



## **The Fed: Bad Forecasts and Misguided Monetary Policy**

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This paper analyzes the Federal Reserve's quarterly Summary of Economic Projections (SEPs) from September 2020 to December 2022 to document the Fed's failure to forecast the sharp rise in inflation and its misguided estimates of the Federal funds rate necessary to achieve those projections, and considers the sources of the Fed's errors. As inflation rose, the Fed persistently projected that inflation would quickly decline toward its 2% inflation target and that maintaining a negative real interest rate was the appropriate monetary policy. Modeling and analytical errors, particularly the failure of the Fed's macromodel to reflect the unprecedented fiscal stimulus and surge in money supply, and human and institutional errors including bad judgment, led to bad forecasts and misguided policy. The paper concludes with suggestions for improvement.

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## **The Fed: Bad Forecasts and Misguided Monetary Policy**

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The Fed failed to forecast the sharp rise in inflation in 2021-2022 and its estimates of the Federal funds rate necessary to achieve its inflation forecasts were far off the mark, providing misleading forward guidance on the future course of monetary policy. These forecasting mistakes contributed to the Fed's biggest monetary policy error and the highest inflation since the 1970s. This assessment of the Fed's forecasting errors provides important lessons for the future.

Table 1 displays the Fed's inflation projections in its quarterly Summary of Economic Projections (SEPs) beginning in September 2020 through December 2022. As reference, the left-hand columns show the inflation (headline and core excluding food and energy) at the time of the quarterly FOMC meeting when the Fed published its SEP. The Fed has been publishing its quarterly forecasts since 2009 and its dot plots, the Federal Open Market Committee (FOMC) participants' assessment of the appropriate monetary policy, since 2012. From 1980 to 2008, the Fed provided semi-annual forecasts as mandated by the Full Employment Act of 1978. In each September SEP, the Fed rolls forward its projections another year; Table 1 does not include its September and December 2022 SEP projections for 2025.

Before analyzing the Fed's quarterly inflation projections, it is important to understand how they are developed and the assumptions upon which they are conditioned. Each SEP projection of real GDP (measured from fourth quarter to fourth quarter), the unemployment rate (average for the fourth quarter), and inflation (PCE Price Index, fourth quarter to fourth quarter) is the median projection of the FOMC participants. These forecasts are conditional, based on each FOMC participant's estimate of the "appropriate monetary policy" that would achieve their inflation projection. These conditional aspects of the SEPs are often overlooked by the media and financial market participants. Compiling the inflation projections of the individual FOMC members who may have different economic forecasts and varying assumptions of appropriate monetary policy involves an aggregation problem. There are similar aggregation problems with the median FOMC estimates of the Fed funds rate.

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**Table 1. FOMC’s Summary of Economic Projections (SEPs) of Inflation**

SEP forecast Made in:	Actual inflation*		2021		2022		2023		2024	
	PCE	Core	PCE	Core	PCE	Core	PCE	Core	PCE	Core
September 2020	0.9	1.1	1.7	1.7	1.8	1.9	2.0	2.0		
December 2020	1.1	1.3	1.8	1.8	1.9	1.9	2.0	2.0		
March 2021	1.5	1.6	2.4	2.1	2.0	2.0	2.1	2.1		
June 2021	3.6	3.1	3.4	3.0	2.1	2.1	2.2	2.1		
September 2021	4.4	3.9	4.2	3.7	2.2	2.3	2.2	2.2	2.1	2.1
December 2021	5.2	4.3	5.3	4.4	2.6	2.7	2.3	2.3	2.1	2.1
March 2022	6.1	5.2			4.3	4.1	2.7	2.6	2.3	2.3
June 2022	6.4	5.0			5.2	4.3	2.6	2.7	2.2	2.3
September 2022	6.4	4.7			5.4	4.5	2.8	3.1	2.0	2.1
December 2022	6.0	5.0			5.6	4.8	3.1	3.5	2.5	2.5

Sources: Board of Governors of Federal Reserve System, quarterly Summary of Economic Projections.

Note: \*PCE inflation (yr/yr) measure available at time of quarterly FOMC meeting.

In addition, while the Fed understands that these SEP economic and inflation projections are conditional and the FOMC participants’ assessments of the appropriate monetary policy—the Fed funds rate dots—are not policy commitments, the projections are widely perceived to be forward guidance on future monetary policy, which may influence the Fed’s projections. Historically, the Fed has projected inflation to glide toward its 2% target, which makes sense since the appropriate monetary policy is supposed to be the interest rate consistent with the Fed achieving its inflation mandate. As inflation rose in 2021, the Fed may have been reticent to project persistently high inflation because it may have sent the wrong signal and influenced inflationary expectations. Also, the projections of individual FOMC participants may be driven by institutional constraints. The seven Fed governors do not stray too far from the senior Fed staff forecasts, which heavily influences the median projections of the 19 FOMC members. And outlying Federal Reserve Bank presidents may have shied away from much higher dots if they suspected it would reduce their influence and credibility in the FOMC’s deliberations. Consider if a district bank president in June 2021 had estimated that inflation would rise to 5%, or in December 2021 had estimated that a 5% funds rate would be the appropriate monetary policy.

## **The Fed's Inflation projections**

The key observation in Table I is that as inflation accelerated in 2021, the Fed adjusted up its projection for 2021 to reflect what had happened already, but projected that inflation would quickly fall back toward the Fed's 2% target in 2022 and remain anchored. Chart 1 illustrates the sequencing of the Fed's SEP projections from September 2020 through March 2022, highlighting the Fed's persistent assessment that inflation would fall sharply as it rose dramatically higher than the Fed had expected.

Through the June 2021 SEP, when inflation had already accelerated to 3.6% (3.1% on core inflation), the Fed projected core inflation to fall back to 2.1% in 2022 and 2023, but in September 2021 the Fed acknowledged some persistence of inflation, projecting core PCE inflation would be 2.3% in 2022 and 2.2% in 2023. In December 2021, facing an acceleration of inflation (to 5.3% and 4.3% on core), the Fed raised its 2022 projection of core inflation to 2.7% in 2022 and 2.3% in 2023. Throughout 2021, it is striking that the Fed projected the appropriate Fed funds rate to remain zero, which involved an increasingly negative real policy rate.

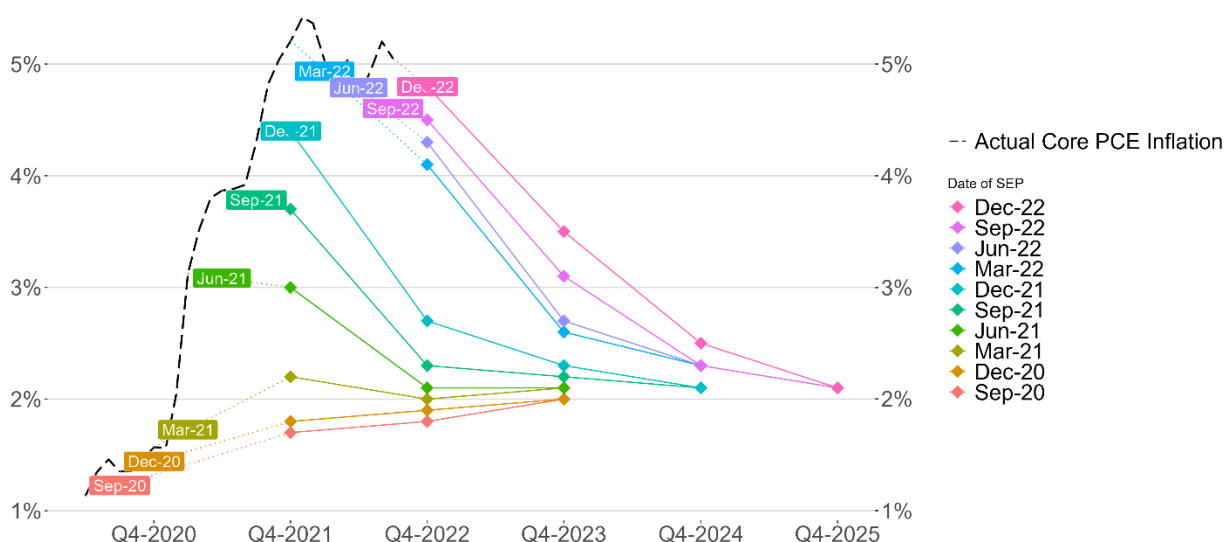
The Fed's quarterly projections in 2022 highlight how it was in catch-up mode. The Fed continued to project significant quick declines in inflation while acknowledging that inflation would persist significantly above its 2% target in 2023 and 2024, and it projected increasingly higher interest rates.

Table 2 shows the high and low range of inflation projections of the FOMC members in each quarterly SEP. The lack of dispersion of forecasts through 2021 is striking. Even though the Fed grudgingly raised its projections of inflation for 2022, actual PCE inflation (5.0% on headline and 4.4% on core) was roughly double the highest FOMC participant projection in September 2021 and several percentage points above the highest projection in December 2021. Possible reasons for this lack of dispersion are discussed below.

## **The FOMC's Fed funds rate projections**

The Fed's projections of the Fed funds rate are the FOMC participants' estimates of the year-end policy rate they think is appropriate to achieve their projection of inflation and economic conditions (unemployment rate and real GDP). Each quarterly SEP also includes a chart showing the "dots" of each participant's estimated year-end Fed funds rate.

**Chart 1. Fed’s Forecasts of Core PCE Inflation and Actuals**



Sources: Board of Governors of Federal Reserve System, Quarterly Summary of Economic Projections  
 Notes: Forecasts are for Q4/Q4 percentage change in core PCE inflation for years ending 2021, 2022, 2023, 2024, and 2025; lines between forecasts of annual inflation are for visual convenience and not part of Fed’s forecasts; dotted line is from last inflation observation available to Fed at time of SEP; full data set available on request

While the dot plot shows the dispersion of interest rate estimates of the FOMC participants, each member’s dot is not linked to his or her projections of the economy and inflation. Accordingly, the median dot in each quarterly SEP involves an aggregation problem. Nevertheless, the median and dispersion of dots provide an assessment of the Fed’s perception of monetary policy—in terms of accommodation or restrictiveness—and how the Fed expects it will have to adjust interest rates.

Table 2 shows the Fed’s projections of Q4/Q4 inflation and year-end Fed funds rate for 2021-2024. It highlights how the Fed persistently estimated the appropriate Fed funds rate at zero throughout 2021 and 2022 even as inflation rose and the Fed’s projections of inflation in 2022 and 2023 edged up. In the June 2021 SEP, the Fed estimated the policy rate of zero through 2022 and 0.6% by year-end 2023. In December 2021, the Fed edged up its policy rate estimate to 0.9% at year-end 2022 and 1.6% in 2023. That is, through December 2021, even as inflation rose above 5%, the Fed estimated that maintaining the Fed funds rate below the inflation it projected was appropriate and would reduce inflation sharply in 2022 and 2023.

**Table 2. FOMC Members’ Median Fed funds Rate Projections and Range of “Dots”**

SEP forecast Made in:	<u>2021</u>			<u>2022</u>			<u>2023</u>		
	Fed Infl Forecast*	Median FOMC “Dot”**	FOMC Range**	Fed Infl Forecast	Median FOMC “Dot”**	FOMC Range	Fed Infl Forecast	Median FOMC “Dot”**	FOMC Range
Sept 2020	1.7	0.1	0.1-0.1	1.8	0.1	0.1-0.6	2.0	0.1	0.1-1.4
Dec 2020	1.8	0.1	0.1-0.1	1.9	0.1	0.1-0.4	2.0	0.1	0.1-1.1
March 2021	2.4	0.1	0.1-0.1	2.0	0.1	0.1-0.6	2.1	0.1	0.1-1.1
June 2021	3.4	0.1	0.1-0.1	2.1	0.1	0.1-0.6	2.2	0.6	0.1-1.6
Sept 2021	4.2	0.1	0.1-0.1	2.2	0.3	0.1-0.6	2.2	1.0	0.1-1.6
Dec 2021	5.3	0.1	0.1-0.1	2.6	0.9	0.4-1.1	2.3	1.6	1.1-2.1
Mar 2022				4.3	1.9	1.4-3.1	2.7	2.8	2.1-3.6
June 2022				5.2	3.4	3.1-3.9	2.6	3.8	2.9-4.4
Sept 2022				5.4	4.4	3.9-4.6	2.8	4.6	3.9-4.9
Dec 2022				5.6	4.4	4.4	3.1	5.1	4.9-5.6

Sources: Board of Governors of Federal Reserve System, quarterly Summary of Economic Forecasts.

Notes: \*PCE inflation forecast is % chg Q4/Q4 for the year indicated.

\*\*The median Dot is the median FOMC member estimate of the Fed funds rate at year-end that would be appropriate with the member’s forecasts of the economy and inflation. The Range is the low and high estimate of all FOMC members.

In its March 2022 SEP, in response to mounting inflation pressures, the Fed dramatically raised its projections of inflation and interest rates. While it raised its estimated policy rate to 1.9% for year-end 2022, this was still well below the 4.4% inflation that it projected. However, it raised its policy rate estimate to 2.8% for year-end 2023, a touch above its 2023 inflation forecast of 2.7%. In subsequent SEPs the Fed dramatically raised its estimates of the Fed funds rate, signaling that it would be appropriate to maintain rates above projected inflation.

Chart 2 is based on data from Tables 1 and 2, showing the evolution of the FOMC’s median projections of inflation and estimates of the Fed funds rate for each year 2021-2024. The quarterly SEPs are on the horizontal axis. Note that the Fed’s inflation and interest rate projections are discrete quarterly observations and the lines connecting them are simply to aid the reader.

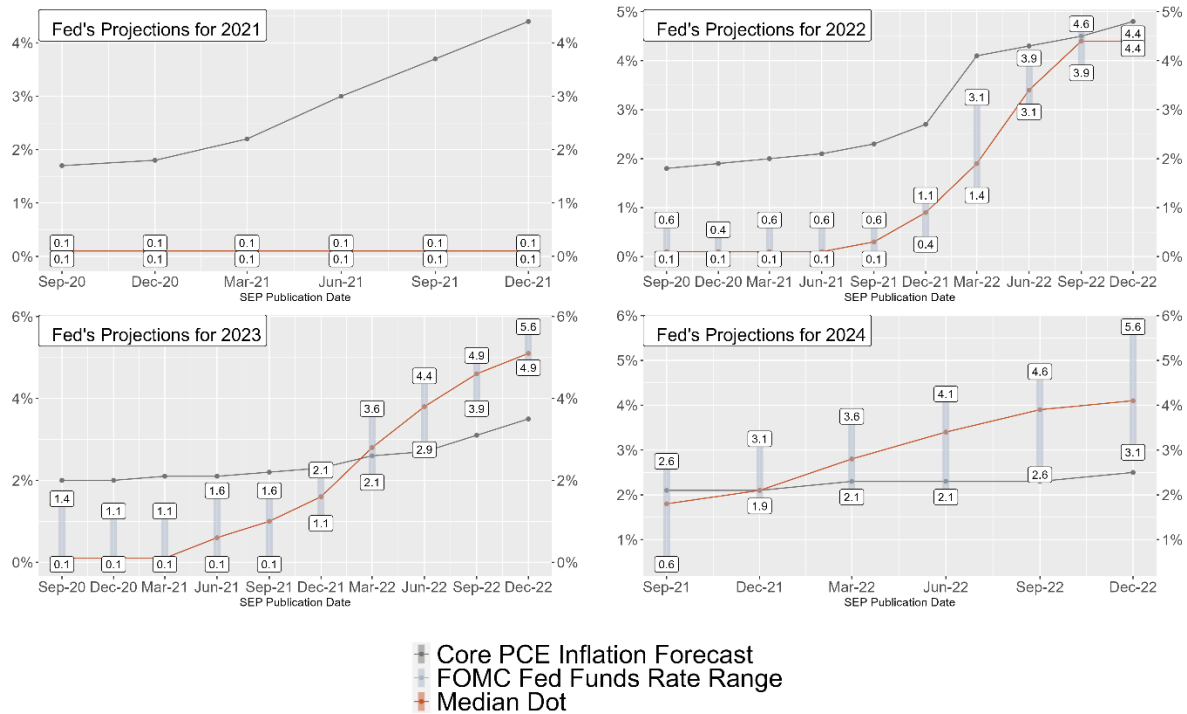
Chart 2 combined with Tables 1 and 2 illustrate the seeming inconsistencies between the Fed's estimates of the appropriate Fed funds rate and its projections of sharply declining inflation. The upper left panel shows the Fed estimated that keeping its Fed funds rate anchored to zero, involved an increasingly negative real rate *relative to the inflation it expected*. The upper-right panel shows that even as the Fed revised up its forecast of inflation for 2022, its projected Fed funds rate remained below the inflation it projected. The bottom two panels of projections for 2023 and 2024 show that, beginning with its March 2022 SEPs, the Fed estimated interest rates above the inflation it projected.

### **Assessing the Fed's Projections**

The Fed was caught flat-footed by the rise in inflation. Just as it had done in the years prior to the pandemic, throughout 2020 the Fed projected that inflation would rise gradually to 2% and stay there. Its projections in 2020 and most of 2021 were largely invariant to the massive fiscal and monetary policy responses to the pandemic or fluctuations in inflationary expectations. Even as inflation rose sharply and became more pervasive in 2021, the Fed fell further behind in raising its inflation projections and continued to anchor its policy rate to zero and purchase unprecedented amounts of Treasury and mortgage-backed securities (MBS), even though the housing market was booming. This involved an increasingly negative real Fed funds rate and the largest deviation from the Taylor Rule in history. (The deviation was large at the zero lower bound following the financial crisis but inflation and Taylor Rule estimates were lower than in 2021-2022.) The Fed seemed to be assessing monetary policy in terms of nominal rather than real rates. Other lessons from historical experiences were not heeded. The quarterly projections of the SEPs provided misleading forward guidance about monetary policy that led to often confusing and muddled communications.

The inconsistencies between the SEP projections of inflation and estimates of the appropriate interest rate suggests a lapse in the Fed's understanding of the inflation process and how monetary policy is related to it. As described later, the Fed never adequately explained why inflation remained low following the financial crisis, and the Fed may have lost its bearings following the pandemic.

**Chart 2. Fed Core PCE Inflation projections and Dots, 2021-2024**



Sources: Board of Governors of Federal Reserve System, Quarterly Summary of Economic Projections, Bureau of Economic Analysis  
 Notes: Projections of inflation are Q4/Q4 percentage change for year indicated while Fed funds rate estimate is for year-end

The Fed’s forecasting failures stemmed from a confluence of modeling and analytical errors, human and institutional errors, and a striking absence of risk management. The Fed’s FRB-US macro model failed to forecast the stimulative impact of expansive fiscal and monetary policies. The Fed’s ongoing reliance on the Phillips Curve and its perception that it could control inflation by credibly managing inflationary expectations contributed to poor forecasts. Human and institutional errors contributed to poor projections and misguided policies. The Fed’s perception of its credibility may have been overestimated based on the sustained low inflation of the prior expansion. The Fed used poor judgment in interpreting the data, and it tended to rely on the “best outcome” projection, with insufficient attention paid to alternative outcomes. The institutional structure of the Federal Reserve System and its ingrained mindset influenced its projections and policy deliberations. This resulted in strained communications. The Fed failed to heed some of the important lessons of history. Its new strategic plan institutionalized asymmetries in its dual mandate and contributed to misguided policies.

**Modeling and analytical errors.** The Fed’s large FRB-US macromodel failed to forecast the inflationary impacts of the expansive fiscal and monetary policy responses to the pandemic and embodies many



modeling and analytical errors. The Fed's heavy reliance on managing inflationary expectations through forward guidance and the Phillips Curve also contributed to misguided forecasting and policies.

The FRB-US is basically a DSGE model of the economy with neo-Keynesian features, Phillips Curve influences, and a dominant role of inflationary expectations. In the model, monetary policy affects aggregate demand through interest rates and financial conditions. Money supply indirectly affects financial conditions but is not explicit or central. The magnitude and duration of fiscal stimulus impulses are muted by specifications of the model. Inflation is heavily influenced by inflationary expectations and the Fed's ability to manage them through forward guidance. In these analytics, increases in inflation above 2% naturally regress back toward the Fed's target.

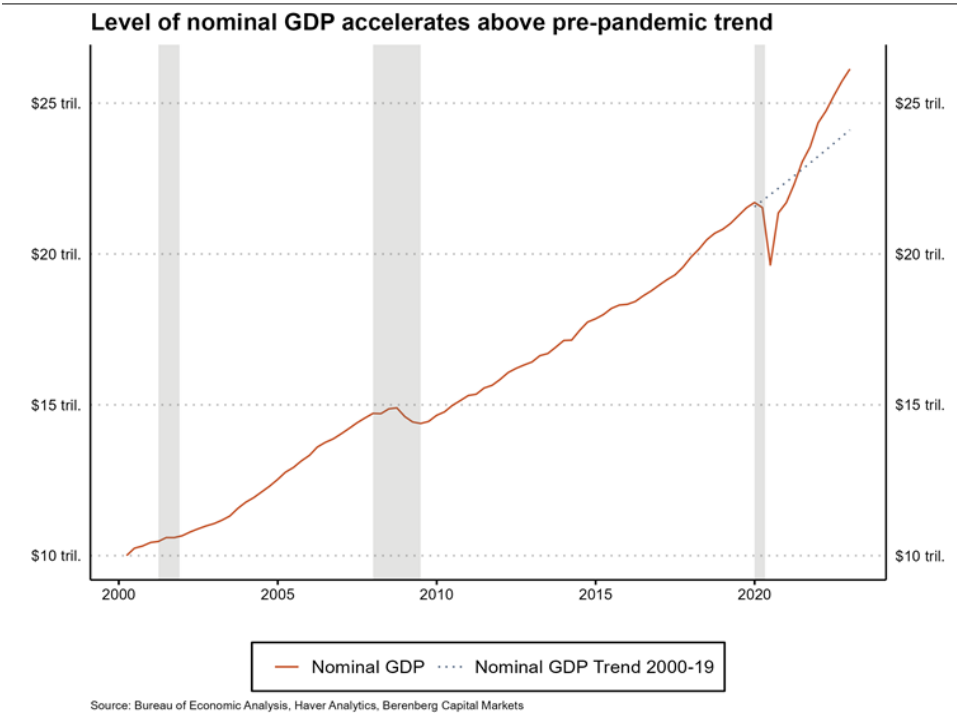
The failure of the FRB-US to forecast the inflationary impacts of the unprecedented fiscal stimulus and monetary accommodation is striking. The fiscal responses to the pandemic—the CARES Act (\$2.3 trillion, enacted March 2020), the Coronavirus Response and Relief Supplemental Appropriations Act (\$900 billion, December 2020) and the American Rescue Act (\$1.9 trillion, March 2021)—totaled \$5.1 trillion, over 27% of real GDP and three times higher than the 9% decline in real GDP. In comparison, President Obama's fiscal response to the Great Financial Crisis (GFC), the American Recovery and Reinvestment Act (\$831 billion, January 2009), increased deficit spending by roughly the same amount as the decline in real GDP during the GFC.

This forecasting failure has been highlighted by Larry Summers (Summers 2023) and others. Summers simulated the FRB-US model and found that a \$2 trillion deficit spending shock raised inflation by 0.7 percentage points, far below what he argued a simple output-gap framework would have predicted. The FRB-US forecasts are also inconsistent with outcomes generated with standard estimates of the fiscal policy multipliers (Tulip 2014), particularly with the Fed's extreme monetary accommodation of zero interest rates and asset purchases including the purchase of roughly one-half of all new Treasury bonds issued. Most of the fiscal stimulus involved the government's transfer payments to households and small businesses. These generated spikes in disposable personal income and financial cushions for businesses that boosted spending, while the sizable portion that was saved generated a surge in excess personal savings (estimated to be \$2.5 trillion, or 13.4% of disposable personal income above pre-pandemic levels), and a parallel 40% surge in M2 money supply.

By Q4 2020, nominal GDP had rebounded back to its pre-pandemic level. Fueled further by the \$1.9 trillion American Rescue Plan of March 2021, nominal GDP rose 12.2% in the next year through Q4 2021,

lifting it well above its pre-pandemic path (Chart 3). The FRB-US model did not predict this magnitude of acceleration. While the Fed acknowledged a pickup in aggregate demand, it emphasized supply bottlenecks as the source of inflation (Board of Governors of the Federal Reserve System 2021). Two observations are appropriate. Even if the FRB-US model was overwhelmed and unable to capture the magnitudes of the pandemic shock and unprecedented fiscal and monetary stimuli, economic common sense should have led the Fed to consider possible outlier outcomes involving excess aggregate demand and inflation based on \$5 trillion in fiscal stimulus, zero rates, and effective debt monetization.

**Chart 3**



Secondly, the Fed was too quick to attribute the rise in inflation to transitory supply shocks and presume that the bottlenecks in supply would reverse quicker than the positive shock to demand. This suggested an asymmetry in its thinking that downplayed the strength in demand in its assessment of the demand-supply imbalance. During the post-GFC expansion, the Fed attributed sub-2% inflation to insufficient aggregate demand, and the prescribed remedy was monetary stimulus such as QEIII in 2012 and sustained zero rates that would lift economic activity. In contrast, in the robust recovery from the pandemic, the Fed understated the role of monetary policy in contributing to the supply-demand imbalance. This asymmetric view delayed the normalization of monetary policy.

The Fed's continued reliance on a Phillips Curve also contributed to its failure to predict the rising inflation. The unemployment rate fell sharply to 6.7% in December 2020 and 5.4% in July 2021 from a pandemic peak of 14.7% in April 2020, but it remained well above the Fed's estimated longer-run natural rate of unemployment of 4% and the 3.5% unemployment rate that existed before the pandemic. The Fed interpreted this as labor market slack that suggested muted inflation. Summers and others argued that different labor market measures indicated that the NAIRU had increased significantly, suggesting tight labor markets. Despite mounting indications of labor market tightness and evidence of early retirement and that the slow recovery of the labor force participation rate might persist, the high unemployment rate delayed predictions of rising wages and inflation. It was only after the unemployment rate fell close to 4% and other labor market indicators suggested constraints on labor supply did the Fed begin to predict an acceleration of wages.

The dominant role of inflationary expectations and the Fed's forward guidance to manage them were a key basis underlying the Fed's forecasts that inflation would remain low. Managing inflationary expectations became an even more prominent monetary policy tool in the post-GFC decade as the Fed acknowledged the Phillips Curve had flattened and that it had become a less reliable predictor of inflation. As former Fed Vice Chair Rich Clarida stated after the Fed's new strategic plan was rolled out in August 2020, "With regard to inflation expectations, there is a broad agreement among academics and policymakers that achieving price stability on a sustained basis requires that inflationary expectations be well anchored at the rate of inflation consistent with the price stability goal. This is especially true in the world that prevails today, with flat Phillips Curves in which the primary determinant of actual inflation is expected inflation" (Clarida 2020).

Even as inflation rose sharply in 2021, market-based expectations based on 10-year treasury TIPS gave the Fed confidence that inflationary expectations remained reasonably anchored to 2% and that it maintained inflation-fighting credibility, even though shorter-duration breakevens and market-based surveys indicated much higher inflationary expectations. The Fed did become concerned in the second half of 2021 when market-based expectations rose and survey-based inflationary expectations (University of Michigan Consumer Sentiment and Federal Reserve Bank of New York Survey of Consumer Expectations) shot up and suggested that expectations had become unanchored. Despite these signals, the Fed delayed raising rates and continued to rely on forward guidance to manage inflationary expectations.

Both market-based and survey-based measures of inflation receded in the second half of 2022 only when the Fed aggressively raised rates and supported them with public statements that it would raise rates further to achieve its 2% inflation target (Powell 2022). This highlighted the ineffectiveness of the Fed's efforts to manage inflationary expectations through forward guidance rather than actual adjustments in monetary policy. Clearly, policy actions speak louder than words, revealing a serious flaw in the Fed's analytical framework.

**Human and institutional errors.** Bad judgment, misguided assessments of data, and a failure to heed the lessons of history have contributed to lapses in the Fed's forecasts and policies. Much of the Fed's thinking and policies were driven by the *presumption* that inflation would stay low. This presumption became ingrained in the post-GFC decade, when inflation remained subdued even as the Fed maintained zero rates and engaged in quantitative easing. These perceptions were incorporated into the Fed's modeling of inflation, echoed in statements by Fed members, and were the basis for research by Fed staffers.

Increases in inflation above 2% were treated as temporary anomalies that would unwind naturally or could readily be unwound. This notion that *inflation should have stayed low* likely contributed to the Fed's misinterpretation of the data in 2021. The Fed's attribution of inflation to transitory supply shortages and suggestion that it was due largely to sharp price increases of a few goods were misleading assessments and inconsistent with available data. Aggregate demand and nominal GDP were accelerating at their fastest pace in history, and detailed Bureau of Labor Statistics data showed that inflation was becoming increasingly pervasive across a broad array of goods and services (Levy 2021).

The Fed's transitory supply shortage argument that inflation would naturally fall to 2% without any need for monetary tightening would have been a favorable outcome for the Fed. The Fed stuck with this assessment too long and did not seem to seriously consider alternative outcomes. Finally, after being renominated to a second term as Fed Chair, Powell stated in testimony to the Senate Banking Committee on November 30, 2021 that "it is time to retire the term transitory," acknowledging that inflation had been more persistent than earlier presumed, and suggesting the need to speed up the Fed's tapering of its asset purchases and moving up its anticipated rate increases (Powell 2021). Other FOMC members quickly supported this notion, distanced themselves from the "transitory" rationale, suggesting that inflation would remain higher in 2022 than they had projected earlier and that rate increases would be forthcoming.

In keeping with tradition, the Fed has been reticent to admit mistakes, but Fed Governor Waller's refreshing candor in a recent interview with CNBC economics anchor Steve Liesman provides important insights (Council on Foreign Affairs 2023):

LIESMAN: Are you at all humbled in your certainty about the trajectory of inflation by what happened a year ago?

WALLER: Yeah...2022 really was—it was a humbling experience. When you sat in April or May of 2021 and you saw this inflation you said...it can't persist for very long...And inflation will come right back down. And that story held from April until September of 2021. Inflation was mostly coming down. It looked transitory. And then October, November, December of 2021, it just exploded. So once that happened, we had to quickly change pace and say, you know, this story, this belief, it's just not there. So, you know, it was a mistake.

LIESMAN: But what was the mistake? Was the mistake being too, you know, locked into your view? Or was the mistake that you were simply low in terms of your trajectory on inflation?

WALLER: *The mistake in my mind, that we made, was we bet the farm on the transitory story.* And any risk management model, you would have said, what if it doesn't go away? What should you be doing to get ready for that event, if it doesn't go away?

These comments highlight the Fed's poor judgment and risk management. Facing significant uncertainties, particularly as inflation deviated more and more from its forecasts, the Fed was remiss not to consider alternative scenarios and alternative analytical frameworks, and how monetary policy would respond to outcomes that differed from its baseline projections. Formally incorporating scenario analysis into its quarterly forecasting exercises and policy deliberations would have improved the Fed's risk management, monetary policy responses and communications (Bordo, Levin and Levy 2020).

The lack of dispersion of forecasts among FOMC members is striking. The range of forecasts in the SEPs shows that not one Fed member came anywhere close to forecasting the rise in inflation. Moreover, through December 2021, not one Fed member projected that a positive real Fed funds rate would be necessary to reduce inflation through the projection period extending to 2023. Through the December 2022 SEP, no Fed member projected that a positive real Fed funds rate was appropriate for 2022. Such projected outcomes are inconsistent with historical experience in which every time the Fed has raised rates to reduce inflation pressures, it has raised its policy rate above inflation (Bordo and Levy 2023).

There were no dissents from the Fed's policy decisions in 2021 and several in 2022. These observations suggest that the institutional nature of the Federal Reserve System may have influenced Fed participants' projections and contributed to the policy errors.

The Fed's organizational and governance skews power toward the Chair and the Board of Governors, away from the Federal Reserve Bank Presidents. The economic and financial forecasts developed by the Board's large and well-trained economics staff carry substantial weight. This institutional centrifugal force leads the governors to align their forecasts to the staff forecasts. In recent years, outlier positions taken by Federal Reserve Bank presidents seem to have diminished. Why have Federal Reserve Bank presidents been so *reserved*? To what extent do internal pressures discourage them from articulating alternative views and analytical frameworks?

A related issue is how the anecdotal evidence gathered by the Federal Reserve Banks affects the FOMC projections forecasts and policy deliberations. When inflation accelerated sharply in mid-2021, the Fed's Beige Book prepared for the July 2021 FOMC meeting reported: "Pricing pressures were broad-based...While some contacts felt that pricing pressures were transitory, the majority expected further increases in input costs and selling prices in the coming months." (Board of Governors of the Federal Reserve System 2021). That portrays broadening inflation pressures. But the Fed's semi-annual Monetary Policy Report prepared for Congress in the same month of 2021 emphasized supply chain bottlenecks as the key source of the rising inflation while understating the role monetary policy played in stimulating aggregate demand (Board of Governors of the Federal Reserve 2021). Did Reserve Bank presidents express views different from the Board consensus, and if so, did these views receive proper attention?

Like so many organizations, the Fed has a "circle the wagons" mentality whereby FOMC members are encouraged (feel pressure) to support the views of the institution and not deviate very much. Certainly, outlying views are presented during policy deliberations, but official dissents are discouraged.

Certainly, the Fed was not alone in its overly optimistic inflation forecast, as most private sector forecasters were also caught by surprise (Waller 2022). The Blue Chip Economic Indicators and the Survey of Professional Forecasters missed with forecasts that were similar to the Fed's SEPs. This is not surprising, since many private sector forecasters take their cues from the Fed (and many of them have been trained at the Fed). Financial markets were also slow to forecast higher inflation in 2021, as reflected in market-based measures such as breakevens on the TIPS and sustained low bond yields; but

survey-based inflationary expectations (University of Michigan Consumer Sentiment and Federal Reserve Bank of New York Survey of Consumer Expectations) were much more accurate in forecasting the rise in inflation. Some alternative measures, such as the Federal Reserve Bank of New York's Underlying Inflation Gauge, also projected that high inflation would persist. The Fed's forecast miss is consistent with its history of being fairly accurate when real growth and inflation remain in narrow ranges but inaccurate when conditions change rapidly. Analogously, in periods when inflation is relatively stable, professional forecasters have a better track record of forecasting inflation than consumer surveys, while consumer surveys have better track records when inflation is changing rapidly (Goodspeed 2022).

**The Fed's new strategic plan.** The pandemic accentuated the Fed's ongoing fear that if inflation remained persistently below 2%, it would lead to a collapse in inflationary expectations and drive interest rates to the effective lower bound and constrain monetary policy. In August 2020, the Fed rolled out its new strategic plan which institutionalized asymmetries into its interpretation of its inflation and employment mandate and conduct of policy. The new plan involved an overly complex flexible average inflation targeting (FAIT) plan that favored higher inflation, prioritized its employment mandate and enhanced it to "maximum inclusive employment," and eschewed preemptive tightening in response to anticipated higher inflation. This strategy was flawed in critical ways and contributed to the Fed's delayed response to the high inflation that unfolded in 2021 (Levy and Plosser 2022). The FAIT did not include any numeric range for acceptable inflation to make up for earlier sub-2% inflation.

When inflation rose above 2% in 2021, the Fed viewed it as a positive step associated with the economic recovery from the pandemic. As the robust recovery in employment tightened labor markets, the Fed said it would delay tapering its asset purchases—and therefore delay its raising of interest rates—until it saw "substantial progress" toward its employment mandate. The Fed's new strategic mandate of "maximum inclusive employment" and its de-emphasis on preemptive monetary tightening likely contributed to this policy decision. The Fed did not provide any guidance for evaluating substantial progress. This unnecessarily delayed raising interest rates, contributed to its inflationary monetary policy, and created significant confusion in the Fed's communications and attempts to provide forward guidance.

**The Fed's SEPs, inflationary expectations, and forward guidance.** Even though the quarterly SEPs are conditional projections and not commitments by the Fed, they are widely perceived to be an

important component of the Fed's forward guidance, and as such they were internally inconsistent and misleading on several dimensions, and occasionally strained the Fed's communications. The Fed's projections of inflation proved unreliable and its estimates of the Fed funds rate revealed an inconsistency in its analytical framework. The Fed's stubborn defense of "transitory" supply shocks implicit in the SEPs was misleading. The Fed "leaned against the data" and allowed its interpretation of the rising inflation to be influenced by its forward guidance (Doh, Gruber and Song 2022). Once the Fed acknowledged that inflation would remain higher than desired, its estimates that it would not need to raise the Fed funds rate as high as inflation were puzzling. The Fed funds futures began pricing in Fed rate increases well above the Fed's estimates, effectively betting against the Fed's forecasts. This strained the Fed's communications, and contributed to an unhealthy give-and-take between financial markets and the Fed. There are concerns that this dents the Fed's credibility (Reis 2022).

The Fed's judgment in managing inflationary expectations also lapsed. While the Fed emphasized the importance of anchoring inflationary expectations to 2%, it failed to tighten monetary policy when expectations became unanchored. Instead, the Fed forecast and communicated that inflation would fall, and emphasized in public statements that it had all the tools necessary to reduce inflation. This seemed more like a "strategy of hope" rather than a well-reasoned strategy for monetary policy.

**Misreading history.** The Fed made a major mistake in assuming that inflation would follow the same pattern as the post-GFC period without taking into consideration the stark differences between the character and policy responses to the pandemic and the GFC. Nominal GDP did not accelerate much beyond 4% following the GFC, despite monetary and fiscal stimulus, and averaged below 4% during the 2009-2019 expansion. This resulted in 2.25% real growth and 1.75% inflation. The Fed's primary explanation for the persistently low inflation was the Phillips Curve was flatter than it had earlier presumed. This *ex post* rationale provided little insight into how operational changes by the Fed and financial conditions stemming from the GFC may have impacted the monetary policy transmission channels and the failure of aggregate demand to accelerate. The Fed began paying interest on excess reserves (IOER) and tightened capital and liquidity standards for banks, which may have encouraged banks to hold reserves created by the Fed's quantitative easing rather than make loans (Plosser 2018 and Ireland 2019). Heightened regulatory scrutiny of commercial banks and the imposition of rigorous stress tests also may have deterred lending. The GFC had crippled the banking and housing sectors and impaired the household finances. The Fed's QE post-GFC generated a spike in bank reserves, but it had no lasting impact on the growth of M2. Bank credit to households or businesses remained subdued for



years into the recovery and while mortgage debt outstanding receded. In summary, while the Fed's quantitative easing expanded bank reserves, that stimulus was not put to work in the economy.

The pattern around the pandemic was in sharp contrast. The Fed's asset purchases generated a surge in bank reserves while excessive fiscal stimulus in the form of government income transfers to households and small businesses contributed parallel surges in M2 and personal savings. Banks remained well capitalized and were not impaired. The monetary and fiscal stimulus fueled the pent-up demand and generated a robust rebound in consumption and aggregate demand. Housing boomed. Consumer balance sheets were healthy. Employment rebounded and wage gains rose. The Fed understated the surge in aggregate demand and the role monetary policy played in stimulating it.

The Fed seemed to ignore other valuable benchmarks from history. Major wars have typically involved deficit financing accommodated by monetary ease that subsequently resulted in inflation, and the government's pandemic spending and public statements were very war-like (Bordo and Levy 2020 and Hall and Sargent 2023). There are interesting parallels between the WWII period and the pandemic. Following all episodes of excessive ease in the modern era, the Fed had always raised the Fed funds rate above inflation. Understating the unprecedented fiscal stimulus, sustaining a negative policy rate, and allowing an all-time wide gap with Taylor Rule estimates proved costly (Bordo and Levy 2023).

### **Concluding remarks**

The Fed's aggressive interest rate increases since mid-2022 and sizable upward revisions to its projections have been necessary and positive steps, and inflation has begun to recede from its peak. However, the magnitude and persistence of the forecasting and policy errors raise many questions and suggest room for improvement. It would be insufficient for the Fed to now say "we're on top of the issue now so don't worry about it." It must assess the sources of its errors and establish a plan for corrective action. The Fed would benefit from a formal internal introspection—an "after action review." Shortfalls in the FRB-US model must be addressed, particularly its failure to adequately capture the fiscal stimulus and the failure of its financial conditions parameters to capture the extent of the Fed's monetary accommodation and the surge in money. The Fed must re-establish symmetry in its mindset

about its 2% inflation target and set aside the presumption that inflation tends to be too low. This involves correcting the flaws and asymmetries in its strategic framework. The assessment held by some Fed members that the strategic plan is sound but it was implemented incorrectly in 2021-2022 is incorrect and a non-starter. The Fed must improve the quarterly SEPs. This involves clarifying the conditionality of the inflation projections and establishing a consistency between the inflation projections and interest rate estimates based on the Taylor Rule and other guidelines. Also, the SEPs should be modified to include alternative scenarios and estimates of how the Fed would respond to them. These should be woven into the FOMC's policy deliberations. The Fed also needs to encourage diverse views among FOMC participants, and take steps to avoid the inadvertent institutional dampening of alternative views on the economy, inflation and appropriate policies. It must also consider ways to make better use of anecdotal evidence gathered by district banks. "Outside the box" thinking and consideration of alternative models should be encouraged. The Fed needs to address its unhealthy relationship with financial markets, which may improve its communications strategy. The objective is to improve the Fed's conduct of monetary policy.

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