful rules would help participants draw a quantitative connection between scenarios in which inflation proves more persistent than they expect and higher policy rates. Such an approach would improve upon the vague “risk management” approach in which that connection is obscured.

On the other hand, policy rules would also help clarify the circumstances in which the committee would cease raising rates. Speculation has been widespread about the FOMC’s contemplation of a pause in rate increases to “take a look around” to see what effect rate increases were having. Pausing rate increases before inflation has fully returned to target makes sense, given the long and variable lags that have long been known to characterize how changes in the stance of monetary policy affect the economy. But how is the public to predict when such a pause might take place? And how would the committee justify the point at which it chooses to pause? Monetary policy rules provide the natural answers. They provide prescriptions for how high interest rates should be for any given *actual* inflation rate and real activity measure in order to successfully disinflate. Such relationships implicitly build in historical lags in how future outcomes connect to current data and policy settings. While there may be a range of prescriptions, depending on the particular version, their connection to historical periods of monetary policy success can provide a relevant anchor. Without such an anchor, the choice of when to pause could well be perceived as arbitrary, leaving the Fed vulnerable to accusations of favoritism or political influence.

Similarly, grounding policy setting in monetary policy rules would help anchor discussions about when incoming data might reveal enough weakening to warrant the Fed reversing course and easing policy. It would quantify how much weakness would justify a cut in interest rates without jeopardizing price stability. Indeed, policy rule prescriptions supported the need for monetary stimulus

at the moment the pandemic hit in early 2020. Further down the road, monetary policy rule prescriptions would help the Fed avoid the chronic problem of delaying the exit from monetary ease (Bordo and Levy 2022).<sup>20</sup>

### Constructive Forward Guidance

Referencing historically successful monetary policy rules would be a constructive method for the FOMC to provide forward guidance. The traditional method involving qualitative or quantitative committee statements about future interest rate settings or asset purchases has encountered a number of pitfalls. One stems from the ambiguity in such statements about whether the committee was conveying information about its reaction function or its economic outlook. The committee often intended the former, seeking to encourage the belief that it would hold rates “lower for longer” than market participants had believed, only to find that the forward guidance announcement led market participants to believe that the FOMC was more pessimistic about the outlook than they had thought. Emphasizing the implications of systematic policy rules that the committee is likely to need to emulate would convey information about the Fed’s reaction function without implicating the committee’s economic outlook.

Another pitfall in traditional forward guidance practice is the tension it creates with the notion that policy will be “data dependent.” Emphasizing systematic rule-like behavior is a natural way for the Fed to stress its reaction function or data dependence. Framing decision making in this manner is far more appropriate and likely to be more effective than the Fed’s halting and confusing steps to offer forward guidance as if it were some kind of independent tool. Referencing systematic policy rules would help integrate communication about forward guidance with the usual meeting-to-meeting policy-setting process.

Framing forward guidance in terms of systematic policy rules would also alleviate the problem that arises when being seen as complying with past forward guidance conflicts with the policy response indicated by incoming data.<sup>21</sup> This tension was evident in late 2021 when forward guidance about the sequencing of asset purchase tapering and rate increases delayed the lift-off that incoming data indicated was urgently needed. Monetary policy rules build in responsiveness to incoming economic data in a way that is more continuous than the process of invoking an “escape clause.” Explaining policy as a systematic pattern of response or reaction function is likely to be as close to a credible commitment as the Fed can achieve while describing the future outlook for policy. It would be more easily understood by the public as well.

### Improved Clarity and Precision of Communications

Referencing monetary policy rules would also allow the Fed to avoid confusion about elusive abstract concepts such as “the neutral rate” when discussing the likely future path of interest rates. The media and financial markets, and at times Fed officials, have identified “the neutral federal funds rate” with the longer-run projection for the federal funds rate in the FOMC’s SEP. In this context, a neutral interest rate corresponds to the concept, attributed to Knut Wicksell, of a “natural” interest rate that prevails in a hypothetical equilibrium without inflation or deflation, the idea being that rates above that restrain the economy while rates below that provide stimulus.<sup>22</sup> In the September 2022 SEP, participants’ longer-run federal funds projections ranged from 2.3 to 3.0%, with a median of 2.5%. In the same SEP, every participant projected inflation to be at 2.0% in the longer run. But inflation now is running above 5%, and inflation expectations are above 2%. FOMC participants thus project the real federal funds rate to be between 0.3 and 1.0% in the longer run, with a median of 0.5%. The natural interest rate

varies continually over time with economic conditions, a point emphasized by Marvin Goodfriend and Robert King (1997), as well as Michael Woodford (2003). And it certainly varies with the expected rate of inflation; as noted above, it is the *ex ante* real interest rate that moderates the incentive of consumers and firms to delay current spending. The 2.5% median SEP projection for the nominal federal funds rate in the longer run, when inflation has settled at 2%, is irrelevant as a benchmark for gauging the current stance of monetary policy when inflation is above 5%.

Some Federal Reserve officials have referred to the FOMC's longer-run projections for the nominal federal funds rate as the "neutral" rate and have talked about rates above that as "restrictive." For example, after the July 2022 FOMC meeting, Chairman Powell stated that the committee believed the funds rate target—then 2.25 to 2.50%—was "at" neutral in the sense that it matched up with the longer-run federal funds rate projections in the SEP.<sup>23</sup> With inflation running at 5% or more, a federal funds rate of 2.5% implies a real, inflation-adjusted rate of negative 2.5% or below—quite stimulative by historical standards. In an interview a month later, Federal Reserve Bank of New York president John Williams provided a very different analysis, describing the neutral rate as a longer-run *real* federal funds rate of about one-half and stating that the nominal interest rate minus what inflation is expected to be over the next year needed to rise above that.<sup>24</sup> Williams's approach represents an application of the Taylor principle, and it would be just a small further step to appeal to the historical record embodied in monetary policy rules as the appropriate benchmark for assessing the stance of monetary policy.

## Conclusion

The Fed is facing many challenges. Some, if not most, are self-inflicted. The changes it made to its strategic framework in

August 2020 contributed to an inflationary bias in its approach to policy and significant confusion on the part of the public. It constituted a significant departure from the past. This left the Fed unprepared and somewhat confused when faced with the inflationary consequences of the pandemic and the aggressive stimulus provided by monetary and fiscal policies during and following the crisis.<sup>25</sup> Its policy response was at first denial, blaming inflation on exogenous and transitory forces beyond its control. The result was surging inflation and public questioning of the Fed's commitment to price stability. Belatedly, it reversed course. It forcefully reaffirmed its commitment to price stability and began to tighten policy assertively. Better late than never. However, despite the messages and near-term actions, there is much ambiguity and uncertainty over the path of policy going forward.

The hard work of restoring price stability has just begun. Reducing inflation will require a sustained effort to restrain aggregate nominal demand. That will slow economic growth and soften the labor market. More difficult challenges will arise as the slowdown becomes more apparent. The Fed will come under increasing pressure to back off its fight against inflation and turn its attention to promoting economic expansion and employment growth in particular. As the slowdown continues, political pressure will undoubtedly grow for the Fed to reverse course. This is when the real test of the Fed's resolve will arise. Federal Reserve officials have expressed their determination to resist the urge to ease prematurely or too quickly, which would only prolong high inflation. Maintaining its stated resolve will be easier if the Fed describes what it believes will be necessary and what principles will guide its decisions in more objectively grounded, quantitative terms. Such efforts will give the public a better understanding of the Fed's underlying reaction function and, thus, how its policy will evolve as the economy evolves. Such efforts will help minimize the extent to which speculation about the Fed's intentions drives financial market volatility.

In this essay, we argue that there is a well-established framework that can provide much-needed guidance, enhance transparency, and improve communication and accountability. Economists have learned that simple policy rules, such as those suggested by John Taylor that describe how interest rates should be set in response to changes in inflation and real activity, provide good results in a wide range of models. Such rules are also grounded in historical experience; central bank behavior aligned with desirable simple rules has yielded good economic outcomes, while significant departures from the set of desirable rules have led to monetary instability and adverse economic outcomes. That is, the prescriptions of simple policy rules provide important and useful guidance for monetary policy in a wide range of economic conditions.

Referencing systematic policy rules that are grounded in historical experience can be a constructive way for the Fed to communicate about the likely path of monetary policy. In the current environment, referencing the prescriptions of such rules can provide valuable information to the public about how high rates might need to go and the conditions that might give rise to a pivot in policy or a reduction in rates. Such references would not constitute rigid commitments but would be more informative to markets and the public than the subjective, discretionary, “trust me” approach that largely describes current practice. Moreover, referencing systematic policy rules can bolster the Fed’s credibility—so crucially important now—by making policy more transparent and understandable. Doing so can only help reduce the costs of restoring price stability.

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## Notes

The authors are grateful for comments by Mickey Levy and Andrew Levin. A previous version of this paper was presented at the November 10, 2022, meeting of the Shadow Open Market Committee.

1. The corresponding values for the core PCE are 5.1% for 2021 and 4.6% for 2022. The consumer price index rose 7.2% for 2021 and 6.4% for 2022.
2. The federal funds rate target reached 4.75 to 5.0% in March 2023. The balance sheet reached \$8.9 trillion in March 2022 and shrunk to about \$8.6 trillion as of December 2022. By March 2023, the balance sheet remained at about \$8.6 trillion.
3. "In determining the pace of future increases in the target range, the Committee will take into account the cumulative tightening of monetary policy, the lags with which monetary policy affects economic activity and inflation, and economic and financial developments." FOMC Statement, November 2, 2022.

4. “We think there’s some ground to cover before we meet that test [referring to ‘significantly restrictive’] and that’s why we say that ongoing rate increases will be appropriate. And, as I mentioned, incoming data between the meetings, both a strong labor market report but particularly the CPI report, do suggest to me that we may ultimately move to higher levels than we thought at the time of the September meeting.” (Board of Governors of the Federal Reserve System, Transcript of Chairman Powell’s Press Conference, November 2, 2022, 5–6)
5. The reliance on vague guidance such as “lower for longer” is not uncommon in Fed speak. Unfortunately, such phrases provide no quantitative guidance or conditionality that could help inform financial markets and the public.
6. “So I guess I’d start by saying we’ve been saying we would move expeditiously to get to the range of neutral. And I think we’ve done that now. We’re at—we’re at 2.25 to 2.5 [percent], and that’s right in the range of what we think is neutral.” Chairman Powell, Transcript of Chairman Powell’s Press Conference, July 27, 2022, 5.
7. Note that near-term inflation expectations—over one year or so—are the ones most relevant to decisions to delay or advance current spending, independent of inflation expectations at longer horizons.
8. The natural rate concept is attributed to the early twentieth-century economist Knut Wicksell. See Woodford (2003) and Humphrey (1986), though the latter notes the much earlier contribution of Henry Thornton and Thomas Joplin.
9. “And I think that, to me, that’s one of the benchmarks. That we need to get the interest rate relative to where inflation is expected to be over the next year, into a positive space and probably even, you know, higher than the longer-run neutral level—which I think is around a ½ percent on real interest rates.” See *Wall Street Journal* (2022).
10. One noteworthy exception is James Bullard, president of the Federal Reserve Bank of St. Louis, who has highlighted policy rule prescriptions in public presentations since mid-2022. See chapter 12 of this volume and Bullard (2022 and 2022b).
11. Such economists include many members of the Shadow Open Market Committee.
12. The most recent *Monetary Policy Report* was submitted to the Board of Governors of the Federal Reserve System in March 2023. The section on

monetary policy rules was inexplicably omitted from the February 2022 *Monetary Policy Report*.

13. Board of Governors of the Federal Reserve System, *Monetary Policy Report*, June 2022, 46–48.
14. Even in the March 2023 *Monetary Policy Report* (pp. 42–44), the actual federal funds rate is shown to be substantially below the rates recommended by most of the selected policy rules.
15. The Federal Reserve Bank of Cleveland posts prescriptions from seven different Taylor rules for three different published economic forecasts: <https://www.clevelandfed.org/indicators-and-data/simple-monetary-policy-rules#background>. The Federal Reserve Bank of Atlanta website has a Taylor rule utility in which users can display prescriptions for up to three alternative rules using alternative rule parameters and alternative measures of inflation and real activity: <https://www.atlantafed.org/cqer/research/taylor-rule>.
16. “To be clear, let me say again the question of when to moderate the pace of increases is now much less important than the question of how high to raise rates and how long to keep monetary policy restricted, which really will be our principal focus.” Chairman Powell, Transcript of Chairman Powell’s Press Conference, November 2, 2022, 6.
17. “Our message should be—what I’m trying to do is make sure that our message is clear, which is that we think we have a ways to go, we have some ground to cover with interest rates before we get to, before we get to that level of interest rates that we think is sufficiently restrictive. And putting that in the statement and identifying that as a goal is an important step. And that’s meant to put that question, really, as the important one now going forward. I’ve also said that we think that the level of rates that we estimated in September—the incoming data suggests that that’s actually going to be higher, and that’s been the pattern.” Chairman Powell, Transcript of Chairman Powell’s Press Conference, November 2, 2022, 20.
18. The MPR reports monetary policy rule prescriptions only up through the most recent quarter of reported economic statistics; the MPR submitted on March 3, 2023, for example, only displays predictions through the fourth quarter of 2022. The MPR also reports the most recent SEP, however (December 2022), including FOMC participants’ projections of the end-of-year values of variables that appear on the right-hand-side of policy rules. It would be a simple matter for the MPR to also display the

- results of applying rules to the median or central tendency projections in the SEP.
19. The FOMC would do well to make more extensive use of scenario analysis, both in policy setting and in communications; see Bordo, Levin, and Levy (2020) and Levin (2014).
  20. As noted earlier, the policy rules reported in the MPR recommended a lift-off of the federal funds rate in Q2 or Q3 of 2021, well before the Fed acted at the very end of Q2 of 2022.
  21. The FOMC generally expresses forward guidance as predictions of what a future committee will want to do, rather than as commitments to do what the committee might not otherwise want to do when the time comes. Nevertheless, forward guidance is often perceived, outside the committee and within, as commitments in the latter sense. See Lacker (2019) and Plosser (2013).
  22. See Woodford (2003) and Humphrey (1986). The latter notes the much earlier contributions of Henry Thornton and Thomas Joplin.
  23. “So I guess I’d start by saying we’ve been saying we would move expeditiously to get to the range of neutral. And I think we’ve done that now. We’re at—we’re at 2.25 to 2.5 [percent], and that’s right in the range of what we think is neutral.” Chairman Powell, Transcript of Chairman Powell’s Press Conference, July 27, 2022, 5.
  24. See note 9 above.
  25. See Levy and Plosser (2022) for an early critique of the Fed’s new regime.

## GENERAL DISCUSSION

JOHN TAYLOR (INTRODUCTION): We're at our next-to-last session, a very important one, "Toward a Monetary Policy Strategy." We have four excellent speakers, two current and two former [Federal Open Market Committee] members. And what more could we ask for? We'll have a good discussion.

Anyway, we're going to start with Jim Bullard, who's president of the St. Louis Federal Reserve Bank, Philip Jefferson, a governor on the Federal Reserve Board, and Jeff Lacker, and Charlie Plosser. We'll go in that order. So, take it away, Jim.

\* \* \*

TAYLOR: Thank you. We have time for a few questions or comments. Right here first, Mickey, and then behind you. Go ahead, Mickey. Here comes a mic down the aisle. Thank you.

MICKEY LEVY: Jim, your piece is about monetary policy and fiscal policy, and I want to toss out a caution about overstating the extent to which fiscal policy stimulus is diminishing. Certainly, fiscal stimulus is far less than it was in 2020 and 2021, but three points are important. First, President Biden's Infrastructure Investment and Jobs Act of 2021, which authorized \$1 trillion of spending, is starting to flow into the economy. It had a large impact on government consumption and investment (the "G" in "GDP") in Q4 2022 and Q1 2023, and these increases will continue for many years. One hundred percent of the infrastructure spending is calculated directly in GDP, and many private-sector jobs are [being] created. Fiscal analysis historically suggests that government investment spending generates a higher multiplier

than transfer payments. Second, of the \$5 trillion in budget spending, half a trillion was federal grants to state and local governments. Virtually all of that was saved by state and local governments that were benefiting from surging tax receipts. Right now, with the exception of the Federal Reserve, state and local governments are the second largest holder of US Treasuries, about \$750 billion more than prepandemic levels. That is over 3% of GDP. We know that eventually it will be spent or used to lower taxes, and will stimulate economic activity, long after it was recorded as increases in the federal budget deficit. Third, the cost-of-living adjustments [COLAs] involve increases in deficit spending that add to disposable income and aggregate demand. The social security COLA alone adds \$100 billion to disposable income this year. Most of the spending on Medicare, Medicaid, and SNAP programs is indexed to inflation. This adds up to a tremendous increase in nominal disposable income. Accordingly, I caution on stating that fiscal policy has turned restrictive, based on diminishing deficits.

TAYLOR: Quick response?

JAMES BULLARD: Sure. I think that the composition of government spending is important for this purpose. If you think that the infrastructure spending is legitimately public capital and that that's improving the productive capacity of the country—something we could definitely have a whole conference on—that's a different animal than borrowing money and putting it directly into bank accounts of households.

On the state and local matter, I agree with you. One of the things that I've found anecdotally and from talking to people across the district and across the country is that state and local governments are flush. They have a lot of spending. So, it's like you poured a lot of federal spending, you put it out to the state and local governments, but they don't really have the infrastructure to

be able to spend it at that rate. So, it's trickling out, and I think that will come out over time. So, I agree with that.

Cost-of-living adjustment is also an issue, but I think the more immediate issue for monetary policy is the transfer payments.

TAYLOR: Yes, could you please say your name?

CHARLES SIGULER: Hey there. Charlie Siguler. We talk a lot about forward projections and trying to make all sorts of forward assumptions. And yet the Fed gets, on a weekly basis, data on the M2 money supply. Yet we hardly hear about it. And in recent data, there's been nothing normal about it. And two years ago, there was nothing normal about it. So I just want to sort of highlight a couple of things. From January 1, 2020, through December 31, 2021, the money supply grew by 40%, which was the highest two-year growth in history. There may be something in the 1700s that Niall Ferguson may see, but in the data that I looked at, there's nothing. At the same time, bank deposits grew by 36%, to the tune of about \$4 trillion. Both money supply and bank deposits peaked in the same month last year, April 2022, and they've both been in decline since this. Now there's a year-over-year decline in M2 and bank deposits, which is the first time that I've seen this has ever happened. Most recent data shows that M2 is declining by 4.1% annualized, which is an all-time low in terms of percentage growth. So just trying to sort through all this. And there are a lot of extremes going on here, and with these fluctuations, I just wonder if these extreme gyrations reflect or are affecting financial and price stability, and is M2 something that the Fed should be looking at more closely?

TAYLOR: You're not jumping out of this one. You owe me to answer.

BULLARD: I will say this about M2. I come from the "monetarist bank" and sort of grew up as a monetarist. So I'm very sympathetic. It's been hard to relate money growth to inflation empirically. The standard thinking—around the St. Louis Fed



anyway—over the years has been that there’s just too much other noise going on in the economy at low levels of inflation and low rates of money growth. It’s hard to relate money growth to inflation in that circumstance. Recently, you had an outside movement in M2. Sure enough, you got inflation right behind it. So maybe monetarism will be reinvigorated by this episode. If you subscribe to this theory, this bodes well for disinflation ahead.

TAYLOR: Go ahead.

JEFFREY LACKER: Yeah. I’d recommend a recent piece by Peter Ireland in *Forbes*, or at least on their website, arguing that we need to relearn monetarism, to play on a senior official who said we unlearned it.

TAYLOR: Okay, we have Bill Nelson, and then Krishna [Guha]. Then we’ve got to stop. Bill?

WILLIAM NELSON: Bill Nelson, Bank Policy Institute. So I have two questions for the panel. The first is, to what extent do the FOMC [Federal Open Market Committee] and the Fed bear some responsibility for the financial turmoil we’ve been experiencing owing in large part to the sharp rise in interest rates that we’ve witnessed? I mean, I’ll acknowledge up front that first and foremost, the problems were the responsibility of really awful bank risk management. And we learned a lot about regulation—improvements to regulation and supervision. But, you know, it’s also true that a central bank that is behind the curve raises rates just as much as one that’s not behind the curve—but actually by more, and more rapidly—and that financial stability consequence is one of the important reasons not to fall behind the curve. But it’s worse than that. Sorry. You know, there was also . . . I mean, the Fed was actively communicating to the markets. You know that the neutral policy was 2.5% at a time when inflation was running at 8%. So for example, this is from the July 2022 FOMC meeting where Chair [Jerome] Powell said: “We’ve been saying we would move expeditiously

to get to the range of neutral, and I think we've done that now. We're at two and a quarter to two and a half, and that's right in the range of what we think is neutral." And there were plenty of commentators—well, some commentators, and I was one of them—saying that's dangerous advice, because it's going to cause intermediate and longer-term rates to be too low.

And the second question, which is related to that, is, I'm curious from each of the panelists to know your current spot estimate of the nominal neutral federal funds rate.

TAYLOR: So, let's go to Andy and Krishna.

ANDREW LEVIN: Over the past several years I've been concerned about the lack of dissenting votes on FOMC decisions. By comparison, the Bank of England has been facing lots of tough decisions and there's been dissent on both sides. And meanwhile, the FOMC has been circling the wagons. Sometimes a dissenter might be wrong, and sometimes they might be right. But it takes courage to cast a dissenting vote.

I'm also concerned that the [federal] funds rate is currently at the very bottom of the "comfort zone." Is that the right policy stance for effective risk management? Should we be at the bottom, or maybe at the top, or somewhere in the middle? And that underscores the merits of using the Taylor rule as a benchmark.

TAYLOR: So, Krishna, and then we have the response.

KRISHNA GUHA: Thanks very much. Krishna Guha, Evercore Partners [formerly of] the New York Fed. Quick comment and quick question. The quick comment is, when we talk about the market and where the market's misunderstanding things, I think it's illustrative to point out that were the world to evolve along the lines envisaged in the FOMC's SEP [Summary of Economic Projections], then, in fact, according to standard Taylor rule specifications, the [federal] funds rate should be somewhere between two and a half and three at the end of 2024. That's what your first slide showed. And so, it's not necessarily obvious that the market

is wildly mispriced. The market may, however, be too optimistic about the prospects of achieving that inflation path, which you rightly illustrated yourselves in the second set of slides.

My question has to do with the multiple forms of tightening that are taking place at the moment. So, we have three forms of tightening underway. There's monetary tightening through the classic interest rate channel, there's balance sheet tightening, and there's some hard-to-quantify credit tightening taking place. So, if we were to try to integrate this into a Taylor-type rule, would it be reasonable to enter in some additional terms for those other forms of tightening? And if not, how should we integrate these into our thinking?

TAYLOR: Phil, do you want to take this?

PHILIP JEFFERSON: Yeah. These last three questions are, to me, closely related, okay? One was about trying to assess the impact of . . . let's call it the credit shock, okay? The one prior to that had to do with balancing the dual mandate. The one before that was from Bill, asking about what was the neutral rate. So, in my mind, these questions are kind of all related to one another in some way. And I think that is what makes monetary policy quite challenging. Because I do take the dual mandate very seriously. For those of you who may not know about my background in terms of my scholarship, I've written extensively on poverty and inequality from a neighborhood in Washington, DC, where I've seen very disparate incomes for people in this society. So I care very much about how the labor market performs because, for most people in the US economy, their standing in the labor market will very much determine their station in life. So that's something I'm very mindful of.

But I also am aware that inflation is the most insidious of social diseases. And so, it's important to try to get it down so that people can go about their lives in a way where inflation is in the background.

So, what makes saying what the neutral rate is in this environment so difficult is that we have multiple things going on. Okay? We do have the credit shock and its impact, and that can impact your thinking. I think it's a matter of public record that before the banking shocks occurred, I would guess—and Bill, Jim, please correct me—if people on the FOMC had one view of what that neutral rate might have been, or the terminal rate if you want to think about it in that way, the credit shock may have had some impact on their thinking. So, whether or not anyone wrote down a Taylor rule that included the impact of the credit tightening, we can't say for sure. But I think in terms of policymakers' thinking, it certainly weighs in. So, you know, I don't have a definite answer to these three questions, but I want you to know that these are the considerations that we're all trying to balance as we're looking or thinking about the appropriate setting of the main policy rate.

TAYLOR: Thank you. Jeff, then we have to stop.

LACKER: So, to Bill Nelson. We did cite the Powell statement you quoted in our paper, and we noted that a month and a half later, in August, John Williams, head of the New York Fed, gave an interview to the *Wall Street Journal* where he lays out the right way to think about the neutral rate. The neutral rate depends on how you define it. Like Wicksell or the SEP? You know, those are two different things.

Is the market off base? The question is: What's going to get inflation down to where it's going in the SEP? And the Taylor rule says, well, you know, given what we've seen now, we're not there. It's sort of like a miracle happens in the next three quarters or two quarters.

So, the concern about credit tightening is interesting. The Taylor rule summarizes, given inflation and unemployment, where the rate should be. Now, times when the Fed's had to tighten to reduce inflation, it's almost always been associated

with some credit tightening, virtually every time, right? So, you would only want to adjust the Taylor rule for credit tightening, you would only want to forego rate increases that you would otherwise undertake on the basis of Taylor rules, if you thought the credit tightening was worse than it was typically in the past at times such as 1990, the early 1990s, 2001, and 1982. So, it doesn't seem to me like that's warranted now.

TAYLOR: I think we have to stop after that. Is that okay? Maybe the last word for Jim. Go ahead.

BULLARD: Okay, so I agree with Philip Jefferson. The unemployment rate is very low, at a fifty-year low. The inflation tax is high. This hurts the population in the lowest segment of the income distribution the hardest. They have less ability to adjust to inflation. I think that's our opportunity to get inflation down now, if we can get rid of the inflation tax while the labor market is strong. On Krishna Guha's question, I agree that the market's optimistic. They're not necessarily wrong. I like to interpret that as they have a lot of confidence in the FOMC. [*Laughter*] I think there are multiple forms of tightening going on. You have to put that in a model. You can't just put that in your Taylor rule.

On the financial stability question posed by Bill Nelson—Did the Fed contribute to the financial turmoil?—I think we did communicate fairly effectively that we were going to raise rates quickly. I think that by and large, the financial sector agreed that we were going to have to do this. You just can't expect every entity in the whole country to adjust appropriately. Some probably are going to get burned on this, but I think overall it's been pretty good. I will say financial stress metrics are actually still quite low. So, we're not in the situation that we were in March–April of 2020, and we're certainly not in the situation that we were in 2008. So far, so good. Hopefully, we'll get good results out of this.

TAYLOR: Okay, thank you, panel.