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An Early Retrospective on Monetary Policy in the Powell Era

Christina D. Romer

David H. Romer

University of California, Berkeley

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Introduction

Jerome Powell's tenure as Federal Reserve chair has unquestionably been eventful. Since taking office in February 2018, Powell has faced a worldwide pandemic with government-mandated lockdowns and extreme unemployment, the highest inflation since the 1970s, and unprecedented threats to Fed independence. To most economists—ourselves included—Chair Powell is a hero. He has faced these enormous challenges with skill, integrity, and quiet determination. The continuing soundness of the U.S. economy, stability of our financial markets, and respect for the Federal Reserve are due in no small part to his effective leadership. For that we must all be grateful.

But that gratitude does not mean that scholars should not evaluate policy in the Powell era with the same rigor and dispassion as they would the tenures of other Fed chairs. In that spirit, in this paper we take an early look at the monetary policy record during Powell's eight years as chair. What did monetary policymakers do, and why did they do it? How reasonable were the policy choices they made? Most importantly, are there lessons from the Powell era that could help future Fed chairs?

Chronology. We begin our study with a selective chronology of monetary policy since 2018. We don't attempt to provide a comprehensive blow-by-blow description of Federal Reserve actions. Rather, we focus on what we see as six relatively distinct policy episodes. These are: (1) the interest rate and balance sheet normalization in 2018 and early 2019; (2) the reversal of both these policies in mid- and late-2019; (3) the aggressive expansionary response to the COVID-19 pandemic in 2020 and early 2021; (4) continued loose policy in 2021 as inflation surged; (5) the rapid tightening in 2022 and 2023 to fight inflation; and (6) the interest rate cuts starting in mid-2024 and severe threats to Fed independence. For each episode we discuss the policy context, the nature of policy, and the key policy actions.

Methodology. The heart of our study analyzes the motivation and reasonableness of policy in these six episodes. To understand the motivation for policy, we read the narrative records of the Federal Open Market Committee (FOMC)—primarily the "Minutes" of FOMC meetings (hereafter, just Minutes). What reasons did policymakers give for doing what they did? We then ask whether those decisions were reasonable. This focus on "reasonableness" reflects realism about how rigorously we can evaluate policy in the Powell era at this early stage. Given the short sample and the myriad other factors affecting output and prices, we can't establish fresh estimates of the causal effects of monetary policy over the past eight years. What we can do is ask—based on existing forecasts of inflation and unemployment, a qualitative forward-looking interest-rate rule, and actual outcomes—whether the choices of monetary policymakers during the Powell era were reasonable. In this analysis, we consider the forecasts of macroeconomic conditions of FOMC members (the Summary of Economic Projections), the Board of Governors staff (the Tealbook forecasts), and private sector forecasters (the Survey of Professional Forecasters).

Analysis. For the period February 2018 to February 2020, the first two episodes in our chronology of monetary policy in the Powell era, we find policy was initially sound and focused closely on macroeconomic fundamentals. Policymakers raised interest rates slowly because they were forecasting that inflation and unemployment were at or near their long-run objectives. Attempts to shrink the Fed's balance sheet, however, led to a temporary loss of interest rate control and a return to balance sheet expansion. The directional shift from interest rate hikes to cuts in mid-2019 can be understood as a response to slightly worse economic forecasts and a few low inflation readings, but it perhaps missed the more fundamental fact that unemployment was at historic lows. We see an increasing focus among FOMC members on theories

that inflation was relatively impervious to economic conditions and that a strong labor market could lead to more broadly shared prosperity.

For the pandemic period, March 2020 through March 2022, the second two episodes in our policy chronology, we again find a gradual evolution from sensible and highly effective monetary policy to more questionable policy decisions. Early in the pandemic, the Federal Reserve took aggressive actions to stabilize financial markets and ensure smooth market functioning. These measures succeeded in preserving credit flows and likely reassured both firms and consumers. The rapid reduction in the federal funds rate to zero and forward guidance that it would remain very low were also reasonable in light of the unprecedented circumstances of government lockdowns and extreme increases in unemployment.

In 2021, monetary policymakers chose to look through rising inflation in part because they had made strong forward guidance that they would achieve both their inflation target and a "broad-based and inclusive" maximum employment goal. More fundamentally, the FOMC feared that below-target inflation could return, felt that a hot labor market had important benefits, and believed that inflation was relatively impervious to a very strong labor market. Mistaken forecasts that inflation would disappear quickly also factored into their policy choices. However, given that even the mistaken forecasts had inflation above target for an extended period and unemployment well below the natural rate, the decision to leave the funds rate unchanged for so long does not appear reasonable and had unfortunate consequences.

For the period March 2022 through the present, which covers the final two episodes in our chronology, we again find that monetary policy was initially exemplary, but later decisions were more questionable. The FOMC eventually responded to high inflation with aggressive increases in interest rates. It is very possible that the forceful moves and clear communication played a role in taming inflation, and did so with historically modest damage to the labor market. The gradual reduction in interest rates starting in mid-2024 was motivated by the Fed's forecasts that it was closing in on both its inflation and maximum employment targets, and so could move toward its estimate of the neutral rate. However, similar to what we find for the 2019 cuts and the 2021 inflation forbearance, the FOMC arguably lost some sight of the bigger picture. In this case, the most important missing fundamental was simply that inflation had been well above target for years. At the same time, Powell and the Fed have faced unprecedented attacks on their independence, and have reacted with an admirable mix of quiet resolve and, when needed, forceful and focused responses.

Lessons. Finally, we use our analysis of the Powell era to draw some lessons for future policymakers. The first, and perhaps most essential, lesson is that monetary policymakers need to have a realistic model of how the economy operates and what monetary policy can accomplish. In the Powell era, monetary policy was most successful when it was driven by a conventional framework focused on managing aggregate demand to reach the Fed's inflation target and the maximum level of employment consistent with price stability, such as in 2018 and 2022–2023. Monetary policy has been least successful, not just in the Powell era but in generations before, when it was based on less solid theories and sought to solve social problems or reach unrealistic goals, such as in 2021 and in the late 1960s and 1970s.

Our second and third lessons concern monetary policy strategy. One is that the Federal Reserve should move quickly and aggressively when conditions warrant. Central banks typically prefer to act incrementally and with prolonged advance warning. But in 2021, this tendency allowed inflation to go unchecked for unnecessarily long. In contrast, the immediate and powerful response to the pandemic outbreak in 2020 appears to have prevented severe financial disruptions and helped stabilize the economy, and the unusually rapid and forceful tightening in 2022 appears to have helped tame inflation at relatively little cost. The other monetary policy strategy lesson is that inflation is harmful even if inflation expectations do not become unanchored. In 2021 and 2022, long-run inflation expectations did not rise greatly, but the post-pandemic

inflation led to enormous unhappiness, stress, and anger, and contributed to a breakdown of trust in leaders and institutions. The policy implication we draw from this is not that policymakers should respond to short-lived fluctuations in inflation that are due to one-off disturbances. Rather, it is that inflation that threatens to become long-lived potentially warrants a response, regardless of the behavior of expectations or whether it is due to demand or supply.

The next two lessons concern the operational side of policy. The evidence from 2021, when the Fed's assertive forward guidance was one source of its slow response to inflation, reinforces the view that forward guidance can be a barrier to reacting quickly to changed conditions and risks policy becoming overly based on internal considerations rather than macroeconomic fundamentals. The lesson we take from these downsides is that forward guidance should be carefully crafted and the bar for using it should be high. Our other operational lesson is that the Federal Reserve balance sheet should remain large. Attempts to shrink the balance sheet led to a temporary loss of interest rate control in 2019, with few, if any, discernible benefits. Although there are reasonable steps that would allow the balance sheet to be shrunk somewhat, there is no realistic, low-cost path to a much smaller balance sheet.

Our sixth and final lesson from the Powell era is that Federal Reserve independence is vital but tenuous. When Powell took office, the importance of central bank independence was well established and Fed independence seemed secure. But the past eight years have provided surprising—if not shocking—evidence of the extent to which independence is at risk, and a vision of how dramatically loss of independence could affect policy. For the Fed itself, the best defense against such threats is to conduct policy well, including learning from past missteps, and to stand up for independence when the threats become dire. Ultimately, however, the defense of independence will need to come from Congress, the courts, economists, and the public.

This early retrospective of monetary policy in the Powell era is organized as follows. Section I presents a selective chronology and description of policy since 2018. Section II provides a discussion of the sources and methodology we use to analyze the motivation and reasonableness of policy in different episodes. Sections III, IV, and V present our analysis of policy in the various subperiods of the Powell era. Finally, Section VI draws tentative lessons from monetary policy in the Powell era for the future.

I. Chronology of Policy in the Powell Era

To set the stage for our analysis, it is useful to sketch the broad developments in monetary policy during Powell's tenure. We identify six main policy episodes since 2018. Table 1 shows the approximate dates of the episodes and how key policy indicators behaved in each one. Appendix A describes the sources of all data used in the paper.

A. Policy Normalization in 2018 and Early 2019

Powell was sworn in as Federal Reserve chair in February 2018. Prior to that, he had served as a Fed governor since 2012. For the first year of his tenure as chair, the FOMC continued with the policy normalization plan agreed to under Chair Janet Yellen. This plan sought to gradually raise the target for the federal funds rate away from the effective lower bound, where it had been since mid-December 2008,

Table 1. Policy Episodes in the Powell Era

Episode	Dates (Month/Year)	Change in Funds Rate Target (percentage points)	Change in Securities Holdings (Billions of $)
Policy Normalization	2/2018 – 6/2019	1.00	−594[a]
Policy Reversal	7/2019 – 2/2020	−0.75	253
Pandemic Expansion	3/2020 – 2/2021	−1.50	3179
Inflation Forbearance	3/2021 – 2/2022	0.00	1452[b]
Fighting Inflation	3/2022 – 8/2024	5.25	−1778[c]
Interest Rate Cuts	9/2024 – present	−1.75	−283[d]

Source: Authors' analysis and calculations, Federal Reserve Economic Data (FRED).
Notes: The funds rate target is calculated as the average of the series "Federal Funds Target Range - Upper Limit" and "Federal Funds Target Range - Lower Limit." The change is calculated from the last day of the month before the start date of the episode through the last day of the last month of the episode. Total securities holdings are the sum of "Assets: Securities Held Outright: U.S. Treasury Securities: All: Wednesday Level", "Assets: Securities Held Outright: Mortgage-Backed Securities: Wednesday Level" and "Assets: Securities Held Outright: Federal Agency Debt Securities: All: Wednesday Level". The change is calculated from the last Wednesday of the month before the start date of the episode to the last Wednesday of the last month of the episode.
[a] The change is calculated through the end of July 2019; asset reductions were ended in August 2019.
[b] The change is calculated through the end of May 2022; asset purchases were ended in June 2022.
[c] The change is calculated starting from the end of May 2022.
[d] The last observation of securities holdings is May 6, 2026.

and gradually reduce the Fed's holdings of securities, which had mushroomed during and after the global financial crisis.[1]

Figure 1 shows the midpoint of the Federal Reserve's target range for the federal funds rate for 2015 to 2026. The first increase away from the lower bound occurred in December 2015. In total, the target rose 1.25 percentage points during Yellen's tenure. Figure 2 shows Federal Reserve holdings of Treasury securities and mortgage-backed securities and agency debt. The holdings began to be reduced in October 2017, initially with caps of $6 billion per month for Treasuries and $4 billion per month for MBS and agency debt (Minutes, 9/19–20/2017, p. 10). Total holdings of these assets declined by $52 billion between the end of September 2017 and the end of February 2018.

Starting with Powell's first meeting as chair in March 2018, the FOMC continued the pattern of federal funds rate target increases and asset reductions. Figure 1 shows that the funds rate target was increased another percentage point in four steps in 2018. It then remained at a range of 2.25–2.50% through July 2019. The rate at which Fed holdings of Treasury securities, MBS, and agency debt were allowed to decline was gradually increased according to the schedule the FOMC had laid out in June 2017 (Minutes, 6/13–14/2017, p. 3). The cap reached $50 billion per month in October 2018 and held steady at that level through

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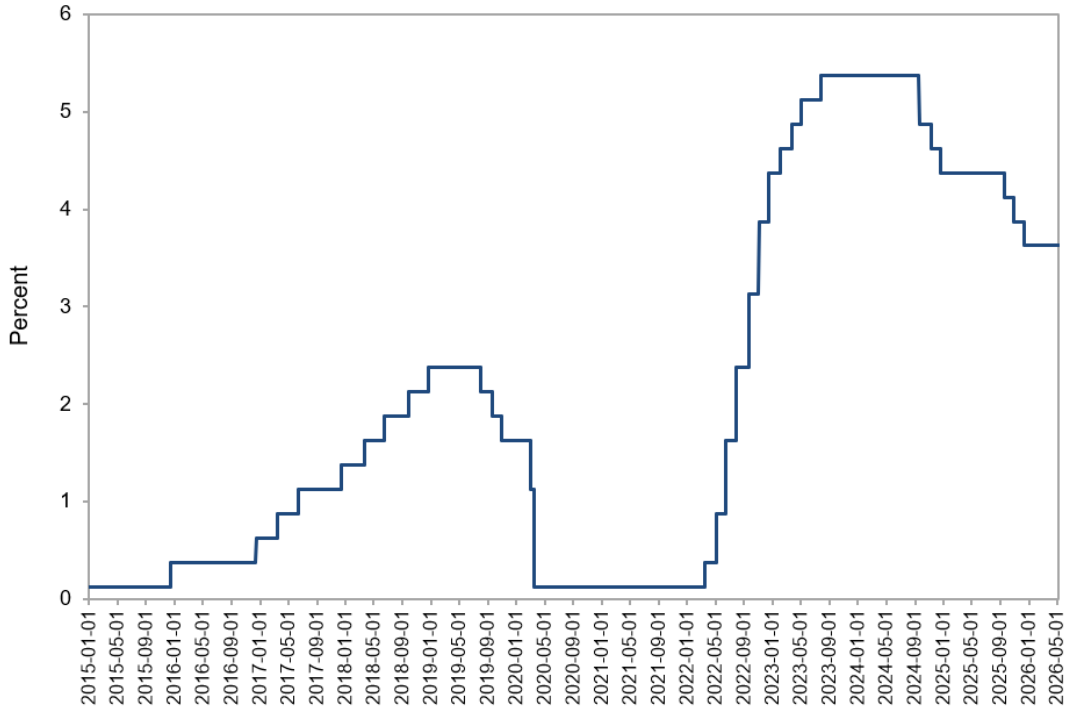
1. The normalization plans were issued in September 2014 and augmented in March 2015 (https://www.federalreserve.gov/monetarypolicy/policy-normalization-discussions-communications-history.htm).

Figure 1. Midpoint of the Target Range for the Federal Funds Rate 2015–2026



Source: FRED.
Notes: Average of the series "Federal Funds Target Range - Upper Limit" and "Federal Funds Target Range - Lower Limit."

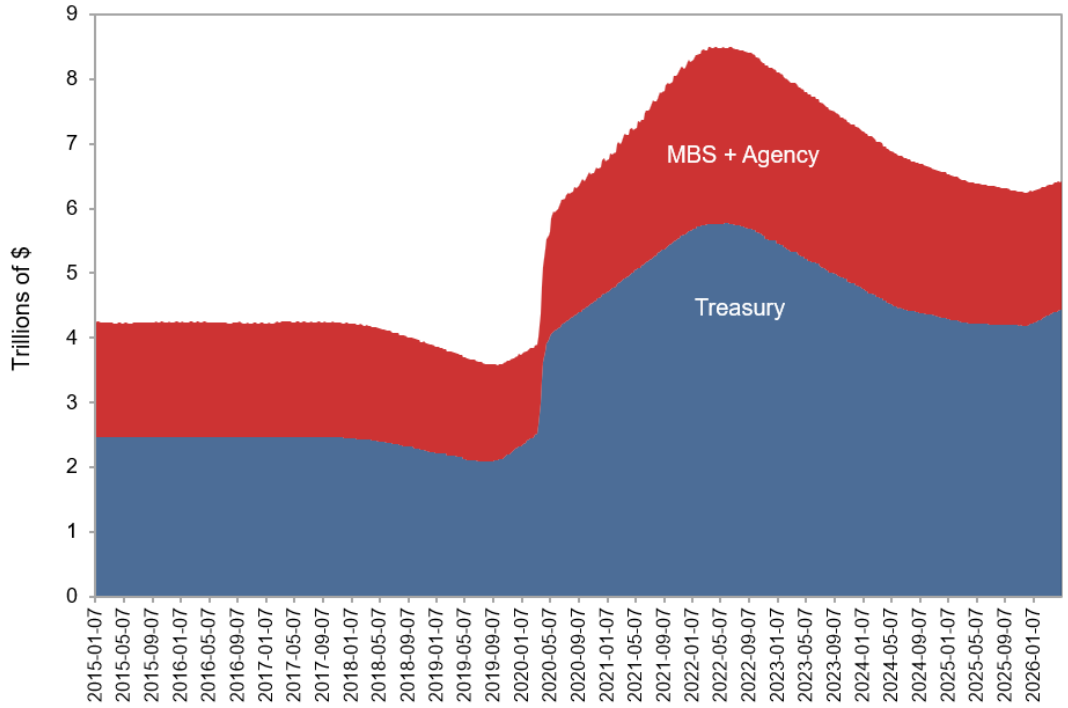
April 2019. It was then reduced to $35 billion per month through the end of July 2019 (Minutes, 3/19–20/2019, p. 4). Fed holdings of these assets declined by $594 billion from the end of February 2018 through the end of July 2019.

B. Policy Reversal in Mid-2019

After leaving rates unchanged for six months, the FOMC discussed reducing the target for the funds rate at the June 2019 FOMC meeting but decided to wait. At the next meeting (in late July), the Committee reduced the target by 25 basis points, despite a consensus that conditions had improved somewhat from the month before (Minutes, 7/30–31/2019, pp. 9–10). This reduction was followed by two more 25-basis-point cuts—in mid-September and at the end of October. The target then remained unchanged at 1.5–1.75% until early March 2020.

With regard to the balance sheet, at the January 2019 meeting, a staff presentation suggested that, consistent with the FOMC's decision to implement policy in an "ample reserves" regime, the efficient level of securities holdings might be reached in the latter half of 2019. (Minutes, 1/29–30/2019, p. 10). This led the Committee to release a statement at its March meeting saying that it would slow its reduction in its asset holdings beginning in May, and that it would then hold the size of the balance sheet steady starting in October (Minutes, 3/19–20/2019, p. 4). At the July 2019 meeting, however, the decision was made to accelerate the end of net asset reductions to August 1, 2019 (Minutes, 7/30–31/2019, p. 13). Finally, in

Figure 2. Federal Reserve Holdings of Securities
2015–2026



Source: FRED.
Notes: The area in blue shows the Federal Reserve's holdings of Treasury securities (series "Assets: Securities Held Outright: U.S. Treasury Securities: All: Wednesday Level"). The area in red shows its holdings of mortgage-backed securities and agency debt securities (sum of series "Assets: Securities Held Outright: Mortgage-Backed Securities: Wednesday Level" and "Assets: Securities Held Outright: Federal Agency Debt Securities: All: Wednesday Level").

October 2019, the Committee decided to start purchasing Treasury bills again to "ensure that the supply of reserves remains ample," and to "conduct term and overnight repurchase agreement operations at least through January of next year to ensure that the supply of reserves remains ample even during periods of sharp increases in non-reserve liabilities" (both quotations from Federal Reserve Press Release, October 11, 2019, "Statement Regarding Monetary Policy Implementation"). Figure 2 shows that between the end of July 2019 and the end of February 2020, Fed holdings of Treasury, MBS, and agency securities rose by $253 billion.

C. Aggressive Response to the COVID-19 Pandemic in 2020 and Early 2021

When the pandemic reached the United States in early March 2020, the Federal Reserve took extraordinary expansionary actions. Figure 1 shows that the FOMC decided to reduce the target for the funds rate by 50 basis points on March 3. Then on March 15, it reduced the target by another 100 basis points, to the effective lower bound of 0–0.25%. This reduction was combined with the statement that "[t]he Committee expects to maintain this target range until it is confident that the economy has weathered recent events and is on track to achieve its maximum employment and price stability goals" (Minutes, 3/15/2020, p. 11). This somewhat vague forward guidance was replaced in September 2020 following the adoption of a revised

"Statement on Longer-Run Goals and Monetary Policy Strategy" in August (FOMC, 2020). The new guidance said: "The Committee decided to keep the target range for the federal funds rate at 0 to ¼ percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time" (Minutes, 9/15–16/2020, p. 14).

The actions the FOMC took on asset purchases early in the pandemic were even more aggressive. At the March 15, 2020 meeting, the Committee instructed the Open Market Desk to increase over coming months "holdings of Treasury securities and agency mortgage-backed securities (MBS) by at least $500 billion and by at least $200 billion, respectively" (Minutes, p. 11). In June, the guidance was changed to say that purchases would occur "at least at the current pace to sustain smooth functioning of markets for these securities" (Minutes, 6/9–10/2020, p. 13). This guidance was maintained essentially unchanged until December 2020, when the new instruction was to "[i]ncrease the System Open Market Account holdings of Treasury securities by $80 billion per month and of agency mortgage-backed securities (MBS) by $40 billion per month," and to "[i]ncrease holdings of Treasury securities and agency MBS by additional amounts and purchase agency commercial mortgage-backed securities (CMBS) as needed to sustain smooth functioning of markets for these securities." This direction was accompanied by the statement that purchases would continue at this rate "until substantial further progress has been made toward the Committee's maximum employment and price stability goals" (all three quotations, Minutes, 12/15–16/2020, pp. 11 and 12). Figure 2 shows that system holdings of Treasury securities, MBS, and agency debt increased by an astounding $3.2 trillion between the end of February 2020 and the end of February 2021.[2]

D. Continued Loose Policy in 2021 as Inflation Surged

Inflation, which had been slightly below the Fed's 2% target before the pandemic, fell early in the pandemic. But it then rose sharply. The 1-month percentage change in the core PCE price index (at an annual rate) was 5.0% in March 2021, and the 12-month change in the headline index reached 2.7%.[3] From that point on, the inflation readings were consistently well above 2%. Nevertheless, the FOMC continued with highly expansionary policy until early 2022.

Figure 1 shows that over the entire period March 2021 through February 2022, the funds rate target was 0–0.25%. The forward guidance that was issued in September 2020 was repeated verbatim until December 2021. At that meeting, the guidance was softened somewhat (Minutes, 12/14–15/2021, p. 13), and in January 2022, it was changed to say: "With inflation well above 2 percent and a strong labor market, the Committee expects it will soon be appropriate to raise the target range for the federal funds rate" (Minutes, 1/25–26/2022, p. 19).

Asset purchases also continued throughout much of 2021. The FOMC instructed the desk to purchase $80 billion of Treasury securities and $40 billion of agency mortgage-backed securities per month at every meeting from March 2021 through November 2021. Likewise, the forward guidance about those purchases remained in effect until the September 2021 meeting. At that point, the Committee statement said that "a moderation in the pace of asset purchases may soon be warranted" (Minutes, 9/21–22/2021, p. 12), and starting in November, the Committee began to slow the pace of purchases (Minutes, 11/2–3/2021, p. 11–

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2. The Fed also opened (or in some cases, reopened) a large number of emergency liquidity facilities in the second half of March and the first half of April 2020 (Minutes, 4/28–29/2020, pp. 3 and 5, and the Federal Reserve press releases of March 23, 2020 and April 9, 2020).

3. When our interest is in actual inflation over short periods of time or in moderate variations in actual inflation, we report core inflation. Otherwise, we use headline inflation over 12 months.

12). In January 2022, the FOMC decided to end asset purchases in March and adopted a new "Principles for Reducing the Size of the Federal Reserve's Balance Sheet" (Minutes, 1/25–26/2022, pp. 19 and 11). This set of broad guidelines called for "significantly reducing the size of the Federal Reserve's balance sheet," but did not offer specific parameters (p. 11).[4]

E. Rapid Tightening in 2022 and 2023 to Fight Inflation

Figure 1 shows that the FOMC began to raise the funds rate target in March 2022. Between then and the final rate increase in July 2023, the range for the funds rate increased by 5.25 percentage points. Both the ultimate size of the increase and the speed were unprecedented in the post-Volcker era. The funds rate target was raised by 75 basis points at four consecutive meetings in mid-2022. For most of the period, the forward guidance took a relatively minimalist form: "[T]he Committee … anticipates that ongoing increases in the target range will be appropriate" (Minutes, 3/15–16/2022, p. 12). In November 2022, the guidance in the policy statement was augmented to read: "The Committee anticipates that ongoing increases in the target range will be appropriate in order to attain a stance of monetary policy that is sufficiently restrictive to return inflation to 2 percent over time" (Minutes, 11/1–2/2022, p. 11). In March 2023, the Committee began to signal that the end of increases was in sight, by changing the language to "some additional policy firming may be appropriate" (Minutes, 3/21–22/2023, p. 10). Even after rates were raised for the last time (at the July 2023 meeting), the language about possible future increases remained essentially the same for a number of meetings. The funds rate target remained at a range of 5.25–5.5% until mid-September 2024.

In addition to raising rates rapidly, the FOMC also embarked on a program of reducing the balance sheet. Consistent with the plan adopted at the previous meeting, in June 2022 the FOMC instructed the Desk to start reducing asset holdings by up to $47.5 billion per month (Minutes, 6/14–15/2022, pp. 10–11). The cap was then doubled starting in September 2022 (Minutes, 7/26–27/2022, p. 11). The pace was then slowed to a maximum of $60 billion per month beginning in June 2024, with some changes that made the shrinking of the balance sheet more concentrated on agency debt and agency MBS (Minutes, 4/30–5/1/2024, p. 10). All told, the Fed's holdings of Treasuries, agency MBS, and agency debt declined by roughly $1.8 trillion between the end of May 2022 and the end of August 2024.

F. Interest Rate Cuts Starting in Mid-2024 and Threats to Fed Independence

The final episode in our broad chronology of monetary policy during the Powell era begins with the first interest rate cut following the 2022 tightening. In mid-September 2024, the FOMC cut the funds rate target by 50 basis points. The Committee then reduced the target by an additional 25 basis points at each of the next two meetings. The Minutes for the December 2024 meeting said that "after this meeting, the Committee would likely slow the pace of further adjustments to the stance of monetary policy," and, indeed, there were no further cuts until September 2025 (12/17–18/2024, p. 11). The funds rate target was reduced by another 75 basis points in three steps between September and December 2025, and there have been no further changes since then. Altogether, the funds rate target was reduced 1.75 percentage points from its previous high.

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4. In July 2021, the FOMC established a standing repurchase agreement facility (SRF) and the Foreign and International Monetary Authorities Repo Facility (FIMA). The Minutes said: "[P]articipants viewed the SRF and FIMA Repo Facility as important new tools, serving in backstop roles, that would support effective policy implementation and smooth market functioning" (7/27–28/2021, p. 3).

Even as the FOMC was cutting interest rates, the Committee continued to support reducing the Fed's asset holdings. The instructions that went into effect in June 2024—that is, rolling over principal payments from Treasuries after the first $25 billion, and reinvesting the principal payments for agency debt and mortgage-backed securities over $35 billion also into Treasuries—continued until April 2025, when the pace of reduction was slowed (Minutes, 3/18–19/2025, p. 13). Finally, in October 2025, the FOMC directed the Desk to stop net asset reductions entirely starting on December 1 (Minutes, 10/28–29/2025, p. 15). Starting with the December 2025 meeting, the directions to the Desk were to roll over all principal payments from Treasuries, reinvest all principal payments from agency securities into Treasury bills, and "[i]ncrease the System Open Market Account holdings of securities through purchases of Treasury bills and, if needed, other Treasury securities with remaining maturities of 3 years or less to maintain an ample level of reserves" (Minutes, 12/9–10/2025, p. 14).

2025 and 2026 also witnessed fierce attacks on Fed independence. During his first term as president, Donald Trump had criticized Powell vociferously, and there were reports that he wanted to try to fire him. But the recent attacks have been even more extreme. They have included not just ferocious criticism and expressions of a desire for Powell to be terminated, but an attempt to fire a Fed governor, subpoenas, and threats of criminal indictments. Powell has resolutely defended Fed independence, and as of this writing, the firing of the governor is in litigation and the criminal investigation has been suspended.

II. Methodology

A central goal of the paper is to understand the motivations for monetary policy over the past eight years and to evaluate its "reasonableness." To do this, we draw on many sources.

A. Narrative Evidence on Motivation

To understand why policymakers did what they did, we read the official narrative accounts of Federal Reserve meetings. We focus primarily on the Minutes of the Federal Open Market Committee. These roughly 12,000-word summaries of FOMC meetings provide a discussion of current economic and financial conditions, a qualitative description of the staff forecast, members' discussion of the outlook, and the reasoning behind the policy decision. Assuming that the Minutes are prepared well and frankly, they should provide a parsimonious summary of what appears in the verbatim *Transcripts* of FOMC meetings. Indeed, one can imagine that they have the benefit of helping the reader avoid accidentally overweighting the comments of FOMC members with fringe views.[5]

Our approach is to read the Minutes in chronological order and identify the motivations that appear to carry the day and underlie policy actions. For the years when the *Transcripts* are available (2018–2020), we occasionally use them to check that the Minutes and our understanding of them are accurate. We also freely consult Powell's speeches, press conferences, and testimony for additional narrative evidence.

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5. In Romer and Romer (2023), we redo earlier narrative analysis using the *Transcripts* in place of the Minutes (or what used to be called the "Record of Policy Actions"). That the two sources yield very similar findings leads us to conclude that the Minutes do indeed provide accurate and honest summaries of what occurred at FOMC meetings. Similarly, López-Salido and Nelson (2026) argue that the Minutes are a good guide to what is contained in the *Transcripts*, and that by distilling what the FOMC views as the essence of the discussion, on some dimensions they have valued added relative to the *Transcripts*.

Table 2. Forecast Comparisons

	Inflation— Current Year	Inflation— Next Year	Unemp.— Current Year	Unemp.— Next Year
A. SEP vs. Tealbook, 2016–2020				
Avg. difference	0.06	0.12	0.01	0.24
Avg. absolute diff.	0.06	0.12	0.07	0.24
B. SEP vs. SPF, 2016–2020				
Avg. difference	−0.00	−0.02	−0.13	−0.21
Avg. absolute diff.	0.09	0.04	0.17	0.23
C. SEP vs. SPF, 2021–2026				
Avg. difference	0.01	0.04	−0.00	−0.01
Avg. absolute diff.	0.18	0.12	0.14	0.14

Source: Authors' calculations.
Notes: Numbers are in percentage points. Inflation for the current year refers to inflation from Q4 of the previous year to Q4 of the current year; inflation for next year refers to inflation from Q4 of the current year to Q4 of the next year. The unemployment forecasts are for Q4. The sample in Panel C ends with 2026 meeting 3. The SPF unemployment forecasts for next year are only available for the SPF forecasts conducted in the third and fourth quarters. See Appendix B for how we make the timing of the SPF comparable to that of the SEP and Tealbook. The forecast difference is calculated as the SEP forecast minus either the Tealbook or SPF forecast.

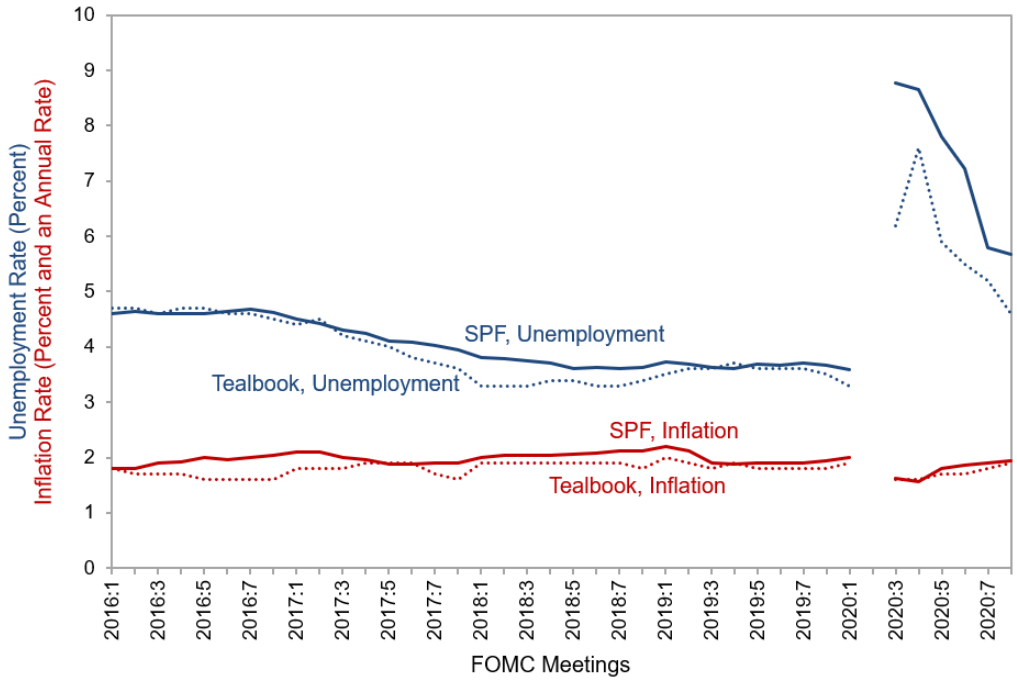
B. Forecasts

Since monetary policy is typically forward-looking, the Fed's own forecasts of economic conditions are clearly important for understanding why the FOMC acted as it did. Ideally, the forecasts would be those of the FOMC members. Unfortunately, the forecasts in the FOMC's Summary of Economic Projections (SEP) do not provide quarter-by-quarter projections. Rather, they provide forecasts that vary in horizon depending on the quarter in which the meeting occurs. We therefore use the Federal Reserve staff Tealbook projections. Because the Tealbook is prepared before each FOMC meeting, these forecasts are available eight times a year.

We focus on the forecasts of inflation as measured by the PCE deflator and forecasts of the unemployment rate. We use the quarterly forecasts for both variables (that is, quarterly inflation at an annual rate and the quarterly average unemployment rate) in the quarter four quarters after the current one. There is a tradeoff in choosing which quarter ahead to use. The very short-run forecast (particularly for inflation) is likely to be influenced by idiosyncratic factors that would dissipate before they could be influenced by monetary policy and are therefore essentially irrelevant to policy. The very long-run forecast will be affected by how the FOMC expects to act and how those decisions are expected to influence the path of the economy. For example, the forecast at extremely distant horizons is likely to always be for inflation to equal the FOMC's target and for unemployment to equal its natural rate. Four quarters after the current one appears to provide a reasonable balance between these considerations.

Judging from the Minutes, the Tealbook forecast appears to play a central role in FOMC deliberations, which suggests that it is a reasonable proxy for members' own forecasts. If one aligns the forecasts in the Tealbook to match the horizon of the median forecast in the SEP in a period of overlap, the two are indeed quite similar. Panel A of Table 2 compares the median SEP forecast and the Tealbook forecast for both the current year and the next year for both inflation and unemployment. Over the period 2016 to 2020, the

Figure 3. SPF and Tealbook Forecasts for the Quarter 4 Quarters Ahead 2016–2020



Sources: Federal Reserve Bank of Philadelphia and authors' calculations.
Notes: The Tealbook numbers correspond to those reported in the Tealbook. The SPF numbers are adjusted to roughly match the timing of the Tealbook numbers. See Appendix A for specifics of the sources. See Appendix B for the specifics of the adjustments to the SPF data and for an explanation of why we show no forecast for either the Tealbook or the SPF corresponding to 2020 meeting 2.

deviations between the SEP and Tealbook forecasts are generally small for both forecast horizons and both series. The largest departure, which is for the next year's unemployment rate, stems largely from the fact that in 2020 the FOMC was more pessimistic than the staff about 2021 unemployment.

Unfortunately, the Tealbooks are only released with a five-year lag, so the last year for which we have them is 2020. As the continuation of the Tealbook forecast for 2021 to the present, we use the median of the Survey of Professional Forecasters (SPF). At a quarterly frequency, the SPF only goes out four quarters, so that is another reason for choosing this horizon. The SPF is conducted quarterly in the middle of the quarter. As Appendix B explains, we use various weighted averages of the SPF forecasts to approximate the timing of the Tealbook forecasts.

Figure 3 shows the Tealbook and SPF forecasts for inflation and unemployment in the quarter four quarters ahead for 2016 through 2020. The figure shows that the Tealbook and SPF forecasts are remarkably similar in this period of overlap. The most notable difference is during the pandemic, when the Tealbook unemployment forecast is roughly 1 percentage point below the SPF forecast. This similarity suggests that using the SPF as a proxy for the Tealbook in analyzing Fed behavior is sensible. Moreover, Panel B of Table 2 shows that for the period when both the Tealbook and the SPF are available, the FOMC's forecasts contained in the SEP are as close to the SPF as they are to the Tealbook (with the differences between the SEP and the SPF for unemployment coming mainly from the fact that in 2020 the SPF was even more pessimistic than FOMC members).

Of course, it is possible that the SPF is a less good proxy for the FOMC's forecast after 2020. As a check on this, Panel C of Table 2 compares the SEP forecasts to the SPF for 2021 to 2026 (meeting 3). The first row shows that there are essentially no systematic differences between the two, and the second shows that observation-by-observation differences are generally small.

C. Comparison with a Qualitative Forward-Looking Taylor Rule

One way to judge whether monetary policy during the Powell era was reasonable is to compare it with the prescription of a qualitative forward-looking Taylor rule. A forward-looking Taylor rule summarizes how monetary policy has behaved in successful periods in the past. It also captures the implications of the most widely-accepted models of what monetary policy can accomplish. Such a rule suggests that the Fed's target for the funds rate should be high relative to its estimate of the neutral funds rate (i_t^*) when unemployment is forecast to be below its natural rate ($\bar{u}_t$) and/or inflation is forecast to be above the Fed's target (π^*). Conversely, the target funds rate should be low relative to the neutral rate when unemployment is forecast to be above the natural rate and/or inflation is forecast to be below target. Now literally specifying such a forward-looking Taylor rule and comparing its predictions with what was actually done is likely to have limited value. The parameters of such a rule surely vary over time, and there is no single widely accepted specification. But what we can do is check if monetary policy was moving in a direction that roughly corresponded with the qualitative predictions of such a rule and was roughly appropriate given macroeconomic forecasts.

We find Figure 4 a helpful way to visualize how the FOMC's choices of its funds rate target were related to its outlook in different periods. Each point in Figure 4 corresponds to an FOMC meeting. The horizontal axis shows a summary statistic of the outlook for the economy in the quarter four quarters after the meeting. Specifically, it is the difference between the forecast of inflation in that quarter and the FOMC's target ($\mathrm{E}_t[\pi_{t+4}] - \pi^*$), plus the difference between the FOMC's estimate of the natural rate and the forecast of the unemployment rate in that quarter ($\bar{u}_t - \mathrm{E}_t[u_{t+4}]$). We obtain our estimate of the natural rate using the long-run level of unemployment in the SEP. As an example of our summary statistic, for an inflation target of 2% and a natural rate of 4%, if the forecast of inflation four quarters ahead is 3% and the forecast of unemployment is 3.5%, our summary measure of the outlook would be 1.5 percentage points. Thus, higher values of the summary statistic correspond to forecasts of higher inflation and/or lower unemployment.[6]

The vertical axis in Figure 4 shows the difference between the midpoint of the target range for the federal funds rate set at the meeting and the FOMC's estimate of the neutral rate ($i_t - i_t^*$). We obtain our estimate of the neutral rate using the long-run funds rate in the SEP. Observations are labeled by the year and by the FOMC meeting number within the year (1 through 8), with some labels omitted to improve readability. In short, the figure shows the relationship between the target funds rate and the outlook. The figure corresponds to the time period from the first FOMC meeting of 2016 to the third FOMC meeting of 2026. Appendix B provides additional information about the construction of the figure.

The figure obviously does not have a structural interpretation; how the position of the economy in the figure changes from one meeting to the next depends on changes in both monetary policy and the outlook (which will be influenced by past changes in policy). In addition, even though the Tealbook and SPF forecasts are very similar to the FOMC's, the forecasts for the quarter four quarters after a meeting are an

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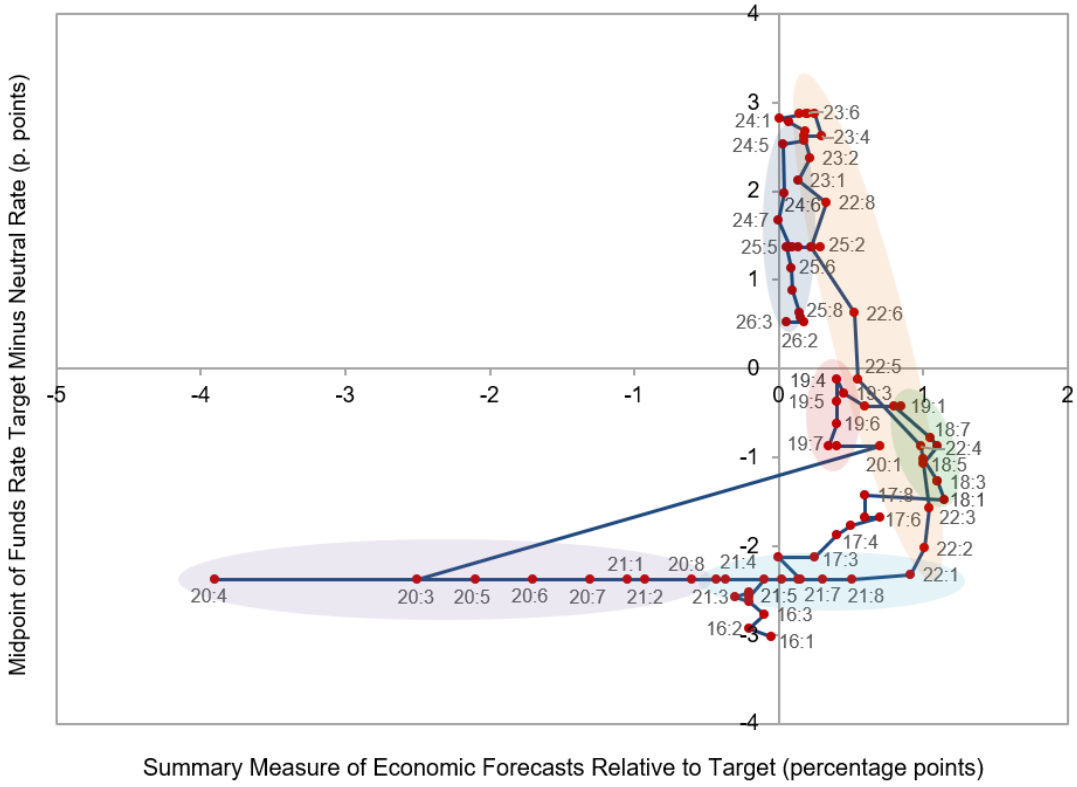
6. The choice of equal weights on inflation and unemployment is for simplicity. Substantial changes in the weights (such as doubling or halving the weight on unemployment) have little effect on the messages from the figure. As discussed above, because the FOMC does not make quarterly forecasts, the forecasts we use are those from the Tealbook (through 2020) and the SPF (thereafter).

Figure 4. Scatterplot of Forecasts (Relative to Target) and Funds Rate (Relative to Neutral) 2016 to 2026

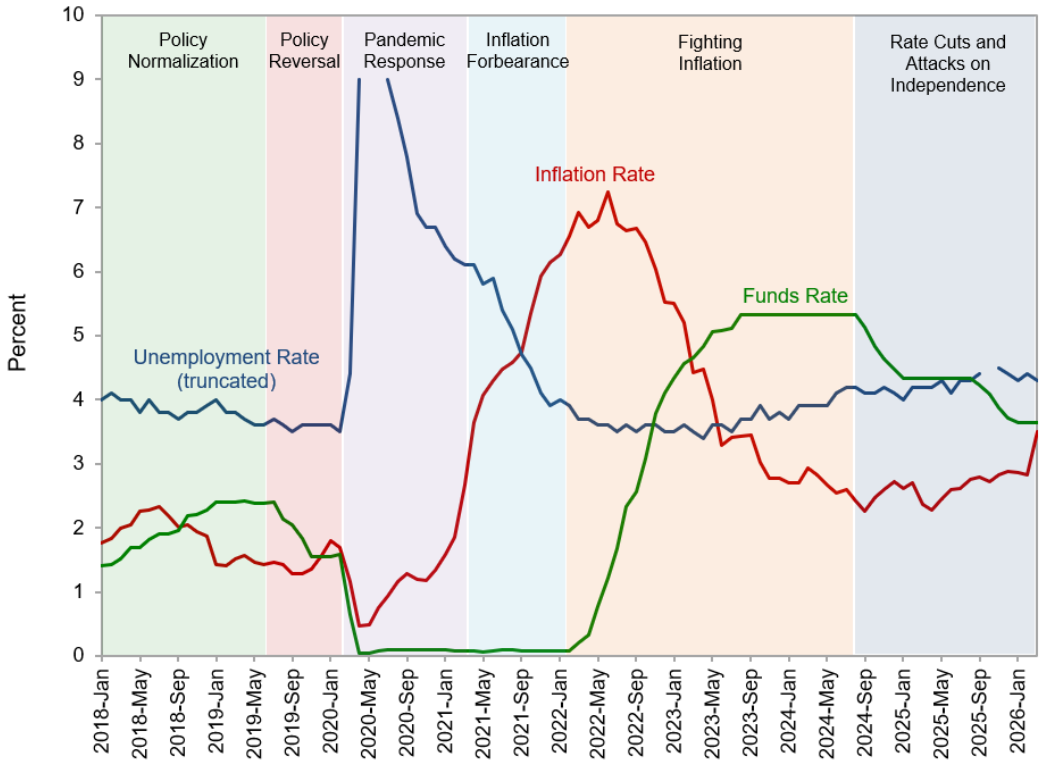


Source: Authors' calculations.
Notes: The labels next to the observations report the year followed by the number of the FOMC meeting within the year. See the text and Appendix B for a detailed description of the figure. The colored ovals correspond to the policy episodes identified in Section I: green—policy normalization in 2018 and early 2019; pink—policy reversal in mid-2019; purple—aggressive response to the COVID-19 pandemic in 2020 and early 2021; aqua—continued loose policy in 2021 as inflation surged; peach—rapid tightening in 2022 and 2023 to fight inflation; blue gray—interest rate cuts starting in mid-2024 and threats to Fed independence.

imperfect summary of the FOMC's outlook. Other horizons are relevant, the Committee may judge that the risks are asymmetric around the modal outcome, and its estimate of the current natural rate may not correspond to its estimate of the long-run unemployment rate. Likewise, its estimate of the current neutral funds rate may not be the same as its estimate of the long-run funds rate.

Nonetheless, we find the figure useful for thinking about the reasonableness of policy. For example, responding to a weaker outlook by reducing the target rate, which would show up as a movement to the left and down in the figure, is on its face reasonable. On the other hand, absent other important considerations, an extended period of a strong outlook and a target rate below the neutral rate, which would correspond to being in the lower right quadrant, would be troubling about policy's reasonableness. The same would be true of reducing an already below-neutral target in the face of a strong outlook, which would be reflected as a downward movement within the lower right quadrant.

Figure 5. Actual Outcomes for Inflation, Unemployment, and the Funds Rate 2018 to 2026



Source: FRED.
Notes: The inflation rate is the percentage change in the PCE price index (series "Personal Consumption Expenditures: Chain-type Price Index") from the month 12 months earlier. The unemployment data are monthly (series "Unemployment Rate"). We have left out the observations for May and June 2020 and truncated those for April and July 2020 so that other observations are more visible. The actual values for unemployment in these months are: April (14.8%), May (13.2%), June (11.0%), and July (10.2%). The funds rate (series "Federal Funds Effective Rate") is the monthly average of daily figures.

D. Comparison with Actual Outcomes

Finally, the ultimate test of whether monetary policy was reasonable over the past eight years depends on actual outcomes. Thus, we also look at what current estimates tell us about inflation and unemployment since 2018. This is obviously a somewhat unfair test. The Federal Reserve has no control over many of the shocks that hit the economy and the country—both negative and positive. Nevertheless, a systematic examination of how the economy actually fared is a useful complement to the more nuanced analysis of whether the actions the Powell Fed took were reasonable given what they believed at the time. Figure 5 shows the actual data for inflation and unemployment, along with the monthly effective federal funds rate for the period 2016 to 2026. The colored bars indicate the six broad episodes of our chronology.

III. Analysis of 2018 and 2019

The pre-pandemic period of Powell's tenure as chair falls naturally into two subperiods: the continuation over the course of 2018 of the normalization that began under Chair Janet Yellen, and the reversal in direction in 2019 of both interest rates and the balance sheet.

A. Policy Normalization in 2018 and Early 2019

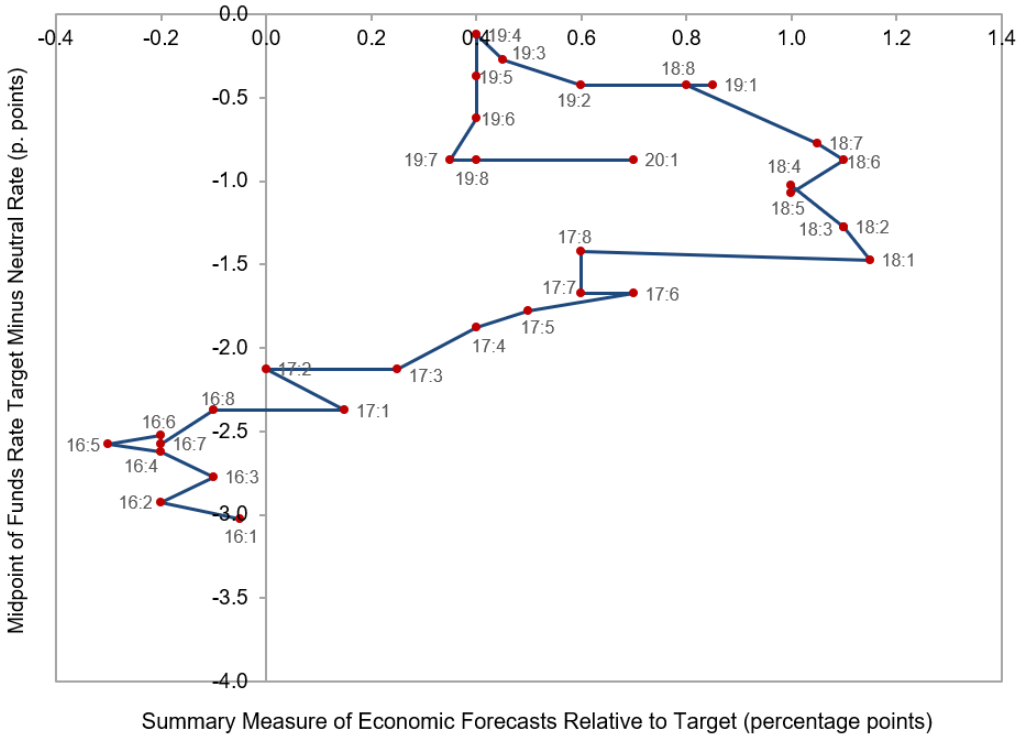
Motivation. In March 2018, at the first FOMC meeting chaired by Powell, the most recent data showed the unemployment rate at 4.1%. In the staff forecast: "The unemployment rate was projected to decline further over the next few years and to continue to run below the staff's estimate of its longer-run natural rate over this period," and "[t]he staff projected that inflation would reach the Committee's 2 percent objective in 2019" (Minutes, 3/20–21/2018, p. 5). The FOMC agreed: "Most participants described labor market conditions as strong" and thought that recent developments "had increased the likelihood of progress toward the Committee's 2 percent inflation objective" (p. 7). "[A]lmost all" participants supported an increase in the funds rate, but agreed that with the increase, monetary policy would remain "accommodative" (that is, the funds rate would be below its neutral level) (p. 8).

The main change from March to November 2018 (the meeting before the FOMC's last rate increase) was that the stronger outlook for unemployment and inflation went from projected to largely realized. The most recently reported unemployment rate was 3.7%; in the staff forecast, similarly to March: "The unemployment rate was projected to decline further below the staff's estimate of its longer-run natural rate" in 2019, "but to bottom out in 2020 and begin to edge up in 2021" (Minutes, 11/7–8/2018, p. 8). The most recently reported figure for 12-month core PCE inflation was 2.0% (versus 1.5% in March), and the staff, rather than expecting inflation to rise to 2%, "expected both total and core PCE price inflation to remain close to 2 percent through the medium term" (p. 8). In the FOMC, "above-trend economic growth [was] expected to continue before slowing to a pace closer to trend over the medium term" (p. 8), with the unemployment rate "at a historically low level" (p. 9). And: "In general, participants viewed recent price developments as consistent with their expectation that inflation would remain near the Committee's symmetric 2 percent objective on a sustained basis" (p. 9).

The Minutes generally do not provide sharp descriptions of the link between the Committee's view of the outlook and its policy decisions. For example, after extensive discussions of the staff and Committee's assessments of the outlook and how those had changed since the previous meeting, the March 2018 Minutes merely report: "Based on their current assessments, almost all participants expressed the view that it would be appropriate for the Committee to raise the target range for the federal funds rate 25 basis points at this meeting" (Minutes, 3/20–21/2018, p. 8). The clearest statement of the link from the outlook to the Committee's thinking about the overall path of the funds rate comes from the June meeting: "[P]articipants generally judged that, with the economy already very strong and inflation expected to run at 2 percent on a sustained basis over the medium term, it would likely be appropriate to continue gradually raising the target range for the federal funds rate to a setting that was at or somewhat above their estimates of its longer-run level by 2019 or 2020" (Minutes, 6/12–13/2018, p. 8).

In addition to raising its interest rate target, throughout 2018 the FOMC continued on the path of slowly reducing the size of the Fed's balance sheet that had been laid out in June 2017. Although there were various briefings and discussions about how the shrinking of the balance sheet was affecting financial

Figure 6. Scatterplot of Forecasts (Relative to Target) and Funds Rate (Relative to Neutral) 2016:1 to 2020:1



Source: Authors' calculations.
Notes: The labels next to the observations report the year followed by the number of the FOMC meeting within the year. See the text and Appendix B for a detailed description of the figure.

markets and what the likely end point of the balance sheet would be, the balance sheet received almost no attention in discussions of monetary policy.

Reasonableness. Figure 6 shows the observations from the scatter plot in Figure 4 just for the period from the start of 2016 to the eve of the pandemic. It shows that over the course of 2017 and 2018, the FOMC gradually raised the funds rate in the face of a strong—and generally strengthening—outlook. In January 2016 (meeting 1), just after the FOMC (at that point under Yellen) had first increased the target from the effective lower bound, the outlook was for inflation to be slightly below the FOMC's target and for unemployment to be slightly below its normal level. In December 2018, when the FOMC made its last increase, the forecast was for inflation to still be slightly below target, and for unemployment to be a full point below the natural rate. But despite the increases and the strong outlook, at that point the FOMC's target funds rate was still roughly half a percentage point below its estimate of its long-run level.

This discussion suggests that the decisions to raise rates in 2018 (and to continue with balance sheet normalization in 2018 and into 2019) were very reasonable. The outlook was strong, and so raising the target fund rate toward neutral was appropriate. The case for where these decisions left the Committee in December 2018 is less clear-cut, since it involved a funds rate still below neutral in the face of a strong outlook. However, had the Committee continued on its path of raising its target 25 basis points every other meeting, the funds rate would have reached the Committee's estimate of its normal level by mid-2019 and been noticeably above by year-end. The repeated shortfalls of aggregate demand over the previous years

and the failures of inflation to rise to 2% made it very defensible for the Committee to have been moving gradually rather than feeling a need to rush. We therefore conclude that the Committee's decisions during the year were reasonable.

B. Policy Reversal in the Second Half of 2019

The FOMC reversed course on both interest rates and the balance sheet in 2019. We discuss each in turn.

Interest Rate Cuts—Motivation. The interest rate cuts appear to have been motivated by several factors: weaker inflation readings, some downgrading of the outlook for the real economy and concern about downside risks, concern about inflation's repeated failure to return to 2%, and perhaps an increased weight on the benefits of a strong economy and changing views about the possibilities for a hot labor market not leading to inflation.

The downgrading of the outlook actually started at the December 2018 FOMC meeting. The description of the staff's inflation outlook reverted to language like that earlier in the year, saying that "[c]ore PCE price inflation was forecast to move up to 2 percent in 2019" (Minutes, 12/18–19/2018, p. 7). In addition: "Participants commented on … [v]arious factors that could pose downside risks for domestic economic growth and inflation" (p. 9). By June 2019, the staff no longer expected unemployment to fall, and the summary of the staff forecast did not mention inflation returning to 2%: "The unemployment rate was projected to be roughly flat through 2021 and remain below the staff's estimate of its longer-run natural rate. … Both total and core inflation were projected to move up slightly next year, … but nevertheless to continue to run below 2 percent" (Minutes, 6/18–19/2019, p. 7). In the FOMC: "Participants judged that uncertainties and downside risks surrounding the economic outlook had increased significantly over recent weeks" (p. 7), and "many participants viewed the risks to the outlook for inflation as weighted to the downside" (p. 8).

Together with slightly adverse further news, these considerations led the FOMC to lower its target range for the funds rate by 25 basis points at each of the next three meetings. In July, for example, supporters of a rate cut cited "signs of deceleration in economic activity in recent quarters" and "concerns about the outlook for inflation," and they argued that "a policy easing at this meeting would be a prudent step from a risk-management perspective" (Minutes, 7/30–31/2019, p. 11). Powell emphasized this perspective in his press conference after the meeting. In response to the question: "Would you say … [t]his is sort of an insurance cut and not a data-dependent cut?" Powell responded: "Yes. … I gave three reasons for what we did, and that is to insure against downside risks to the outlook from weak global growth and trade tensions" (Press Conference, 7/31/2019, p. 6). Whether the focus on risk management in this case was a way of ensuring that the forecast truly incorporated probabilities of other outcomes or reflected the increasing emphasis on the importance of a strong labor market is impossible to tell.

One additional motivation for the rate cuts was that persistent forecast errors for inflation in the years since the global financial crisis had made the Committee particularly attentive to data on actual inflation. For example, in September: "Many participants also cited the level of inflation or inflation expectations as justifying a reduction of 25 basis points in the federal funds rate at this meeting. Inflation had generally fallen short of the Committee's objective for several years and, notwithstanding some stronger recent monthly readings on inflation, the 12-month rate was still below 2 percent" (Minutes, 9/17–18/2019, pp. 11–12).

Another factor that may have contributed to the decisions to cut rates was a view that the Phillips curve was relatively flat and that the benefits of a strong labor market were greater than previously believed (an issue we return to in our analysis of the Fed's slow response to the post-COVID inflation). As part of its

framework review, the Fed sponsored a "Fed Listens" initiative "to hear about how monetary policy affects peoples' daily lives and livelihoods" starting in February 2019.[7] Although the results were not formally discussed by the FOMC until December, that discussion suggests that the initiative and related developments may have affected the FOMC's thinking over the course of the year. In December: "Participants generally saw the feedback from *Fed Listens* events as reinforcing the importance of sustaining the economic expansion so that the effects of a persistently strong job market reach more of those who, in the past, had experienced difficulty finding employment. Several participants mentioned that sustaining strong labor market conditions … might increase the maximum sustainable level of employment over the longer run" (Minutes, 12/10–11/2019, p. 3). Also: "A few [participants] pointed to the continued absence of significant wage and price pressure … even as the unemployment rate had moved below most estimates of its longer-run level. A few participants raised the possibility that the maximum sustainable level of employment had increased as the expansion continued to draw workers who would otherwise not be in the labor force" (pp. 3–4). Others, however, raised concerns about potential harms from inflation and noted that "monetary policy is a blunt instrument whose effects cannot be targeted to specific communities" (p. 4).

Hints of these considerations came up earlier in the year. In March 2019, for example: "A few participants cited the combination of muted inflation pressures and expanding employment as a possible indication that some slack remained in the labor market" (Minutes, 3/19–20/2019, p. 11). As another example, in October, when the most recent reading on the unemployment rate was 3.5%: "A couple of participants judged that there was more room for the labor market to improve" (Minutes, October 29–30/2019, pp. 12–13).

Reasonableness. The developments in 2019 are reflected in the points in Figure 6 corresponding to that year's FOMC meetings. Over the first four meetings of the year, the forecast for unemployment crept up and the FOMC's estimate of the long-run funds rate crept down. The result was a movement to the left and up in the diagram, bringing it close to (but slightly to the right of) the origin by mid-year. The interest rate cuts starting with the fifth meeting in 2019 then show up as a downward movement in the diagram.

Given that the summary statistic for the outlook was still positive, the case for the rate cuts starting in July 2019 is far from obvious. They led to a situation in January 2020 (the last FOMC meeting before the pandemic) where 12-month inflation was somewhat below target but forecast to rise to very close to target, unemployment was more than a half-point below the natural rate and projected to fall slightly further, and the funds rate was about a point below the FOMC's estimate of its long-run level.[8] Moreover, the case for working aggressively to ensure that inflation would return to target was notably weaker than it had been in earlier years. For most of the period since the financial crisis, unemployment had been above the natural rate, implying no conflict between Fed's inflation and unemployment objectives. That was clearly no longer true in 2019.

It is impossible to know how the economy would have evolved absent the pandemic. On the eve of the pandemic in February 2020, unemployment was 3.5%, core PCE inflation over the three months ending in February was at an annual rate of 2.4%, and vacancies were continuing to fluctuate close to their highest levels since the start of the series in 2001. If the pandemic hadn't happened and the FOMC had stayed its course, perhaps the inflation readings would have proven to be temporary blips, or perhaps the strong economy would have caused the inflation to continue or even rise further. On the one hand, inflation had

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7. https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications-fed-listens-events-2019-2020.htm.

8. In the last pre-pandemic SEP in December 2019, the median SEP forecast of the unemployment rate in 2020Q4 was identical to the Tealbook's, and the forecast of inflation from 2019Q4 to 2020Q4 was 0.2 percentage point above the Tealbook's.

seemed quite impervious to the state of the economy in the years leading up to 2020, and short-run variations in inflation were common. On the other hand, the evidence from earlier episodes and the post-pandemic inflation shows that the imperviousness has limits, and more broadly, that times when the Fed has pursued policies it thought would lead to unemployment well below its estimate of the natural rate generally end badly (Romer and Romer, 2024a).

Balance Sheet Reversal—Motivation. The Fed's response to the global financial crisis and its aftermath had led to a ballooning of its balance sheet, resulting in reserve supply far above the level at which marginal reserve holdings stopped having any noticeable benefit other than the interest paid on them. As a result, reserve supply intersected far out on an essentially flat portion of the reserve demand curve. The Fed had long indicated a desire to transition from this regime of "abundant" reserves to one where reserves were merely "ample," with reserve supply much closer to the point where the marginal convenience benefit of reserves first reaches zero. In this regime, reserve supply would still meet reserve demand along a fairly flat portion of the reserve demand curve, so that equilibrium interest rates would be relatively insensitive to variations in supply—as opposed to the case of "scarce" reserves, where the relevant part of the demand curve is steep and small shifts in supply have large effects on rates.

As described in Section I.A, the Fed began shrinking its balance sheet with this objective in mind in October 2017, although it did not formally adopt the "ample reserves" terminology until January 2019 (Minutes, 1/29–30/2019, p. 12). In mid-September 2019, the Fed discovered that its reserve supply could easily tip into the regime of scarce reserves. On September 16 and especially September 17, interest rates spiked and became highly volatile. Some transactions that normally occurred at rates close to the federal funds rate took place at rates hundreds of basis points above, and markets were significantly disrupted (Anbil, Anderson, and Senyuz, 2020; Duffie, 2026).

At a proximate level, the spike and volatility in interest rates is easy to understand. Large corporate tax payments and the settlement of a large amount of Treasury debt led to a sudden, large fall in the quantity of reserves in the banking system. As a result, the price of holding reserves (that is, the spread between interest rates on other safe, short-term assets and the interest rate on reserves) rose (Anbil, Anderson, and Senyuz, 2020).

The more important issue is why reserves became scarce in a situation where reserve supply was far above traditional levels. Before the global financial crisis, the Fed's balance sheet was 6% of GDP and banks' total reserves were 0.3% of GDP; just before the volatility in September 2019, the corresponding figures were 18% and 7.3%.[9] But this too is not difficult to understand. Institutional and regulatory changes, notably the payment of interest on reserves and new liquidity requirements, greatly increased reserve demand and made it highly inelastic below some relatively high threshold (Cecchetti and Schoenholtz, 2026; Duffie, 2026; Anderson, Barbarino, Diercks, and Miran, 2026). Moreover, various factors made financial institutions that were in a position to lend when rates spiked reluctant to do so (Anbil, Anderson, and Senyuz, 2020; Minutes, 9/17–18/2019, p. 5). When reserve supply fell below the threshold, rates rose sharply and became very sensitive to small shifts in supply or demand.

These developments were inconsistent with the Fed's desire for an ample reserves regime. In addition to stepping in to address the immediate volatility, the Fed therefore responded to the evidence that reserves were not ample by increasing supply. At an unscheduled FOMC meeting on October 4, 2019 held "to review developments in money markets and to discuss steps the Committee could take to facilitate efficient and effective implementation of monetary policy," "all FOMC participants agreed that control over the federal funds rate was a priority and that recent money market developments suggested it was appropriate to . . .

9. Data for the size of the balance sheet are for 12/26/2007 and 9/11/2019; data for reserves are for 12/2007 and 8/2019; data for nominal GDP are for 2007Q4 and 2019Q3.

consider steps at this time to maintain a level of reserves consistent with the Committee's chosen ample-reserves regime" (Minutes, 10/29–30/2019, pp. 15 and 16). The Committee agreed that "[t]o ensure that the supply of reserves remains ample," it would expand reserve supply through purchases of Treasury bills "at least into the second quarter of next year" and conduct repurchase agreement operations "at least through January of next year" (p. 17).

Reasonableness. The Fed's decision to reverse course on shrinking the balance sheet was obviously appropriate. Although it is superficially tempting to want to return to the days of a small balance sheet and low reserves, the turbulence of September 2019 and the reasons for that turbulence show that doing so without major institutional changes is simply not possible. Had the Fed not reversed course, it risked turbulence like that of September 17 becoming commonplace.

The more interesting question is whether it is reasonable not to try to make changes that would allow a return to a small balance sheet and low reserves. The weight of the evidence is that that reluctance is very reasonable. Returning to the old regime would likely require either greatly reducing or completely eliminating both bank liquidity requirements and interest on reserves. It is hard to see a case for either change. Liquidity requirements were adopted after the global financial crisis to reduce the chances of a recurrence. And slashing interest on reserves would be equivalent to a large tax increase on reserves, which is hard to justify and which might risk moving even more of financial intermediation into less regulated institutions. Duffie (2026) and Anderson, Barbarino, Diercks, and Miran (2026) discuss various other possible regulatory and institutional changes that could lead to substantial reductions in the quantity of reserves needed for reserves to be "ample." Even with those changes, however, reserve demand would still be much higher than before the global financial crisis.

More broadly, a large Federal Reserve balance sheet merely means that a noticeable part of private agents' claims on the public sector take the form of interest-bearing reserves rather than interest-bearing Treasury debt. As long as in normal times the Fed uses some simple and predictable rule for the composition of its holdings of Treasury debt (such as holding only short-term debt, or mirroring the maturity structure of the full stock of Treasury debt), and so leaves debt management to the Treasury, this seems relatively inconsequential.

IV. Analysis of 2020 and 2021

In this section, we examine the motivation and reasonableness of monetary policy decisions in the two middle episodes of the Powell era: the pandemic and the post-pandemic inflation.

A. The Aggressive Response to the COVID-19 Pandemic in 2020 and Early 2021

As discussed in Section I, the Federal Reserve took extraordinary actions in response to the COVID-19 pandemic. The actions included promptly cutting the target for the federal funds rate to its lower bound, vast asset purchases, and the reopening of special facilities to support credit flows and financial market functioning.

Motivation. From the beginning, the FOMC expressed the motivation for the aggressive policy response primarily in terms of maintaining aggregate demand and meeting the Fed's dual mandate. The Minutes from the video conference on March 2, 2020, when the FOMC made the first rate cut, summarized participants' motivation this way: "Although a reduction in the policy rate would not slow the spread of

infection or remedy broken supply chains, it could help shore up the confidence of households, businesses, and financial markets; ease financial strains of consumers and firms; and provide meaningful support to the economy in the face of a large shock to demand" (Minutes, 3/15/2020, p. 13). Likewise, at the emergency meeting on March 15, "participants prominently cited the possibility of the virus outbreak becoming more widespread than expected. Such an event could lead to more wide-ranging temporary shutdowns, with adverse implications for the production of goods and services and for aggregate demand" (Minutes, 3/15/2020, p. 8). Policymakers also noted that "a stronger dollar, weaker demand, and lower oil prices were factors likely to put downward pressure on inflation in the period ahead" (p. 7).

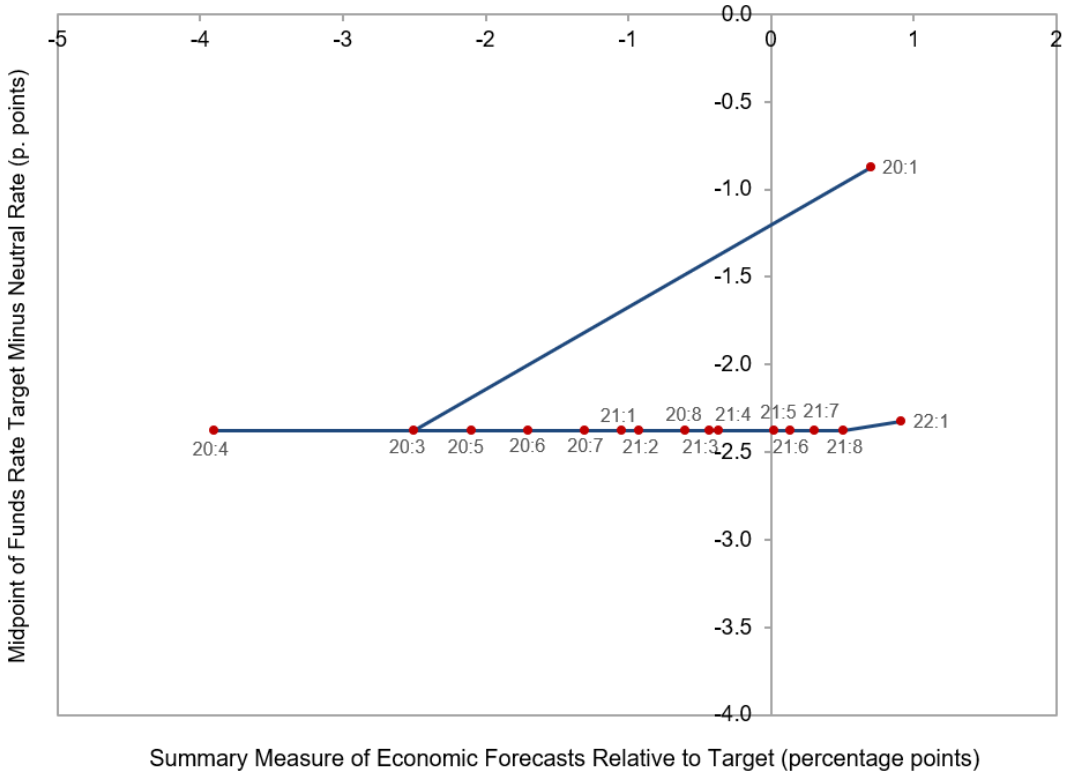
The narrative record also makes clear that financial stability concerns and market uproar were an important consideration early in the pandemic and were a motivation for action—particularly asset purchases and other measures to aid market functioning. The staff review of the financial situation at the March 15 meeting said: "Late in the intermeeting period, short-term funding markets showed signs of stress, with elevated demand for repo funding and increased short-term spreads. Trading conditions for Treasury securities and MBS were impaired" (Minutes, 3/15/2020, p. 4). Likewise, meeting participants "noted that financial markets had exhibited extraordinary turbulence and stresses" and "expressed concern about the disruptions to the functioning of these markets" (p. 8). Participants agreed to at least $700 billion of asset purchases to "support the smooth functioning of these securities markets, which in turn would help support the supply of credit to households and businesses" (p. 9).

By the April 2020 FOMC meeting, financial markets had stabilized substantially, so market disruption concerns began to play a less central role in the FOMC's discussions. But much concern continued to be expressed about the effects of the pandemic on real activity, employment, and inflation. In the staff outlook, "U.S. real GDP was forecast to plummet and the unemployment rate to soar in the second quarter of this year" and "[i]nflation was projected to weaken this year, reflecting both the deterioration in resource utilization and sizable expected declines in consumer energy prices" (Minutes, 4/28–29/2020, p. 7).

As 2020 went on, it became clear to the FOMC that economic conditions were improving. For example, at the July meeting, the staff reported that "[l]abor market conditions improved considerably in June" and "[p]articipants noted that the rebound in consumer spending from its trough in April had been particularly strong" (Minutes, 7/28–29/2020, pp. 4 and 8). Also: "Participants observed that many measures of financial market functioning were indicating that improvements achieved since the extreme turbulence in March had been sustained" (p. 9). However, the motivation given for continuing actions, including asset purchases, was not spelled out. The Minutes simply repeated the initial rationale that "the ongoing public health crisis would weigh heavily on economic activity, employment, and inflation in the near term and was posing considerable risks to the economic outlook over the medium term" (p. 11).

In August 2020, the FOMC adopted a revised version of its "Statement on Long-Run Goals and Monetary Policy Strategy" (FOMC, 2020). The revision was taken after much study, and was aimed at dealing with the major monetary policy challenges of the previous decade: inflation persistently below target, a low and falling equilibrium real interest rate, and more frequent hitting of the effective lower bound on interest rates. Among the changes embraced was adoption of flexible average inflation targeting as a way of ensuring that inflation truly hit the 2% target. In September 2020, the FOMC adopted forward guidance for the funds rate that said, in effect, that the funds rate would stay at the effective lower bound until inflation was firmly at the 2% target and employment was at its maximum level. The new forward guidance was viewed by participants as a way to "underscore the Committee's strong commitment to the goals and strategy articulated in the new consensus statement in pursuit of the Committee's statutory objectives" (Minutes, 9/15–16/2020, p. 12). Also in response to the new statement, in December 2020 the

Figure 7. Scatterplot of Forecasts (Relative to Target) and Funds Rate (Relative to Neutral) 2020:1 to 2022:1



Source: Authors' calculations.
Notes: The labels next to the observations report the year followed by the number of the FOMC meeting within the year. See the text and Appendix B for a detailed description of the figure. The upward movement shown by the observation for 2022 meeting 1 (22:1) stems from a small downward revision of the FOMC's estimate of the neutral rate.

Committee added stronger forward guidance for asset purchases. These two new statements guided policy for the remainder of 2020 and through much of the following year.

Reasonableness. The Federal Reserve's aggressive response to the pandemic, particularly the actions to ensure smooth financial market functioning, was surely reasonable and valuable. The pandemic was a new and frightening event that caused uproar in financial markets. Stock prices had tumbled worldwide, credit spreads were rising, and several credit markets showed clear signs of stress and dysfunction. Had the Federal Reserve not responded as aggressively as it did, conditions could have deteriorated to a breaking point. Instead, credit conditions stabilized in just a matter of weeks. In our view, the immediate response to the financial disruption caused by the pandemic is a high point of monetary policy under Chair Powell.

If one thinks in terms of the qualitative forward-looking Taylor rule, the Fed's actions during the first year of the pandemic also look reasonable. Figure 7 shows the subset of observations from Figure 4 that corresponds to the period from the first FOMC meeting of 2020 (January) through the first FOMC meeting of 2022 (January). At the January 2020 meeting, the sum of the amount by which the four-quarter-ahead forecast of inflation exceeded the 2% target and the amount by which the forecast for the unemployment rate four quarters ahead was below the Fed's estimate of the long-run unemployment rate was slightly

positive—driven primarily by an optimistic forecast of the unemployment rate. By the time of the first forecast after the outbreak of the pandemic, which was done for the April 2020 FOMC meeting, the outlook for both inflation and unemployment had deteriorated greatly, so that the sum of the deviations was strongly negative. In that situation, it seems highly reasonable that the FOMC had already cut the funds rate to effectively zero, putting it almost 2½ percentage points below its estimate of the neutral rate.[10]

As can be seen in the figure, the funds rate target didn't change as the forecasts worsened at the fourth meeting of 2020 (June)—consistent with the fact that the target was at the lower bound. Possibly more surprising is that there was no change in the target as the forecasts improved greatly in late 2020 and early 2021. By December 2020, the SEP called for four-quarter PCE inflation to be 1.8% in 2021Q4 and 1.9% in 2022Q4; the unemployment rate was projected to be 5.0% in 2021Q4 and 4.2% in 2022Q4. Given that inflation four quarters ahead was still forecast to be below target and unemployment was forecast to be above the natural rate, leaving the funds rate below neutral made sense. But with the forecasts of both variables moving so quickly toward the FOMC's targets, perhaps the funds rate should have been moving somewhat closer to neutral in late 2020 and early 2021. Of course, given the strong forward guidance and market and media focus on liftoff rather than the full path of the funds rate, such a move would have been fairly radical. But in a policy environment where actors were more accustomed to frequent policy adjustments, it might have been a sensible move.

Looking at actual outcomes for inflation and unemployment reinforces the sense that aggressive monetary expansion was sensible early in the pandemic, but perhaps policy should have been moving toward neutral by early 2021. As can be seen in Figure 5, the unemployment rate spiked dramatically in April 2020 as the economy shut down, but then fell rapidly. By February 2021, it was down to 6.2%. As FOMC participants had anticipated, inflation (measured as the 12-month change in the PCE price index) fell initially during the pandemic—hitting 0.5% in April 2020. It then rose steadily over 2020, reaching 1.8% in February 2021. Though clearly not yet back to normal, the gaps from the Fed's target for inflation and its estimate of the long-run rate of unemployment were closing fast. As a result, one could make a case for reducing the amount of monetary accommodation, while still leaving the funds rate target below neutral.

Another way that monetary policy may have been less than fully reasonable in this episode was in its focus on trying to raise aggregate demand. Even if low demand was responsible for depressing output and inflation, it may not have made sense to stimulate demand during a public health crisis that fed on human interaction. As discussed in Romer and Romer (2022), in such a situation, targeted fiscal support for those directly impacted is likely to be preferable to broad fiscal and monetary stimulus. Interestingly, some FOMC participants clearly contemplated the risk associated with greater economic activity. For example, at the June 2020 FOMC meeting, participants "expressed concerns about the possibility that an early reopening would contribute to a significant increase of infections" (Minutes, 6/9–10/2020, p. 11). However, the policy implication that they took from this was that "highly accommodative monetary policy and sustained support from fiscal policy [were] likely to be needed to facilitate a durable recovery in labor market conditions" (p. 11).

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10. As described in Appendix B, because the Tealbook that had been prepared for the scheduled March 17–18 FOMC meeting (which was canceled) was obviously grossly out of date by the time of the unscheduled March 15 meeting, we treat the forecast for the March 15 meeting (2020 meeting 2) as missing.

B. Continued Loose Policy as Inflation Surged in 2021

The funds rate target remained at its lower bound through all of 2021 and into 2022, even as inflation reached levels not seen since the 1970s. What motivated this policy stance, and was it reasonable?

Motivation. One motivation for the continued loose policy was the extreme forward guidance put in place for the funds rate in September 2020 following the framework review. When policymakers pledged to keep the funds rate at the lower bound until employment was at its maximum level ***and*** inflation was firmly above 2%, the FOMC had placed itself in a bind. Perhaps reflecting the deep concern with inflation that had been perennially below target, policymakers seemed not to have contemplated the possibility that high inflation could become a pressing problem before unemployment was back to its pre-pandemic level. Yet, supply shocks associated with the pandemic, particularly port congestion and shortages of key inputs such as silicon chips, caused exactly that situation. At meeting after meeting, policymakers chose to stand pat despite high and rising inflation because "[p]articipants indicated that the economy had not yet achieved the Committee's broad-based and inclusive maximum-employment goal" (Minutes, 7/27–28/2021, p. 10). Likewise, they continued to purchase assets at a rapid pace in part because of the forward guidance they had put in place in December 2020. For example, at the July 2021 meeting, participants "judged that the Committee's standard of 'substantial further progress' toward the maximum-employment and inflation goals had not yet been met, particularly with respect to labor market conditions," and so continued asset purchases at the same rate as the month before (p. 11).

Of course, this cannot be the entire explanation. When the forward guidance for the funds rate was put in place in September 2020: "Participants generally noted that outcome-based forward guidance for the federal funds rate of this type was not an unconditional commitment to a particular path," and made clear that "circumstances could arise in which the Committee judged that it would be appropriate to change its guidance, particularly if risks emerged that could impede the attainment of its economic objectives" (Minutes, 9/15–16/2020, p. 11). In our view, policymakers chose to adhere to the forward guidance because of the fundamental beliefs reflected in the 2020 framework.[11]

One important belief was that low inflation could be a continuing problem. The 2020 "Statement on Longer-Run Goals and Monetary Policy Strategy" said: "[T]he Committee judges that downward risks to employment and inflation have increased" (FOMC, 2020). This belief continued to be expressed by at least some FOMC participants throughout 2021, despite high actual inflation. For example, in June 2021: "Several other participants cautioned that downside risks to inflation remained because temporary price pressures might unwind faster than currently anticipated and because the forces that held down inflation and inflation expectations during the previous economic expansion had not gone away" (Minutes, 6/15–16/2021, pp. 10 –11). Similarly, in July: "Several participants also commented that price increases concentrated in a small number of categories were unlikely to change underlying inflation dynamics sufficiently to overcome the possibility of a persistent downward bias in inflation" (Minutes, 7/27–28/2021, p. 12). And in September, "several of these participants suggested that there would likely be sustained

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11. Another factor that may have contributed to the FOMC's adherence to the forward guidance for asset purchases was a fear of unsettling financial markets as happened in the 2013 "taper tantrum." At the July 2021 FOMC meeting where there was an initial discussion of eventual tapering of asset purchases: "Several participants noted that an earlier start to tapering could be accompanied by more gradual reductions in the purchase pace and that such a combination could mitigate the risk of an excessive tightening in financial conditions in response to a tapering announcement" (Minutes, 7/27–28/2021, p. 5). Likewise in September 2021, "a couple of participants observed that giving advance notice to the general public of a plan along these lines may reduce the risk of an adverse market reaction to a moderation in asset purchases" (Minutes, 9/21–22/2021, p. 9). At the July meeting monetary policymakers also "saw potential benefits in a pace of tapering that would end net asset purchases before the conditions currently specified in the Committee's forward guidance on the federal funds rate were likely to be met" (p. 5). Thus, fear of accelerating the end of asset purchases may have indirectly influenced the liftoff of the funds rate from the lower bound.

downward pressure on inflation in the years ahead" and "a major challenge facing policymakers … was to maintain a policy stance sufficiently accommodative to keep average inflation at 2 percent and thereby bolster the credibility of the Committee's new policy framework" (Minutes, 9/21–22/2021, p. 10). Thus, one reason policymakers may not have abandoned the forward guidance is that they held fast to the concern about low trend inflation that had inspired it.

Another important belief reflected in the 2020 framework was that the desired maximum employment was very high (Romer and Romer, 2024a). In announcing the revised "Statement on Longer-Run Goals and Monetary Policy Strategy," Powell said: "With regard to the employment side of our mandate, our revised statement emphasizes that maximum employment is a broad-based and inclusive goal. This change reflects our appreciation for the benefits of a strong labor market, particularly for many in low- and moderate-income communities" (Powell, 2020, p. 11). This notion that a very strong labor market could solve a multitude of problems was made explicit in a speech Powell gave in February 2021. He said: "A strong labor market that is sustained for an extended period can deliver substantial economic and social benefits, including higher employment and income levels, improved and expanded job opportunities, narrower economic disparities, and healing of the entrenched damage inflicted by past recessions on individuals' economic and personal well-being" (Powell, 2021, p. 1).

Though less explicit, there is also evidence from the Minutes that the FOMC's definition of maximum employment was very aggressive. In September 2021, when the most recent reading of the unemployment rate was 5.2% and the staff forecast was for the unemployment rate to reach "historically low levels," "[v]arious participants stressed that economic conditions were likely to justify keeping the rate at or near its lower bound over the next couple of years" and that "the economy was still well below maximum employment" (Minutes, 9/21–22/2021, pp. 6 and 10). Even in December 2021, when the most recent unemployment rate was down to 4.2% and "[p]articipants pointed to a number of signs that the U.S. labor market was very tight, including near-record rates of quits and job vacancies, as well as a notable pickup in wage growth," many participants only believed that "if the current pace of improvement continued, labor markets would fast approach maximum employment" (Minutes, 12/14–15/2020, pp. 9–10). Monetary policymakers may have chosen to look through the high inflation because they were deeply committed to achieving a very strong labor market post-pandemic.

A third crucial idea underlying the 2020 framework was that a tight labor market would not conflict with the price stability goal because the Phillips curve was very flat. Powell referred to this in his 2020 Jackson Hole speech, saying: "[O]ur view [is] that a robust job market can be sustained without causing an outbreak of inflation," and contrasting this with "earlier decades when the Phillips curve was steeper, inflation tended to rise noticeably in response to a strengthening labor market" (Powell, 2020, p. 11). The staff also cited a relatively flat Phillips curve in June 2021, when it said that "if the effects of supply constraints proved to be transitory, as expected, then the inflation record from the past 25 years suggested the possibility that low underlying trend inflation and a flat Phillips curve could cause inflation to revert to relatively low levels despite a strengthening economy" (Minutes, 6/15–16/2021, p. 9).

The belief that inflation was quite unresponsive to the state of the economy and that a tight labor market would have social benefits may explain why the FOMC seemed to largely ignore the large fiscal stimulus contained in the American Rescue Plan Act. The staff outlook presented at the March 2021 FOMC meeting noted that "the size of the ARP enacted in March was considerably larger than what the staff had assumed in the January projection. All told, real GDP growth was projected to be substantial this year and the unemployment rate was forecast to decline markedly" (Minutes, 3/16–17/2021, p. 7). Similarly, in light of "encouraging developments regarding the pandemic," "as well as the extent of the recent fiscal policy support, participants significantly revised up their projections for real GDP growth this year compared with

the projections they submitted last December. They noted, however, that economic activity and employment were currently well below levels consistent with maximum employment" (p. 8). Moreover: "Participants observed that the economic downturn had not fallen equally on all Americans and that lower-income and Black and Hispanic households had been disproportionately affected by the pandemic. A number of participants stressed that recently enacted fiscal support would help address some of the hardships faced by these groups and that monetary policy would also help by promoting the economy's return to the Committee's goals of broad-based and inclusive maximum employment and price stability" (p. 8). There was virtually no change in the FOMC's statement or in the projected path of the funds rate in the SEP.

A final factor that likely played a role in the FOMC's decision to continue highly expansionary monetary policy throughout 2021 and early 2022 were the repeated forecasts that extremely elevated inflation would be transitory. The staff outlook from March 2021 said: "[I]nflation was forecast to be temporarily boosted this year by the expected emergence of some production bottlenecks and supply constraints. Following the transitory increase this year, inflation was projected to run a bit below 2 percent next year" (Minutes, 3/16–17/2021, p. 8). In June: "The staff's near-term outlook for inflation was revised up markedly, but the staff continued to expect the rise in inflation this year to be transitory" (Minutes, 6/15–16/2021, p. 8). In September, though the baseline forecast was still for the rise in inflation to be transitory, the staff raised "the possibility of more severe and persistent supply issues" and "pointed to a risk that longer-run inflation expectations would move appreciably higher and lead to persistently elevated inflation" (Minutes, 9/21–22/2021, p. 6).

FOMC participants generally also expected the inflation to be transitory, but were perhaps a little less sanguine than the staff. For example, at the June 2021 meeting, "participants generally expected inflation to ease as the effect of these transitory factors dissipated, but several participants remarked that they anticipated that supply chain limitations and input shortages would put upward pressure on prices into next year" (Minutes, 6/15–16/2021, p. 10). At the September 2021 meeting, "participants observed that the inflation rate was elevated, and they expected that it would likely remain so in coming months before moderating" (Minutes, 9/21–22/2021, p. 8). In the September 2021 SEP, the median forecast for four-quarter PCE inflation was 2.2% for the fourth quarter of both 2022 and 2023.

The link between the forecast that inflation would be transitory and policy decisions is not spelled out in the Minutes. The prediction that inflation would be transitory may explain why policymakers weren't panicked about greatly missing their price stability goal. This may have enabled them to maintain their focus on reaching their optimistic estimate of maximum employment. Or, it could be that the flawed forecasts merely reflected or reinforced the idea that trend inflation was low. In this case, they may have had little additional impact beyond that essential idea.

Reasonableness. Was the FOMC's decision to leave rates at the lower bound and continue asset purchases through early 2022 reasonable? The simplest evidence that it was not comes from actual outcomes. As Figure 5 shows, the 12-month change in the PCE price index rose to a high of over 7% in mid-2022, and the unemployment rate fell to 3.5%. This unemployment rate is roughly a percentage point below the Congressional Budget Office's estimate of the non-cyclical rate of unemployment at the time (CBO, 2022) and a half a point below the median longer-run unemployment rate in the FOMC's Summary of Economic Projections, suggesting that the economy had crossed over into boom territory. The high inflation was exceedingly unpopular. A May 2022 poll found that inflation topped the list of biggest problems facing the country, with 70% of respondents identifying it as a very big problem (Pew Research Center, 2022).

Of course, actual outcomes are influenced by many factors other than monetary policy, so it is important to go further in assessing reasonableness. To do this, we consider again how the FOMC's

decisions compare with the implications of a qualitative forward-looking Taylor rule. Recall that Figure 7 shows the scatter plot for 2020 through 2022 of Fed interest rate decisions versus a parsimonious measure of forecasts of inflation and unemployment. Because the Tealbooks for 2021 and after have not yet been released, the forecasts from 2021 on are those of the Survey of Professional Forecasters.[12] Notice that as the sum of forecasts of economic conditions relative to target was rising strongly over 2021, the FOMC made no change in the funds rate target. Moreover, the sum of the two forecast deviations turned positive midway through 2021, and at the last two meetings of the year, inflation four quarters ahead was expected to be greater than 2% and unemployment four quarters ahead was expected to be below the natural rate. A simple Taylor rule in this situation clearly points to raising rates, and not to keeping the funds rate 2½ percentage points below neutral. Thus, by this criterion, the FOMC's actions do not appear reasonable.[13]

Importantly, this finding holds true even though the SPF forecast greatly underpredicted actual inflation. Like the Fed staff forecasts described in the Minutes and the SEP, the SPF also failed to predict the actual persistence of inflation. For example, the SPF forecast for headline PCE inflation in the quarter four quarters ahead never exceeded 2.6% in the entire period from 2020Q1 to 2022Q2. Even so, a qualitative Taylor rule based on these forecasts does not sanction leaving the funds rate target unchanged over 2021. That is, even the highly flawed forecasts of inflation do not suggest that the failure to raise rates sooner was reasonable.[14]

Monetary policymakers and the Board staff appear to have repeated some of the mistakes of the 1960s and 1970s in 2021, and done so for some of the same reasons. As discussed in Romer and Romer (2002), monetary policymakers from that earlier era ran overly expansionary monetary policy for nearly a decade. A key reason was that policymakers and Board staff convinced themselves that inflation was due to special factors and would not respond to monetary contraction. The Powell Fed obviously changed their behavior much faster than did the Burns and Miller Feds. But it may have shared with its predecessors an overconfidence in its forecasts and excessive surety that it had the correct model of the economy.

V. Analysis of 2022 through Early 2026

Monetary policy in the most recent years of Powell's tenure has been dominated by two episodes: the rapid interest rate increases of 2022–2023, and the pause, cuts, and pause since then. The second episode also featured fierce attacks on the Fed's independence.

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12. The apparent deterioration of the outlook at the start of 2021 is an artifact of the switch from using the Tealbook to the SPF, together with the SPF's more pessimistic view about the speed of recovery from the pandemic. To the extent the FOMC was more optimistic than the SPF, this makes the case for raising rates even stronger.

13. Reifschneider (2024) argues that given estimates of the sensitivity of inflation to the labor market and the lags with which monetary policy affects the economy, raising the funds rates sooner would not have lowered inflation significantly in 2021 and 2022. However, even if that is correct, it does not follow that failing to respond to forecasts of rising inflation and extremely low unemployment was reasonable.

14. The fact that forecasts of inflation and unemployment did not support leaving the funds rate target at the effective lower bound for so long also suggests that broad asset purchases likely should have been curtailed earlier. In addition, one can also ask whether the composition of asset purchases was reasonable. By mid-2021, house prices were rising rapidly, fueled by high demand and limited supply. In this situation, it may have been counterproductive for the Fed to continue buying large quantities of mortgage-backed securities. This topic was raised at the June 2021 FOMC meeting where "[v]arious participants offered their views on the Committee's agency MBS purchases. Several participants saw benefits to reducing the pace of these purchases more quickly or earlier than Treasury purchases in light of valuation pressures in housing markets. Several other participants, however, commented that reducing the pace of Treasury and MBS purchases commensurately was preferable because this approach would be well aligned with the Committee's previous communications or because purchases of Treasury securities and MBS both provide accommodation through their influence on broader financial conditions" (Minutes, 6/15–16/2021, p. 11).

A. Rate Increases Beginning in March 2022

Motivation. The FOMC finally began to raise rates at its March 2022 meeting. At the meeting, "all participants concurred that the U.S. economy was very strong, with an extremely tight labor market, and that inflation was high and well above the Committee's 2 percent inflation objective" (Minutes, 3/15–16/2022, p. 10). As a result, "all participants agreed that it was appropriate to begin a process of removing policy accommodation by raising the target range for the federal funds rate at this meeting. They further judged that ongoing increases in the target range … would be warranted" (p. 10). Nonetheless, Fed officials were relatively sanguine about the economy's prospects. In the staff outlook, "real GDP was expected to remain well above potential over the projection period, and labor market conditions were expected to remain very tight," and inflation was expected to return to close to target in 2023 (p. 8).

The initial increases were moderate (a quarter point in March and a half point in May) and still left the funds rate well below the FOMC's estimate of its neutral level. But the FOMC then raised the target funds rate by three-quarters of a percentage point at four consecutive meetings, and by an additional one and a half points over the next eight months. This shift reflected a less optimistic view of the ease of bringing inflation down. In September 2022, for example: "Participants commented that … inflation was declining more slowly than they had previously been anticipating," and "[m]any participants noted that … they had raised their assessment of the path of the federal funds rate that would likely be needed" (Minutes, 9/20–21/2022, pp. 8 and 9). Monetary policymakers also revised up their estimates of the costs of bringing inflation down: "Participants judged that a softening in the labor market would be needed to ease upward pressures on wages and prices" (p. 8). By March 2023, "the staff's projection … included a mild recession starting later this year" (Minutes, 3/21–22/2023, p. 6).

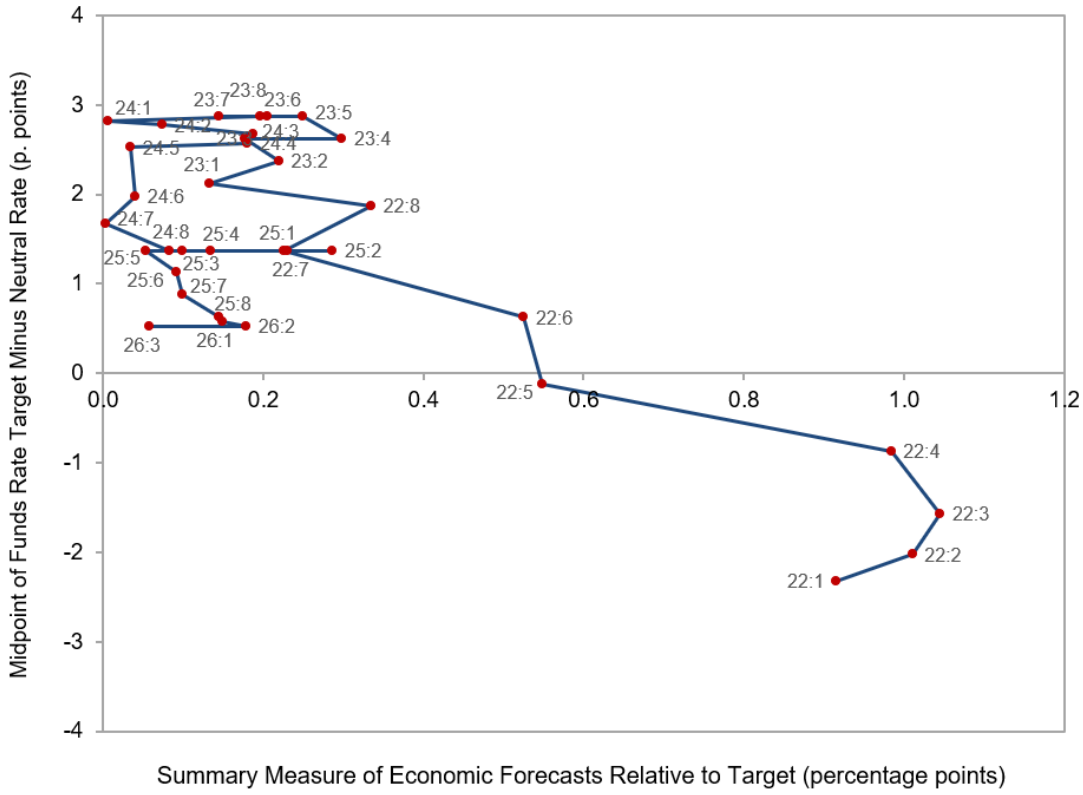
The FOMC stopped raising rates not because it had accomplished its objectives, but because it judged that policy was sufficiently tight that it made sense to pause and see how the large cumulative tightening was affecting the economy. In September 2023 (the first meeting after the final rate increase): "Participants judged that the current stance of monetary policy was restrictive and that it broadly appeared to be restraining the economy as intended," and, "[p]articipants judged that maintaining this restrictive stance of policy would support further progress toward the Committee's goals while allowing the Committee time to gather additional data to evaluate this progress" (Minutes, 9/19–20/2023, pp. 6 and 7).

Reasonableness. These developments show up as a large movement up and to the left in Figure 8, which shows the observations from the scatter plot in Figure 4 just for the period 2022–2026 (meeting 3). At the start of the tightening cycle, inflation was expected to be well above the Fed's target and unemployment was expected to be well below the natural rate, but the funds rate was more than 2 percentage points below the FOMC's estimate of the neutral level. By the end, the funds rate had been increased to almost 3 points above neutral, inflation was projected to be closer to target (though still above), and unemployment was projected to be a hair above the natural rate.

This episode is one of the most impressive of Powell's tenure. In terms of Figure 8, moving rapidly away from a point well into the lower right quadrant to an above-neutral interest rate is more than reasonable. But two aspects of the episode are especially remarkable. The first is the size and speed of the moves. In the previous quarter century, the FOMC had raised its target rate by more than a quarter point only once (a half-point increase in May 2000); and in the previous 40 years, the biggest total increase over any tightening cycle was well short of the 5¼ point increase in 2022–2023 (4¼ percentage points in 2004–2006). While the large and rapid increases were clearly warranted, the FOMC's aggressiveness is striking.

The second is that inflation fell rapidly at relatively little cost. The 12-month change in the PCE price index fell from 6.7% in September 2022 to 2.8% in December 2023 and then to 2.5% in June 2024, with

Figure 8. Scatterplot of Forecasts (Relative to Target) and Funds Rate (Relative to Neutral) 2022:1 to 2026:3



Source: Authors' calculations.
Notes: The labels next to the observations report the year followed by the number of the FOMC meeting within the year. See the text and Appendix B for a detailed description of the figure.

unemployment rising from 3.5% to 3.8% and then to 4.1%. It is very hard to know whether the Fed's dramatic and very visible tightening contributed importantly to the low cost. On the one hand, a rapid fall in inflation with little rise in unemployment was repeatedly expected by the SPF and the FOMC throughout 2021 and early 2022, so perhaps it was just luck that the fall finally occurred shortly after the Committee tightened. Moreover, the clearest statements of the Fed's seriousness about bringing inflation down were not accompanied by noticeable falls in expectations of inflation in financial markets (Romer and Romer, 2024b). And Reifschneider (2024) shows that standard large-scale macroeconomic models suggest the near-term inflation impact of a tightening on the scale of the 2022–2023 rate increases is small. On the other hand, why inflation finally fell when it did is puzzling, so there is no obvious alternative to the hypothesis that monetary policy was important. Further, the unusual conditions of the period make it at least plausible that a modest amount of cooling in key sectors caused by monetary policy could have led to a sharp fall in inflation. Finally, the timing lines up reasonably well with a role for monetary policy: Despite some choppiness, the monthly figures for core PCE inflation suggest a pronounced downward trend starting in about August 2022 and continuing for about a year. This is within the time frame when monetary policy typically matters, especially if expectational effects are significant.

Another noteworthy feature of this episode is that the Fed was willing to backtrack fairly explicitly from past positions. Unsurprisingly, Powell made clear that, in retrospect, he viewed the use of the term

"transitory" as a mistake, and that forecasters—including FOMC members—had underestimated the extent and persistence of inflation.[15] More significantly, in July 2022 he acknowledged that the Fed's forward guidance had been problematic. Discussing the fact that "we said that we wouldn't lift off until we had basically achieved our dual-mandate goals," he first explained why that had seemed appropriate at the time, but then said: "I don't think I would do that again. … [M]aybe the learning is that leave a little more flexibility than that" (Press Conference, 7/27/2022, pp. 22–23).[16] And most notably, when the Fed reviewed its framework in 2025 in the wake of the inflation, it made changes that left no doubt that it was abandoning some of the modifications it had made in the 2020 review. The 2025 framework statement reversed the 2020 statement's emphasis on the effective lower bound and dropped flexible average inflation targeting, the focus only on "shortfalls" in considering deviations from maximum employment, and the description of the employment goal as "broad-based and inclusive" (FOMC, 2025). Powell explicitly noted most of these reversals in his speech announcing the outcome of the review (Powell, 2025).

B. Interest Rate Cuts Starting in Mid-2024 and Attacks on Independence

Rate Cuts—Motivation. After raising rates for the final time at its July 2023 meeting, the FOMC held them steady for over a year. It then began a series of cuts in September 2024, bringing rates down 175 basis points by December 2025.

The initial cuts were motivated by a belief that the economy was operating at roughly its normal level, inflation was headed down to 2%, and the funds rate was well above its neutral level. At the September 2024 meeting, for example: "Participants agreed that labor market conditions were at, or close to, those consistent with the Committee's longer-run goal of maximum employment" (Minutes, 9/17–18/2024, p. 8), and "almost all participants judged that recent monthly readings had been consistent with inflation returning sustainably to 2 percent" (p. 7). In addition, "participants noted that further cooling did not appear to be needed to help bring inflation back to 2 percent" (p. 8). Looking ahead, "participants anticipated that if the data came in about as expected, with inflation moving down sustainably to 2 percent and the economy near maximum employment, it would likely be appropriate to move toward a more neutral stance of policy over time" (p. 10).

The situation had changed slightly by the time of the later cuts. FOMC officials realized that there had been no progress in reducing inflation since the start of the loosening cycle, in part because of tariff policies and other potentially transitory factors, and they were nervous about the inflation outlook. But the labor market had softened, the FOMC saw downside risks, and the funds rate was still somewhat above the Committee's estimate of its long-run level. When the last cut occurred in December 2025, on the inflation side, "[a] majority of participants remarked that overall inflation had been above target for some time and had not moved closer to the 2 percent objective over the past year" (Minutes, 12/9–10/2025, p. 9); the staff did not expect inflation to reach 2% until 2028 (p. 8); and "[p]articipants generally judged that the risks to inflation remained tilted to the upside" (p. 9). On the real side, the most recently available observation for the unemployment rate was 4.4% (as opposed to 4.2% at the September 2024 meeting); "participants observed that labor market conditions had continued to soften" (p. 9); and supporters of the rate cut "generally judged that … downside risks to employment had increased" (p. 11). The FOMC concluded that

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15. On the former, see https://www.congress.gov/event/117th-congress/senate-event/331167/text; on the latter, see Powell (2022a, p. 4).

16. The question Powell was answering and some of his answer concerned the forward guidance about asset purchases. However, his references to "lift off" and "basically achiev[ing] our dual-mandate goals" indicate that he was also discussing interest rates.

this mix of considerations warranted a rate cut, though two members dissented in favor of no change, and "[a] few of those who supported lowering the policy rate at this meeting indicated that the decision was finely balanced" (p. 11).

Reasonableness. Fed officials had vowed to keep rates high until there could be little doubt that inflation was headed back to the 2% target. The September 2022 Minutes have a clear statement: "Many participants indicated that, once the policy rate had reached a sufficiently restrictive level, it likely would be appropriate to maintain that level for some time until there was compelling evidence that inflation was on course to return to the 2 percent objective" (Minutes, 9/20–21/2022, p. 9). Powell's Jackson Hole speech the previous month expressed the idea more simply, saying: "Our responsibility to deliver price stability is unconditional," and "we must keep at it until the job is done" (Powell, 2022b, pp. 3 and 5).

The Fed did not fulfill this pledge. It is true that when the FOMC started the rate cuts, the forecast of inflation in the quarter four quarters ahead was 2.1%. But three years of inflation far exceeding forecasts meant that this was hardly "compelling" evidence that inflation would return to 2%—particularly since the SEP shows that throughout this period, the FOMC overwhelmingly viewed inflation risks as tilted to the upside. And (neglecting transitory variations caused by food and energy prices), actual inflation never came very close to 2%. At the time of the first cut, the most recently available data showed a 12-month core PCE inflation rate of 2.6%; at the time of the last one, the corresponding figure was 2.8%. Inflation has now been above target for five years, and the price level has risen by more than 20%.

Figure 8 shows, however, that if one takes a forward-looking perspective rather than focusing on past pledges and the failures of past forecasts, the cuts are more understandable. At the meeting where the first cut was made, the forecast called for both inflation and unemployment to be very close to target, but the funds rate was 2½ percentage points above its long-run level. As the FOMC reduced the funds rate toward its long-run level, the outlook changed slightly, with the forecasts of both variables drifting up by a few tenths of a percentage point and downside risks emerging on the real side (together with upside risks to inflation continuing). Thus, from this perspective, there was no strong signal that tight policy was called for.[17]

Our own view is that the conjunction of the cumulative costs and risks of an extended period of high inflation, inflation's repeated defiance of forecasts, and the potential damage to the Fed's reputation from failing to fulfill a strong pledge mean that the Fed would have been better served by a slower and more limited approach to reducing rates. But we acknowledge the case for the opposite view.

Attacks on Independence—Description. The most noteworthy aspect of monetary policy starting in 2025 was not the FOMC's decisions about interest rates, but unprecedented attempts by the executive branch to curtail the Federal Reserve's independence. The Treasury-Fed accord of 1951 had established that decisions about monetary policy were the province of the Fed. In the ensuing decades, there came to be a seemingly overwhelming consensus in the United States and abroad concerning the value of central bank independence. In the United States, consultation and cooperation between the Treasury and the Fed were common, the Fed sometimes chose to stabilize the market for government debt, and at times executive and legislative branch officials expressed strong disagreement with the Fed, both on and off the record. But the Fed's authority over monetary policy was not seriously questioned.

Donald Trump upended that consensus. The attacks began soon after Trump appointed Powell as Fed chair in his first term and escalated rapidly. In October 2018, for example, Trump "called the Fed 'crazy,' 'loco' and said it's 'gone wild' with interest-rate hikes." He also said, "I think I know about it better than

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17. At the times of the rate cuts in 2024 and 2025, the median SEP forecasts of the unemployment rate in the fourth quarter of the next year and of inflation over each of the next two years generally agreed with the SPF to within 0.1 percentage point, with no systematic differences.

they do." Two months later, it was reported that he wanted to try to fire Powell. The attacks continued until the Fed's drastic easing in March 2020 in response to the COVID-2019 pandemic.[18]

The attacks have intensified in Trump's second term. The renewed criticism started just days after Trump's second inauguration, as he said he would "demand that interest rates drop immediately," and added, "I think I know interest rates much better than they do." By April 2025, he said Powell "should have lowered Interest Rates, like the ECB, long ago, but he should certainly lower them now. Powell's termination cannot come fast enough!" In July, he suggested there had been mismanagement (or worse) in the renovation of the Fed headquarters. In August, he attempted to fire Federal Reserve Governor Lisa Cook. In January 2026, the Department of Justice subpoenaed the Fed for documents related to the renovations and threatened criminal indictments related to Powell's testimony about the project.[19]

"Reasonableness." To describe Powell's responses to these attacks as reasonable seems almost insulting—it is virtually impossible to find anything other than praise and admiration for them. He has brushed off most of the criticisms with simple statements that the Fed is focused on doing what is right for the economy and that he will not respond to statements by elected officials. Responding to each criticism or getting into extended exchanges would have accomplished little and likely would have made the Fed seem more involved in politics. Further, the FOMC under his leadership has not given in to the natural temptation to demonstrate its independence by pursuing tighter policy than what it believed was warranted on economic grounds. Such moves would have escalated the conflict and again made the Fed seem like a political actor, and in the FOMC's view would have marginally worsened expected macroeconomic outcomes. And Powell has worked tirelessly throughout his tenure to build relationships with Congress and to explain the Fed's role and the value of its independence. These relationships appear to have contributed to efforts by members of Congress to try to protect the Fed from Trump's assaults. Finally, when the assaults on Fed independence crossed from sharp criticism and vague threats into direct attacks, responding directly and clearly was surely appropriate. Powell did exactly this in publicly disagreeing with Trump about factual claims about the renovation, in attending the Supreme Court hearing regarding the attempted firing of Cook, and in posting a pointed response to the subpoenas.[20]

VI. Tentative Lessons

In this section, we consider what future monetary policymakers could learn from the Powell era. We identify six tentative lessons.

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18. https://www.politico.com/story/2018/10/11/trump-federal-reserve-841681 and https://www.cnbc.com/2018/12/22/trump-reportedly-wants-to-fire-fed-chair-powell.html.

19. https://www.reuters.com/markets/us/trump-says-he-will-demand-lower-interest-rates-immediately-2025-01-23/; https://www.cnbc.com/2025/04/17/trump-again-calls-for-fed-to-cut-rates-says-powells-termination-cannot-come-fast-enough.html; https://www.cnn.com/2025/07/15/business/trump-says-fed-renovations-are-sort-of-a-fireable-offense; https://www.politico.com/news/2025/08/25/trump-says-hes-firing-federal-reserve-governor-lisa-cook-00523841; and https://apnews.com/article/federal-reserve-trump-subpoena-bf4fc6c690fa248fbc531bc9bc7f1758.

20. See https://www.nytimes.com/2026/01/16/us/politics/powell-trump-investigation.html; https://apnews.com/article/trump-powell-pushback-renovation-costs-7ddf2d82ccf0129b28587dcc7cc3695b; https://www.wsj.com/livecoverage/supreme-court-lisa-cook-hearing/card/fed-chair-jerome-powell-attends-supreme-court-hearing-iE0lukQv2T8uAzNmYGqp; and https://www.federalreserve.gov/newsevents/speech/powell20260111a.htm.

Lesson 1: Monetary policymakers need to have a realistic model of how the economy operates and what monetary policy can accomplish.

Monetary policy is a potent tool for managing aggregate demand. By affecting interest rates and credit availability, monetary policy affects consumer spending and business investment, which in turn affect output and employment. And, by affecting the strength of the economy relative to its potential, monetary policy affects inflation. These effects play out over years, not months, and can vary with the details of how policy is executed and with what else is going on in the economy. Importantly, however, while successful monetary policy can create an environment conducive to the fundamental determinants of economic growth, it cannot directly affect potential output or the non-inflationary level of maximum employment. For this reason, monetary policy is inherently limited in what it can accomplish.

The periods over the past eight years when the Federal Reserve tried to test the limits of what monetary policy can accomplish have been the times when monetary policy was least successful. At the end of 2019 and again in late 2020 and 2021, the Powell Fed endorsed the notion that the Phillips curve was very flat, so the economy could run hot without generating inflation. As a result, it saw hope for monetary policy to lower income inequality, reduce racial disparities in labor market outcomes, and reverse the labor market damage from past recessions. Following 2019, the pandemic intervened before actual inflation picked up much steam. But in 2021, inflation surged.

The 2021 inflation is instructive because its cause appears noticeably different from earlier episodes. As discussed in Bernanke and Blanchard (2025), the post-pandemic inflation does not seem to have come from a resurgence of the Phillips curve. That is, the main mechanism was not from low unemployment to higher wages to higher prices. Rather, as suggested by Dynan and Elmendorf (2024), it appears to reflect the effects of strong aggregate demand—fueled by both fiscal and monetary expansion—pushing against supply bottlenecks directly raising prices of particular goods. In our view, this permutation of the usual inflation generating process does not mean that the post-pandemic inflation was an anomaly or entirely supply-driven. Rather, it is consistent with the notion that if monetary and fiscal policy try to push the economy above its comfortable level, higher inflation will emerge somehow.

More recently, the Federal Reserve has again been lowering interest rates despite persistent inflation in hopes that inflation will mitigate on its own. Given that the unemployment rate remains near historic lows, that hope strikes us as risky. Over history, assuming that fundamental economic relationships have changed for the better has seldom worked out.

In contrast, policy in the Powell era has been highly successful when it was driven by a conventional framework that stressed a more limited view of what monetary policy can accomplish. In 2018, the Powell Fed successfully normalized policy in the wake of the 2008 financial crisis, and early in the pandemic, it stabilized credit flows and prevented what could have been another financial meltdown. And in 2022 and 2023, it responded forcefully to inflation and succeeded in reducing it dramatically at remarkably little cost. We find it particularly impressive that the FOMC revised its policy framework in 2025 to reflect a more accurate model of how the economy operates.

Future policymakers would do well to learn from history, not just from the Powell era but from generations before. Policymakers should base policy on evidence-based and time-tested models of how the economy operates. Monetary policy should aim to accomplish what it can accomplish—which is to manage aggregate demand to get as close as possible to the Fed's dual mandate of low inflation and employment at its maximum non-inflationary level.

Lesson 2: The Federal Reserve should move quickly and aggressively when conditions warrant.

Central bankers are famously cautious, caricatured as arguing passionately about whether to say "may" rather than "might," or as believing that a policy shift should not just be preceded by a warning, but that the warning should be preceded by a signal, which should be preceded by an indication, which should be preceded by a hint, which should be preceded by an intimation. Given the stakes, it is appropriate that caution is the norm. But the record of the Powell era shows that there are benefits to sometimes moving rapidly and boldly.

The Fed was remarkably aggressive in two episodes during Powell's tenure: the initial response to the pandemic in 2020, and the tightening in response to inflation in 2022–2023. In the first case, it stepped in with overwhelming force to ensure the smooth functioning of the financial system and pivoted to aggressively expansionary monetary policy. In the second, it tightened at an unprecedented rate. Both sets of actions accomplished their immediate goals. The financial system made it through the disruptions of the pandemic outbreak; economic activity returned to normal after its early pandemic collapse faster than feared or expected; and post-pandemic inflation came down rapidly and at surprisingly low cost.

The evidence strongly supports the wisdom of the Fed's aggressiveness. In the case of the pandemic response, one potential concern is the moral hazard created by the knowledge that the Fed is likely to step in if there is a major disruption. But financial crises are endemic, occurring in historical settings with no prospects of government intervention. In early 2020, the financial system was starting to crack before the Fed intervened, and the pandemic was an enormous and completely unexpected shock. The idea that financial institutions would have insulated themselves against such a development in the absence of potential lender-of-last-resort interventions is far-fetched. Thus, the moral hazard costs appear small and the financial stability benefits large.

The other potential concern with this period is that, as we have shown, the Fed pursued aggressive expansion too long. But this was a feature of later policy, not the initial response. It is inevitable that what appears to be the best initial response to a massive shock whose effects are highly uncertain may turn out to have been more than was needed. But that merely means that policymakers need to be ready to back off, not to avoid the actions in the first place.

In the case of the 2022–2023 tightening, a potential concern is that the sharp rise in interest rates risked triggering financial instability. And indeed, there was notable financial disruption in March 2023 with the collapse of Silicon Valley Bank. But that episode was navigated with relatively little disruption, and it does not stand out from various other occasional historical "mini crises." There are important lessons from the episode about financial supervision, and about the benefits of the Fed not getting into a position where sharp tightening is appropriate. But having gotten into that position, the need to address inflation dwarfed other considerations.

Lesson 3: Inflation is harmful even if inflation expectations do not become unanchored.

Ever since inflation broke out in 2021, Fed officials, journalists, and outside observers have been very concerned about whether it could cause inflation expectations to become unanchored, often to the point of implying that this should be the critical consideration guiding policy. These concerns were clearly overblown, particularly in the inflation's early stages. The unanchoring of inflation expectations in the 1970s occurred not all at once or in response to a few shocks, but gradually as a result of more than a decade of overly expansionary policy and increases in actual inflation. And various "inflation scares" and extended

periods of inflation being moderately above or below target in recent decades do not appear to have meaningfully affected inflation expectations in ways that shifted the output-inflation tradeoff.

But the question of whether rapid unanchoring was a real risk neglects a more fundamental consideration: Inflation itself is harmful. The recent inflation provides graphic evidence of two harms of inflation. The first is simple: People hate it. Opinion polls, survey evidence, and observations of popular discussions show that it induces visceral negative reactions and sharp increases in economic dissatisfaction. Consistent with this, Binetti, Nuzzi, and Stantcheva (2024) find that in 2024, most Americans viewed one percentage point of higher inflation as more costly than one percentage point of higher unemployment. They also find that most individuals viewed a major harm of inflation as being that it makes household decision-making more difficult and complex. Similarly, Stantcheva (2024) finds that inflation causes stress about future employment and earnings, particularly among low-income households. Since public well-being is desirable, monetary policymakers should take these aspects of the public's preferences into account.

The second and potentially larger harm is that the disaffection triggered by inflation leads to anger and loss of trust in institutions and elected officials. Stantcheva (2024) finds that the anger caused by inflation is directed mainly at the government, and that most Americans believe inflation reduces social cohesion and political stability. One apparent result is increased support for candidates who channel that anger and who support policies that are superficially appealing but almost certainly counterproductive—with potentially devastating consequences.[21]

How should this affect policy? It certainly does not mean monetary policy should respond to a shock that has an immediate, one-time impact on the price level by trying to prevent the effect or trying to reverse it over time. Rather, it suggests that faced with a shock whose impact on the price level is likely to play out over an extended period, but whose effect on inflation is likely to ultimately be transitory if inflation expectations remain stable, policymakers should focus less on inflation expectations and more on the inflation itself, and so be more willing to respond. This could temper the inflation, and so reduce its harms. And more speculatively, by showing policymakers' concern, it might at least marginally reduce the anger caused by the inflation.

Lesson 4: Forward guidance should be carefully crafted and the bar for using it should be high.

The experience of 2021 shows a clear downside to forward guidance: It contributed to the delay in the Fed's response to inflation beyond the point where tightening was clearly called for. One reason is that, despite having included an "escape clause" in the guidance, the FOMC appears to have felt some obligation to follow it even when circumstances changed in a way that made it no longer a good guide to policy. That is, forward guidance runs an inherent risk of making policy depend in part on past statements rather than current and prospective macroeconomic fundamentals. A second reason is that the forward guidance was specified in a way that made it poorly suited to what actually happened: Had the FOMC contemplated the possibility of inflation rising far above target, it surely would not have said that achieving maximum employment was a necessary condition for raising the funds rate regardless of the behavior of inflation.

The message we take from this is not that forward guidance should never be used. It is a potentially powerful tool, particularly at the effective lower bound, and there are times when it is desirable for

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21. Baccini and Weymouth (2025) and Suwanprasert (2026) present suggestive evidence that the 2022 inflation led to higher support for Republican candidates in the 2022 and 2024 U.S. elections. An older literature starting with Fair (1978) provides some evidence that inflation generally hurts the electoral performance of incumbents.

policymakers to tie their own hands. Rather, the message we take is twofold. First, because it always runs a risk of influencing future decisions in undesirable ways that were not anticipated, the bar for using it should be high. And second, it should be crafted with a wide range of possible paths for the economy in mind, not just the most likely ones.

Lesson 5: The Federal Reserve balance sheet should remain large.

Our discussion in Section III.B of the interest rate volatility in September 2019 has clear implications for the size of the Fed's balance sheet going forward. First, that episode shows that with current institutions and regulations, shrinking the balance sheet further relative to the size of the economy would likely require entering a regime of "scarce reserves" and much greater short-run interest-rate volatility. Second, some of the key drivers of the high demand for reserves—notably liquidity requirements and the payment of interest on reserves—serve valuable functions. Third, it would be possible to make changes that did not undo those drivers but still reduced the quantity of reserves needed in an "ample reserves" regime, but those reductions would not be enormous. And fourth, it is hard to see any large downside of the private sector holding interest-bearing reserves issued by the Fed rather than short-term interest-bearing debt issued by the Treasury. Together, these observations suggest that although there may be changes that would pass a cost-benefit test that would shrink the Fed's balance sheet somewhat, there would be substantial downsides and no significant upsides to attempts to shrink its size greatly.

One aspect of the Fed's current balance sheet, however, seems harder to justify: its large holdings of mortgage-backed securities, which presumably at least marginally shift credit allocation toward a particular sector. Those holdings are currently almost $2 trillion, and at the pace at which they have been falling since June 2024 (when the Fed adopted a policy of not reinvesting any principal payments into the securities), it will take over a decade for them to reach zero.[22] The view that the Fed should not be involved in sectoral credit allocation points to increasing that pace.

Lesson 6: Federal Reserve independence is vital but tenuous.

The benefits of central bank independence were well established long before the start of Powell's tenure. It insulates the central bank from short-term political pressures and allows its decisions to be driven by macroeconomic fundamentals; prevents monetary policy from being subordinated to fiscal policy; and allows monetary policy to be made by individuals with expertise and a sound understanding of how the economy operates. The past eight years have made those benefits even clearer. President Trump has pressed not for marginal adjustments in policy but for dramatic changes, calling for interest rates of "ZERO, or less" in 2019 and "1% and maybe lower" in 2025. He has also linked this desire to fiscal policy considerations, showing a wish for monetary policy to be driven by fiscal needs rather than macroeconomic considerations.[23] And his actions with respect to other agencies suggest that a non-independent Fed could be subject to the whims of administration officials and the pursuit of private rather than public objectives.

In the United States and most other advanced countries, the consensus in favor of central bank independence appeared to be broad and deep, suggesting relatively little risk. Trump's treatment of the Fed,

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22. This calculation is based on the Fed's holdings of mortgage-backed securities, which were $2,156,161 million on 6/4/2025 and $1,981,060 million on 5/6/2026, implying an average reduction of $521 million per day. Na, Newman, and Schlusche (2024) find that under the Fed's current balance sheet plans, the pace of the decline is likely to slow over time.

23. https://www.nbcnews.com/business/economy/trump-pushing-interest-rates-zero-or-less-do-they-work-n1052371; and www.wsj.com/economy/central-banking/trump-says-he-is-leaning-toward-warsh-or-hassett-to-lead-the-fed-34a200e5.

coupled with his successes in reducing or eliminating the independence of other agencies that were presumed to be independent, has shown that that view was ill-founded.

What can be done? For their part, Fed officials can focus on conducting monetary policy well, combating falsehoods, and resisting efforts to pressure or remove them. But the main potential actors are outside the Fed. Courts can affirm that the Fed is independent and that the president's power to remove governors for "cause" does not mean "cause as determined by the president" or "allegations that, if true, would constitute cause." In an ideal world, Congress would amend the Federal Reserve Act to more clearly delimit the president's ability to remove governors; however, we are not in an ideal world, and opening up the Federal Reserve Act would generate other risks. Members of Congress can go beyond just expressing support for independence to more forceful measures, such as tying support for nominations to the Fed to the administration respecting independence. Finally, anyone concerned about these issues—economists, former Fed officials, other experts, and more—can continue to emphasize the vital importance of Federal Reserve independence.

APPENDIX A: DATA

This appendix describes the sources of all data used in the paper.

I. Forecasts of Inflation and Unemployment[24]

A. Forecasts for the quarter 4 quarters ahead

1. Survey of Professional Forecasters (SPF)

PCE6 from the PCE tab and UNEMP6 from the UNEMP tab of medianLevel.xlsx, downloaded from https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/median-forecasts, 5/15/2026.

Because the timing of the SPF does not match the timing of FOMC meetings, in places we also use forecasts for the quarter 3 quarters ahead. These are PCE5 and UNEMP5, from the same places as PCE6 and UNEMP6, downloaded at the same time.

2. Tealbooks

gPPCEF4 from the gPPCE tab and UNEMPF4 from the UNEMP tab of TEALBOOK-GBweb_Row_Format.xlsx, downloaded from https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/philadelphia-data-set, 3/11/2026.

We do not use the March 2020 Tealbook. It was completed on March 6, but because the pandemic was unfolding so quickly, it is clear that it was essentially irrelevant to the March 15, 2020 FOMC meeting. We therefore treat that Tealbook as missing.

B. Q4-Q4 inflation forecasts, forecasts of Q4 unemployment

1. SPF

For inflation, these are PCEA (Q4 of previous year to Q4 of current year), PCEB (Q4 of current year to Q4 of the next year), and PCEC (Q4 of the next year to Q4 of the year after that) from the PCE tab of medianLevel.xlsx, downloaded from https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/median-forecasts, 5/15/2026.

For unemployment, these are generally the appropriate values of UNEMPn from the UNEMP tab of medianLevel.xlsx, downloaded from https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/median-forecasts, 5/15/2026. n ranges from 1 (the previous quarter) to 6 (the quarter 4 quarters ahead). For example, for an SPF done in Q4, we use UNEMP2 for the forecast for Q4 of the current year and UNEMP6 for the forecast for Q4 for the next year. The one case that is more complicated concerns SPFs that are done in done in Q3, For those, we obtain the forecast for Q4 of the next year by using UNEMP4, UNEMP5, and UNEMP6 (the forecasts for Q1, Q2, and Q3 of the next year) and UNEMPB (the forecast of average unemployment over the next year). (Note that because the average of the median forecasts for the 4 quarters need not exactly equal the median forecast of the average for the 4 quarters, what comes out of

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24. Throughout, "unemployment" is shorthand for the unemployment rate.

this calculation will not correspond exactly to the median forecast for Q4 of the next year. However, it is likely to be a good approximation.) For SPFs done in Q1 and Q2, we can only obtain the Q4 forecast for the current year.

As discussed in Appendix B, the fact that the timing of FOMC meetings and the SPF differs leads us to put some weight on the SPF conducted in the quarter after the FOMC meeting for some meetings. For unemployment, the data we need to do this are always reported in the SPF. But for inflation, this means that we sometimes need the SPF "forecast" in February of inflation over the 4 quarters ending in the fourth quarter of the previous year, which the SPF does not report. In that situation, we use the real-time data that were available to the survey participants.[25]

2. Tealbooks

The Philadelphia Fed Greenbook/Tealbook data set only has quarterly forecasts. We therefore obtain the Q4-Q4 inflation forecasts and forecasts of Q4 unemployment from "The Long–Term Outlook" table of the Tealbook. Because we use these data only for meetings with an SEP, we obtain these Tealbook forecasts only for those meetings.

3. Summary of Economic Projections (SEP)

We use the medians as reported in the SEPs.

II. Other FOMC Variables

A. FOMC long-run unemployment, long-run funds rate, and inflation target

These are the medians reported under "Longer run" in the SEPs. For the inflation target, we use the "Longer run" inflation forecast (which is always unanimously 2%).

B. Mid-point of target range for funds rate

This is available from multiple sources. We use the midpoint of the series for "Federal Funds Target Range - Upper Limit" and "Federal Funds Target Range - Lower Limit" from FRED, downloaded 5/7/2026, checking it against the statements released at the end of each FOMC meeting. The data on the actual funds rate are from Federal Reserve Economic Data (FRED), series "Federal Funds Effective Rate," downloaded 5/8/2026.

C. Historical funds rate target

The data are from FRED, series "Federal Funds Target Rate (DISCONTINUED)," accessed 4/20/2026.

III. Actual (Not Real-Time) Unemployment, Inflation, and Core Inflation

A. Unemployment

The data are from FRED, "Unemployment Rate," downloaded 5/8/2026.

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25. See Section IV of this appendix for the source of the real-time data. A further complication is that ALFRED does not show a release of the 2018Q4 PCE price index until after the February SPF was conducted. For that case, we combine the real-time data on the price index in 2017Q4 and 2018Q3 that were available in February 2019 with the February 2019 SPF "forecast" of PCE inflation from 2018Q3 to 2018Q4.

B. PCE inflation

The data are from FRED, "Personal Consumption Expenditures: Chain-type Price Index," downloaded 5/8/2026.

C. Core PCE inflation

The data are from FRED, "Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index)," downloaded 4/25/2026.

IV. Real-Time Unemployment, Inflation, and Core Inflation

A. Unemployment

The data are from ArchivaL Federal Reserve Economic Database (ALFRED), "Unemployment Rate," downloaded 4/25/2026.

B. PCE inflation

The data are from ALFRED, "Personal Consumption Expenditures: Chain-type Price Index," downloaded 5/15/2026.

C. Core PCE inflation

The data are from ALFRED, "Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index)," downloaded 3/26/2026.

V. Other

A. Data on the Fed's balance sheet

The data are from FRED, series "Assets: Securities Held Outright: U.S. Treasury Securities: All: Wednesday Level," "Assets: Securities Held Outright: Mortgage-Backed Securities: Wednesday Level," and "Assets: Securities Held Outright: Federal Agency Debt Securities: All: Wednesday Level," downloaded 5/8/2026.

B. Bank reserves and nominal GDP

Data for nominal GDP are for 2007Q4 and 2019Q3 and are from NIPA Table 1.1.5 (https://apps.bea.gov/iTable/?reqid=19&step=2&isuri=1&categories=survey, accessed 3/21/2026). Data on reserves in December 2007 and August 2019 are from FRED, series "Reserves of Depository Institutions: Total," accessed 3/21/2026.

C. Vacancies

The data are from FRED, series "Job Openings: Total Nonfarm," accessed 3/31/2026.

APPENDIX B: DETAILS OF THE CONSTRUCTION OF FIGURE 4

Each observation corresponds to an FOMC meeting. The number on the horizontal axis is $(\mathrm{E}_t[\pi_{t+4}] - \pi^*) + \lambda(\bar{u}_t - \mathrm{E}_t[u_{t+4}])$. Here $\mathrm{E}_t[\pi_{t+4}]$ is the forecast of quarterly PCE inflation (at an annual rate) in the quarter four quarters after the quarter of the meeting (that is, inflation from $t + 3$ to $t + 4$); $\mathrm{E}_t[u_{t+4}]$ is the forecast of the average unemployment rate in the quarter four quarters after the meeting; π^* is the FOMC's inflation target; $\bar{u}_t$ is the FOMC's estimate of normal unemployment; and λ is the weight on unemployment (which we set to 1 in constructing the figure). The number on the vertical axis is $i_t - i_t^*$, where i_t is the midpoint of the target range for the funds rate set at the meeting, and i_t^* is the FOMC's estimate of the long-run equilibrium funds rate.

The forecast data are from the Federal Reserve staff Tealbook through 2020 and from the Survey of Professional Forecasters thereafter. For the Tealbook, the specific series we use are gPPCEXF4 from the gPPCEX tab and UNEMPF4 from the UNEMP tab of TEALBOOK-GBweb_Row_Format.xlsx, downloaded from https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/philadelphia-data-set, 3/11/2026. For the SPF, the specific series we use are PCE6 from the PCE tab and UNEMP6 from the UNEMP tab of medianLevel.xlsx, downloaded from https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/median-forecasts 5/15/2026.

The Tealbooks are prepared shortly before each FOMC meeting. In contrast, the timing of the SPF forecasts does not match the timing of FOMC meetings. The usual pattern is that there is an FOMC meeting late in the first month of each quarter and in the middle of the third month, and that the SPF is released in the middle of the second month. For the first meeting of the quarter, we therefore use the SPF forecast released in that quarter (which typically lags the meeting by about two weeks). For the second FOMC meeting of the quarter, we put two-thirds weight on the SPF forecast released in that quarter (which typically leads the meeting by about a month) and one-third weight on the SPF forecast released in the next quarter (which typically lags the meeting by about two months; note that for this SPF, we use the forecasts for the quarter three quarters ahead [series PCE5 and UNEMP5], which is four quarters after the meeting).

As described in Appendix A, we treat the March 2020 Tealbook as missing because of the speed at which the pandemic was spreading. For the same reason, it would not make sense to construct an alternative forecast using a weighted average of the February and May SPFs. We therefore have no forecast corresponding to the March 2020 meeting, and so we omit it from the figure.

The numbers for the FOMC's inflation target are the median "Longer run" projection of PCE inflation from the FOMC's Summary of Economic Projections (SEP). Similarly, the numbers for the estimates of normal unemployment are the median longer run projections for unemployment, and the numbers for the estimates of the normal federal funds rate are the median longer run projections for the funds rate. The FOMC prepares the SEP only for every other meeting. For the meetings without an SEP, we therefore use the average of the values from the preceding and following meeting.[26] The inflation target was constant at 2% over our entire sample. The FOMC's estimate of normal unemployment fell from 4.5% at the start of Powell's tenure to 4.0% in most of 2021–2023, and then drifted up to 4.2% by the end of our sample. The FOMC's estimate of the normal funds rate was roughly 3% at the start of Powell's tenure and at the end of our sample, but was somewhat lower in between, with a low of 2.4% in early 2022.

. . .

26. Because of the outbreak of the pandemic, the FOMC did not release an SEP for the March 2020 meeting. However, the values of $\bar{u}$ and i^* did not change between the last SEP before March 2020 (December 2019) and the first one after (June 2020). We therefore treat them as constant from December 2019 to June 2020.

The sample period is the first meeting of 2016 (January 2016) through the final meeting of Powell's term as chair in April 2026 (2026 meeting 3). Observations are labeled by year and meeting number within the year (with some labels removed to improve readability). In numbering the meetings, we only consider scheduled meetings. The one exception is in 2020, when the scheduled March 17–18 meeting was canceled and replaced by a pair of unscheduled meetings on March 2 and March 15. We treat 2020 meeting 2 as missing and number the April 28–29 meeting as 2020 meeting 3.

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