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“Reflections on Phasing Policy Amidst (Pandemic) Uncertainty”

*The 2023 Goldman Lecture in Economics
at Wellesley College*

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*The views expressed today are my own, not necessarily those of my colleagues on the
Federal Reserve Board of Governors or the Federal Open Market Committee.*

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Key Takeaways

1. Collins highlighted three main forms of uncertainty that monetary policymakers confront, all present in the pandemic era. The first relates to *data and measurement* – how accurately statistics describe the variables they intend to measure. The second relates to *relationships between key economic variables* that influence policy decisions – examples include the links between a tight labor market and inflation dynamics. The third is related to *unforeseen events*, such as pandemics, natural disasters, or geopolitical developments.

2. For policymaking, the appropriate response to uncertainty depends on its type as well as the context. Uncertainty can call for policy to move unusually rapidly – or to take a more wait-and-see approach. In the current policy cycle, this has contributed to different policy phases, starting with a period of holding rates low when pandemic-related risks were still high, followed by a period of aggressive moves, and then the current more gradual, patient approach to policy.

3. Some special factors have impacted the pandemic recovery that make it difficult to compare to previous business cycles, adding to the uncertainty. Despite many expecting a slowdown this year, demand has remained remarkably resilient to date. Household balance sheets have been solid, partially due to savings accumulated during the pandemic, and corporate cash holdings have been elevated due in part to locking in financing at previously low rates. Factors like these have likely made the economy less interest sensitive than during past tightening cycles, to date.

4. With progress on inflation and continued elevated uncertainty, the FOMC appropriately shifted to a new, more gradual and “patient” policymaking phase. Though inflation levels are still too high, taking the time to holistically assess incoming information is warranted. It reflects the fact that we are likely close to the peak of this tightening cycle, with the risk of inflation remaining persistently high more closely balanced with the risk of slowing activity more than needed to achieve price stability. Still, Collins expects we’ll need to hold rates at restrictive levels until we see evidence that inflation is on a sustained path back to 2 percent.

5. Collins remains realistic, but optimistic, about restoring price stability without a significant economic downturn. Overall, she continues to be realistic about the economic uncertainties and risks, but optimistic that price stability can be restored with an orderly slowdown in activity and only a modest increase in the unemployment rate – an outcome consistent with both parts of the Fed’s dual mandate.

6. One key policy lesson, Collins suggests with the benefit of hindsight, relates to risks from supply shocks. The pandemic represented uncharted territory for policymakers; and risk assessments, however difficult to make, had to be made. But Collins observes that the risk of widespread, binding supply constraints may suggest a stronger case than previously realized for insuring against too-high inflation by removing policy accommodation more quickly.

7. Collins also offered some takeaways to students about learning and careers. She recommended a mindset of lifelong learning and seeking out thoughtful, capable people with diverse perspectives. In working environments, she also underlined the importance of gathering information broadly – quantitative and qualitative – and intentionally hearing from a wide range of stakeholders, including voices that have not traditionally been “in the room.”

Thank you for inviting me to be with you today. It is such a pleasure to be on the Wellesley campus with students, faculty, and community members.

Before my remarks, there are a few people I would like to acknowledge. First, the late Marshall Goldman, whose legacy of insightful inquiry is rightly commemorated with this annual lecture. Second, the Wellesley economics department and your chair, Courtney Coile, for the invitation to deliver this year's Goldman lecture. Over the years, members of Wellesley's economics faculty have had many substantive connections with me and also with the Federal Reserve System, and I want to express my appreciation for your commitment to excellence, your intellectual curiosity, and your dedication to your students. I really must commend Wellesley as a whole, and certainly the economics department, for sending into the world thoughtful, prepared, and very able women who have made an impact in so many fields – not least, in economics and finance.

Last but certainly not least, I want to acknowledge your president, Paula Johnson, and thank her for her leadership and, on a personal level, her friendship. Paula and I got to know each other as undergraduates – a few miles from here, and a few years ago – and it has been so wonderful to see her many distinguished contributions to society in the years since then, during her remarkable career in medicine, public health, and higher education.

Brief Context

Allow me to preview what I'd like to cover today. As you know, I've come to Wellesley to speak about my role, and the Fed's responsibilities, in making policy – in particular, amidst *uncertainty*, and with a focus on the different *phases* of monetary policy during the pandemic.

I'll start with a bit of context, to level set about the Fed's policymaking and other roles. Then I'll turn to monetary policy and explore the important matter of uncertainty in policymaking through the lens of the recent pandemic and ongoing economic recovery. I'll discuss the evolution of the economy over this period and the corresponding phases

of policy – bringing the essential element of time and changing conditions into the analysis. I'll conclude with some very brief connections to thinking about careers in economics and policymaking.

Of course, I offer my standard disclaimer – these comments are my own, and may not reflect the views of any other Federal Reserve policy maker.

So first let me set the stage with a bit of context, in particular for the students who are learning about macroeconomics and the role of the central bank. Created by Congress nearly 110 years ago, and refined over time, the Fed's duties support the functioning of the U.S. economy, in the public interest. We do a variety of things, starting with monetary policy. For me and my colleagues at the Boston Fed, the overarching vision is a vibrant economy that works for all. I see our mission as serving the public in New England and the nation by promoting a strong, resilient, and inclusive economy and financial system.

Beyond monetary policy, we have other duties – which I won't have time to discuss today. They include¹:

- supporting the safety and soundness of the nation's financial institutions, by supervising some of the country's banks and serving as a "lender of last resort" to the financial system;
- mitigating financial stability risks;
- supporting safe and reliable payment and settlement systems – back-end infrastructure and services to the banking system and the U.S. Treasury (ranging from currency and coin circulation to various electronic channels); and
- promoting community economic development in a variety of ways.

Most of my remarks today will be about our monetary policymaking, but I'd like to take a moment, with many economics students and professors in the audience, to highlight the variety of research we do – which is wide-ranging, because the economy is

¹ Learn more in "[*The Fed Explained: What the Central Bank Does*](#)," a publication of the Board of Governors of the Federal Reserve System.

so multifaceted. Our economists and their research assistants and analysts do fascinating, data-driven, nonpartisan, policy-relevant work, and I'll mention just two (of many!) recent examples. Some of our researchers have studied the attention – or inattention – that consumers give to inflation, demonstrating that the absolute level of inflation is important. When inflation is low and stable, consumers don't really think about it; but when inflation is higher, consumers are much more aware of it, and possibly more likely to change their behavior.² Another recent study looked at the potential causes of racial wealth gaps and found that inheritances and other types of wealth transfers from one generation to the next play only a small part – the main contributors to the gap, the authors find, are differences in lifetime earnings and pension assets. Therefore, policies that successfully increase human capital can potentially help reduce this gap.^{3, 4}

Monetary Policy

Let's turn to monetary policy, and the core of my talk today. It's important to note that at the Fed we are entrusted with *monetary*, and not fiscal, policy. This involves actions that ultimately affect the cost of borrowing for businesses and households.

The Fed spends a lot of time analyzing economic conditions – using data, doing research, and listening to stakeholders locally and nationally. Having prepared in great depth, I join the other 11 regional Reserve Bank presidents and the seven members of the Board of Governors in Washington eight times a year to discuss appropriate monetary policy. After taking in substantive staff analysis, and multiple go-arounds by committee participants, there is a vote on policy actions by the current voting members, some of whom rotate year-to-year. The committee's decision and summary of appropriate policy is released in a statement, and then the Chair holds a press

² See Bracha and Tang (2022).

³ See Sabelhaus and Thompson (2022).

⁴ Additionally, the Boston Fed, in collaboration with a coalition of community partners, is launching a multiyear research initiative to explore wealth disparities across Massachusetts. Our findings intend to inform policy and will hopefully be used by public, private, and non-profit organizations to develop strategies that promote equity in wealth, a key foundation for greater economic opportunity.

conference to explain the committee’s decisions, which are then implemented in the market.

The Federal Reserve is charged, by Congress, with a “dual mandate” of price stability and maximum employment. We currently define price stability as 2 percent inflation – a low level, where consumers and businesses do not see eroding purchasing power as a pressing concern.⁵ Maximum employment, the other pillar of the dual mandate, is less specifically defined, but refers to the broad and inclusive goal of job opportunities for all Americans. It’s important to note that while often characterized as competing, history has shown that price stability is essential for a well-functioning economy, and an important precondition for maximum employment that is sustainable over time.

Figure 1’s left panel shows the evolution of the inflation rate since the 1960s, with grey bars indicating recessions.⁶ While there are many inflation measures, I focus here on the 12-month change in the price of personal consumption expenditures (or PCE), excluding the important but volatile food and energy components – also known as “core” inflation⁷ and generally a good predictor of overall inflation’s path.

As the figure shows, achieving price stability hasn’t always been an easy task over this period. An inflationary buildup started in the mid-1960s and persisted until the disinflation achieved under Fed Chairman Paul Volcker in the early 1980s. This was followed by an extended period of inflation moderation, with inflation typically near or below 2 percent since the 2008 financial crisis and Great Recession, lasting until the recent pandemic-related inflation flare-up.

⁵ While this argument holds even more strongly for a zero-inflation rate, one reason to target a positive but low inflation rate is that it can be difficult for firms to cut wages. A positive inflation rate helps to achieve real wage declines that facilitate adjustment when the economy faces a contractionary shock, thus alleviating the downward nominal wage rigidity constraint. For additional context see Bewley (1999).

⁶ See [U.S. Business Cycle Expansions and Contractions](#), produced by the National Bureau of Economic Research.

⁷ While this measure can be a better indicator of underlying inflation trends, the Fed’s inflation target is expressed in terms of total PCE inflation. Salwati and Wessel (2021) is a helpful summary of different inflation measures.

Figure 1's right panel shows the unemployment rate along with inflation, further illustrating the challenges monetary policymakers face in trying to stabilize economic activity at a level consistent with both aspects of the Fed's dual mandate.⁸

By raising or lowering interest rates, monetary policy affects aggregate demand in the economy – and **Figure 2** shows how the stance of policy has evolved over time. Policy *tightening* – an increase in the Fed's policy rate, the federal funds rate – raises the cost of borrowing for firms and households, with the effect of slowing demand for capital, labor, goods, and services, which in turn relieves price pressures, tempering inflation. Conversely, lowering the federal funds rate, or *easing* policy, reduces the cost of borrowing, thus supporting an expansion of aggregate demand and employment. This tends to increase price pressures, raising inflation.⁹

It is important to note that many of the deviations of inflation and unemployment from levels consistent with price stability and full employment have resulted from unanticipated events requiring the Fed to react. The COVID-19 pandemic is a prime example – a shock originating outside of the economic system and resulting in a substantial disruption to the economy, requiring a response from the Fed in pursuit of its dual mandate.

So, I will now offer some reflections on conducting monetary policy during a time of heightened uncertainty stemming from the unprecedented nature of the COVID-19 pandemic. I will note that, while a keen observer of monetary policy for many years, I was not involved in policy decisions until joining the Boston Fed in July of 2022.

A key takeaway for me is that the elevated uncertainty, and the risk management considerations associated with that uncertainty, played an important role in policy setting since the pandemic began, and appropriately so. I see the most salient types of

⁸ Fed actions typically are not intended to cause a recession, possibly with the exception of the Volker disinflation. The Fed's limited ability at times to stabilize the economy could be due to events that are beyond the control of monetary policy. For further reflections on these topics see [Blinder \(2023\)](#).

⁹ The Fed can also affect interest rates through instruments other than its policy rate, such as by buying or selling government-backed securities. These so-called large-scale asset purchases have occurred at times when the federal funds rate hit the zero-lower-bound. The Fed also provides information about future policy (so-called forward guidance) with its meeting statement and quarterly Summary of Economic Projections.

uncertainty as having shifted, with somewhat different policy implications, as the situation evolved – and will explore that with you today.

Of course, with the benefit of hindsight, some may argue that different policy decisions would have been preferable. However, I think it is too soon to judge how well the Fed has managed the challenges of stabilizing the economy during this very complex period. We will have much to learn from the in-depth analysis that this period warrants. And much will depend on whether inflation returns to target in a reasonable amount of time with only modest effects on employment.

I will highlight that I remain a “realistic optimist,” based on my assessment of currently available information. The ongoing resilience I see in the economy, and the progress on inflation so far, lead me to believe there is a pathway to achieving this desirable outcome. In fact, that path seems to have widened recently – although considerable risks remain.

Uncertainty and Monetary Policy

Former Fed chairman Alan Greenspan once noted that uncertainty is not just a “pervasive feature of the monetary policy landscape; it is the defining characteristic of that landscape.”¹⁰ So, I’ll next highlight three main forms of uncertainty that monetary policymakers must confront.¹¹

The first is uncertainty related to *data and measurement*. This refers to how accurately available statistical data describe the variables they intend to measure, and to the fact that some variables are not directly observable. Two examples are maximum sustainable employment, and the underlying “neutral” interest rate, above which policy becomes restrictive (or below which policy becomes accommodative). Both are important economic concepts that are certainly affected by uncertainty.

¹⁰ See Greenspan (2004).

¹¹ Accessible and thoughtful discussions about the different forms of uncertainty and how they affect the conduct of monetary policy can be found in, for example, Bernanke (2004) and Mendes et al (2017).

The second form is uncertainty related to the *relationships between key economic variables* that influence policy decisions. Examples of this type, in the current context, include the links between a tight labor market and inflation dynamics, and the size and timing of the effects of monetary policy – the proverbial “long and variable lags” with which policy exerts its effects on the economy.

The third form is uncertainty related to *unforeseen events*, such as pandemics, natural disasters, or geopolitical developments. While statistical methods can use past experiences to help quantify the first two types of uncertainty, these types of shocks resist prediction.

For policymaking, the appropriate response to increased uncertainty depends on its type as well as the context.¹² In many situations, uncertainty calls for a gradual and cautious approach to policy. This can arise in periods of increased uncertainty about the data, or the effects of policy actions on the economy. Allowing time for the “signal” to emerge from the “noise” in the data, or to fully assess the economy’s response to past policy actions, can help – leading to more informed policy decisions, and balancing the risks of doing too much versus not doing enough.

However, in some circumstances, uncertainty calls for policy to move aggressively. Examples often involve contexts where doing nothing or moving too slowly exacerbates the economic circumstances that policymakers are trying to address. For instance, too-small or too-slow actions to make monetary policy more accommodative at the outset of a major crisis could lead to severe labor market displacements that persistently lower employment, with significant pain for many. On the flip side, when there are risks of higher inflation expectations becoming entrenched, a gradual inflation-fighting approach may limit policymakers’ ability to restore price stability without a significant downturn.¹³

¹² See Brainard (1967).

¹³ For further discussions on this topic see, for example, Ball (1999), Friedman (1968 and 1977) and Phelps (1967).

The COVID-19 pandemic was uncharted territory along *all* these dimensions of uncertainty, due to the size and speed of the economic disruptions it induced. **Figure 3** plots the severity of the pandemic in terms of hospitalizations and deaths. This unforeseen public health event quickly moved the world to an economic situation unlike any in the post-World War II period, with policymakers trying to decipher whether the usual rules governing the behavior of the economy still applied. The pandemic also affected segments of the economy very unevenly, and in non-standard ways relative to previous economic crises, making it more difficult to interpret incoming data and assess the effects of monetary policy on the economy. And as time passed and the economy evolved, so did the nature of the pandemic-induced uncertainty.

The nuances in how uncertainty influences policy decisions contributed to distinct *phases* of monetary policy, which I will now discuss in more detail.

Background: The economy before early 2020

To set the stage, I suspect it is helpful to highlight some key features of the pre-pandemic economy.

Overall, in early 2020 the economy was doing quite well, as can be seen earlier in **Figure 1B**. Despite an unemployment rate that had fallen to near 50-year lows, core inflation remained below the Fed's 2 percent target.¹⁴ Absent clear indications of inflationary pressures, the Fed was not actively restricting economic growth. Importantly, this monetary policy strategy of letting the labor market “run hot” with inflation still below target was successfully drawing more people into the labor market, benefiting groups that traditionally endured higher than average unemployment rates, and fostering a broader-based and more inclusive notion of maximum employment.

¹⁴ Wage inflation was rising some but still relatively subdued. It is possible that, given more time, wage and price pressures would have picked up. Still, these pressures were potentially limited because output growth was moderate and relatively stable.

COVID-19 [March 2020 to November 2020]

In March 2020, the COVID-19 pandemic struck, and almost overnight much of the U.S. (and global) economy shut down. Economic activity plummeted, and by April 2020, the unemployment rate had spiked to 14.7 percent – an extraordinary jump in speed and magnitude.

In addition to enormous public health uncertainty, the COVID-19 shock created unprecedented uncertainty about the extent and length of the economic shutdown. It was unclear how consumers and firms would react to social distancing requirements, and limits on mobility. Concerns also emerged about an extended period of depressed economic activity, and with that, the possibility of falling prices potentially resulting in a *deflationary spiral*. And there were worries about very high unemployment leaving a more permanent labor market imprint, despite the hope that many of the layoffs would be temporary.

The pandemic also laid bare and exacerbated labor market inequalities, as lower-paid, customer-facing occupations were affected the most by the shutdowns while many of the higher-paying occupations could be performed remotely. The left panel of Figure 4 shows the disparities in unemployment by race, and the right panel by educational attainment. Separately, closures of schools and daycares forced some individuals – especially women – who could not work from home to drop out of the labor force at least temporarily.

So the situation involved considerable uncertainty about the possible extent of the economic damage brought on by the pandemic, and the potential for significant negative feedback loops. This called for large and decisive monetary and fiscal policy actions to avoid a worst-case scenario.¹⁵ The Fed cut its policy rate to essentially zero,

¹⁵ A description of the fiscal and monetary policy measures taken in response to the COVID-19 pandemic can be found, for example, in Romer (2021), and Milstein and Wessel (2021). See also Alicia Parlapiano, Deborah B. Solomon, Madeleine Ngo, and Stacy Cowley, “Where \$5 Trillion in Pandemic Stimulus Money Went,” *New York Times*, March 11, 2022.

and provided forward guidance on the future path of interest rates, indicating that rates would remain near zero until the achievement of certain economic conditions.¹⁶ The Fed also launched an array of programs to support the flow of credit to businesses, households, and state and local governments.¹⁷ The Fed gathered additional sources of information¹⁸ as well, in an effort to reduce uncertainty and better understand the extremely unusual economic developments.

Elected officials provided extraordinary fiscal assistance to the economy, and its effects are still reverberating. The extent of the support to households, for example, is captured in the large *rise* of disposable income above pre-pandemic trends, as shown in **Figure 5** – something that had never occurred to such an extent in previous downturns.

The timeliness and magnitude of these fiscal and monetary policy measures ultimately succeeded in preventing the most-feared economic risks from materializing. The unemployment rate dropped rapidly, and inflation did not decline much from its low, pre-pandemic level. Of course, containing the virus and the swift development of vaccines were crucial to avoiding a broader crisis.

The reopening of the economy and the inflation surprise [Dec. 2020 to Nov. 2021]

After the acute phase of the pandemic, there was a noticeable rebound in GDP and its largest component – personal consumption expenditures – in the second half of 2020. This is shown in **Figure 6**, where both series are plotted relative to an estimate of long-run trend.

¹⁶ Initially, the guidance in the FOMC statement affirmed that rates would stay near zero until policymakers were “confident that the economy has weathered recent events and is on track to achieve its maximum employment and price stability goals.” In September 2020, guidance was strengthened to indicate that rates would stay low until “labor market conditions have reached levels consistent with the Committee’s assessment of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time.”

¹⁷ In addition, the Fed resumed purchases of Treasuries and government guaranteed mortgage-backed securities, first to restore market functioning and later to support the economy with low interest rates across the maturity spectrum.

¹⁸ For an overview of these sources see Cajner et al (2022).

However, despite this progress, there were worries heading into 2021 that economic activity could stall. The real-world effectiveness of vaccines, which first became available in December 2020, was still uncertain. Another wave of the virus was underway. And so consumers' willingness to resume normal activities was quite unclear.

Amidst this backdrop of continued high uncertainty, monetary policy remained highly accommodative, even as inflation started to pick up in the spring of 2021, as shown in the lighter line in **Figure 7**. At the time, the rise in inflation was believed to be mainly tied to supply chain constraints that would resolve quickly. Expectations of future price increases remained low¹⁹, reinforcing the idea that inflation could rise temporarily without leaving a persistent imprint on the economy. And although the unemployment rate had improved considerably, it was still around 6 percent in the first half of 2021, above levels considered consistent with full employment. This state of affairs did not suggest an immediate need to remove monetary policy accommodation and tighten financial conditions.

In such a context of heightened uncertainty, it is crucial to assess the costs associated with each risk to the economic outlook and devise the best strategy to achieve the Fed's dual mandate goals. And in the early stages of the pandemic recovery, given the still uncertain public health situation, risks of demand setbacks outweighed the risks of inflation.

With the benefit of hindsight, one could argue for removing policy accommodation sooner.²⁰ But to me at the time, given the continued significant

¹⁹ After dropping sharply with the start of the pandemic, market-based inflation expectations rose through much of 2020 and into 2021, but by mid-2021 had risen enough to only equal their long-run average. Short-term survey-based expectations measures, while up a bit in early 2021, did not rise sharply until May and longer-term survey-based measures edged higher but remained in a fairly narrow range.

²⁰ Chair Powell commented at the March 2022 FOMC press conference: "...if we knew now that these supply blockages [and] the inflation resulting from them, in collision with ... very strong demand, if we knew that that was what was going to happen, then in hindsight, yes, it would have been appropriate to move earlier."

uncertainty, it seemed prudent for the Fed to support the economy versus pre-empting an inflation surge that few were forecasting.²¹

Ultimately, the economy evolved quite differently than anticipated. In particular, demand exceeded expectations, while supply fell short, resulting in a large demand-supply gap that fueled inflation. By early 2021, GDP and consumption were already above trend (see **Figure 6**) and subsequent waves of the virus did little to slow demand, which was unusually tilted toward consumption of goods, and away from services.

However, supply-chain constraints persisted as highlighted by the New York Fed Global Supply Chain Pressure Index in **Figure 8**. While efforts were underway to understand the supply bottlenecks, including development of new indicators like the New York Fed index, it proved very difficult to assess the extent and duration of supply challenges emanating from an atypical pandemic shock in real time. Russia's war in Ukraine in early 2022 was yet another unanticipated event, adding to supply-chain pressures and firms' costs.

Importantly, there was also the expectation that, as the economy reopened more fully, spending would shift from goods (which people could consume while sheltering at home) back to services, and ease price pressures for goods. And given the expectation that supply in the service sector could sufficiently meet demand, service-sector inflation was not expected to rise significantly.

Again, reality was different. Households had accumulated substantial savings during the early stages of the pandemic, thanks to the fiscal support and limited opportunities to spend. So services consumption rose, but without a material decline in goods consumption. Thus, there was little relief from supply chain bottlenecks. And, most crucially, labor supply did not rise as anticipated to meet service sector demand.²²

²¹ See Collins (2023).

²² The labor force participation rate collapsed when businesses shut down early in the pandemic. As firms reopened, the participation rate retraced some of its initial decline, but many workers stayed on the sidelines due to several factors, including fears of contracting COVID-19, childcare problems and extra savings built up during the pandemic. Participation was also held down by lower immigration (Peri and Zaiour 2022). Participation began to recover more robustly in the fall of 2021, the same time that the

This led to a noticeable pickup in labor costs and services inflation. Given that services are a significant portion of the consumption basket, inflation became very broad based.

Monetary policy tightening [December 2021 to May 2023]

With broad-based wage and price pressures by late 2021, it was increasingly clear that elevated inflation would be more persistent than initially thought.

Policymakers therefore began the process of removing monetary accommodation in hopes of slowing economic activity and bringing demand into better balance with supply.²³

In March 2022, the FOMC raised the federal funds rate by 25 basis points. Financial conditions had already started to tighten — especially in the mortgage market — owing in part to the Fed’s statements about its policy direction, or forward guidance.

After March, policy rate increases were swift, with a 50 basis points hike in May, and then 75 basis points at the four subsequent meetings, followed by another 50 basis points increase (see **Figure 7**). By the end of 2022, the FOMC had raised rates cumulatively by 425 basis points—a very rapid pace, relative to the other tightening cycles that have occurred since the Volcker disinflation 40 years ago.

Policymakers judged that high, unexpectedly persistent inflation, combined with a tight labor market, required rapid policy rate adjustments to fulfill the Fed’s mandate. Rates were increased an additional 25 basis points at each of the next three meetings, to over 5 percent in May of this year.

I will note that high inflation takes a toll on all of us. In my travels around New England, I’ve heard repeatedly about the challenges households face from rapid price

share of foreign-born workers in the working-age population began to increase. As of August 2023, participation had increased by about one percentage point relative to August 2021, despite the longstanding downward trend in participation caused by population aging (Cooper et al. 2021).

²³ In its December 2021 statement, the FOMC announced it was slowing the pace of long-term asset purchases and signaled that the end of such purchases was near. The Summary of Economic Projections that accompanied this statement also showed an upward shift in policymakers’ expectations for the path of the federal funds rate over the next year. The process of reducing asset holdings (so-called quantitative tightening) commenced in March 2022.

increases, particularly those with lower incomes struggling to make ends meet. Inflation is challenging as well for businesses forced to grapple with higher costs and more complex planning and investment decisions. So this battle against inflation was and is important, in the public interest.

Uncertainty also played an important role in policy setting as the Fed sought to combat high inflation. By late 2021 and early 2022, the source of uncertainty had shifted from implications of the public health situation to uncertainty about key economic relationships – most notably the inflation process. In particular, persistently high levels of inflation led to concerns about a possible rise in longer-term inflation expectations, which had it occurred would likely have made it more difficult for policymakers to restore price stability. This type of uncertainty also argued for aggressive rate increases.

The focus on bringing inflation down and containing longer-run inflation expectations in turn created additional uncertainty about the economy's ability to withstand a rapid tightening of financial conditions. The banking stresses caused by the collapse of Silicon Valley Bank and Signature Bank in early March 2023 added to this concern, as many expected the banking turmoil to restrict consumer and business credit beyond the typical impact of policy tightening.²⁴

Despite many forecasters expecting a slowdown this year, demand has remained remarkably resilient to date. Indeed, since the beginning of the tightening cycle, the economy has remained in a relatively strong position. Household balance sheets have been solid, partially due to savings accumulated during the early stages of the pandemic, and corporate cash holdings have been elevated, due in part to firms' ability to lock in financing at low rates early in the pandemic. These factors have likely made the economy less interest sensitive than during past tightening cycles.

More recently, however, there is evidence that firms' cash holdings are declining, and households' stocks of accumulated excess savings are diminishing. Therefore, the

²⁴ To address the banking stress, the Fed in conjunction with the Treasury Department enacted the Bank Term Funding Program (BTFP), which helped relieve banking strains and likely limited additional credit contraction.

need for credit is rising. These developments will eventually make demand more responsive to high interest rates.

The most recent policy phase, and looking ahead

With interest rates firmly in a range that will restrict the economy, we are starting to see promising signs of policy having the desired effects.

In particular, the darker line in **Figure 9** shows that total PCE inflation (which includes the volatile food and energy prices) is down considerably from its peak. Core PCE inflation has also moderated some, but has some way to go to return to 2 percent, and it is too soon to tell whether recent progress will be sustained.

Disaggregating core PCE inflation into its three main components, as shown in **Figure 10**, provides valuable insight into the different drivers of inflation. Inflation for *goods* (the dark blue line) has decreased noticeably with the improvement in supply conditions. And as lower market rents are starting to pass through, *housing or shelter* inflation (the lighter blue line) is moderating as well. But core inflation for *non-housing services* (orange line) remains elevated, and this accounts for over half of core consumption. Bringing this component down will likely require labor market conditions to cool more, since labor represents a large share of costs in the services sector.

While the unemployment rate remains near historic lows, there is some evidence of demand becoming better aligned with supply in the labor market. Despite the September jump in employment, growth in payrolls this year has slowed relative to last year though it is still significantly above trend (see **Figure 11**). The previously very high voluntary quit rate has fallen to pre-pandemic levels. Lower, though still high, job vacancies are also consistent with a gradually cooling labor market. We are also seeing promising developments in terms of labor supply as labor force participation has increased, especially for prime-age workers (those aged 25 to 54), as also shown in **Figure 11**.

In this context, the FOMC shifted to a new, more gradual, policymaking phase this summer – holding rates constant in June and again September, after a 25 basis point hike in July.

In my view, this transition to a more patient, approach – taking the time to holistically assess incoming information – was warranted for a number of reasons. In particular, it reflects the fact that we are likely close to, and possibly at, the peak of this tightening cycle, with the risk of inflation remaining persistently high more closely balanced with the risk of slowing activity more than needed to achieve price stability.

Once again, appropriate policy in this phase is importantly influenced by uncertainty and related risk assessments. With inflation expectations well anchored, the uncertainty now relates more to difficulty assessing the ultimate impact of our policy actions to date²⁵ and to extracting signal from data that are noisier than usual.²⁶ In reviewing incoming economic data, I avoid focusing on individual data points, looking instead for trends that show both sustained reductions in inflation, and progress on the underlying goal of realigning supply and demand.

Patience will give us time to better separate “signal” from “noise” in the data and to balance risks, as the effects of tighter policy continue to work through the economy. I expect we’ll need to hold rates at restrictive levels for some time – until we see evidence that inflation is on a sustained path back to 2 percent. And while we are likely near, and could be at, the peak for policy rates, further tightening could be warranted depending on incoming information.

Overall, I continue to be realistic about the economic uncertainties and risks, but optimistic that price stability can be restored with an orderly slowdown in activity and only a modest increase in the unemployment rate – an outcome consistent with both parts of the Fed’s dual mandate.

²⁵ Estimates of the peak effect of monetary policy on activity and inflation vary considerably in terms of timing and magnitude. For a review see, for example, Havranek and Rusnak (2013).

²⁶ For instance, monthly inflation readings have been more volatile than usual since the beginning of the pandemic. Consumers’ spending patterns have also changed, creating issues with seasonal adjustment, and with inferring the underlying strength of demand.

Some closing policy thoughts

Looking ahead, there will be many important policy-relevant issues to be studied from the still-evolving business cycle induced by the pandemic. That said, I hope I have conveyed the important role for uncertainty considerations in setting monetary policy.

There are different types of uncertainty. And depending on type as well as context, uncertainty can call for policy to move unusually rapidly – or to take a more wait-and-see approach. In the current policy tightening cycle, this has contributed to different policy phases, with a period of aggressive moves followed by the current more gradual approach to policy.

The pandemic represented uncharted territory for policymakers, and risk assessments, however difficult to make, had to be made. One lesson I'll offer, with the benefit of hindsight, relates to risks from supply shocks. In particular, the risk of widespread, binding supply constraints may suggest a stronger case than previously realized for insuring against too-high inflation by removing policy accommodation more quickly. More generally, I look forward to the extensive research and debate to come, as we endeavor to draw additional lessons, deepen understanding and improve policy.

Still, despite the evolving uncertainties about the economy and appropriate policy, I hope that you, like me, are encouraged by the economy's resilience and the progress on inflation to date.

Concluding Observations

I've shared a lot with you today, including about the need for reflection, learning, and humility for policymakers, especially in extraordinary times. The backdrop has been uncertainty – that will remain and be elevated at times. In this context, I'll end by offering some concluding thoughts from my own career journey, which I hope you may find helpful.

First, lifelong learning is essential - for individuals and for institutions. I see this as more than an activity – it is a mindset. In an uncertain, evolving world, drawing lessons from past experiences will help us do better and improve outcomes.

Developing new skills and expanding knowledge positions us for future opportunities. I hope you also agree that it is great fun. For me, learning is one of life's joys.

Second, seeking out thoughtful, capable people with diverse perspectives – including those you may disagree with – is a valuable practice, for policymaking, for work, and in life. Listen well so that you can learn. Hopefully, you'll also develop strong partners and collaborators who can assist and support you in navigating uncertain contexts. And I encourage you to share your own perspectives – smart, capable Wellesley women have a lot to contribute!

A third, related, point is the importance of gathering information broadly. This deepens understandings and can help moderate uncertainty. By information, I mean both quantitative data, which is core to empirical economics, *and* qualitative information, such as from case studies and narratives. I'm excited to see technology leading to new data sets we can parse for insights. I also see intentionally hearing from a wide range of stakeholders as complementary to the collection and analysis of statistical data – including hearing from voices that have not traditionally been in the room.

That brings me to where we started: economics. It is a field that opens doors – though there is important work, for those of us in this field, to ensure that economics itself is open and inclusive. For me, the discipline that intrigued me as a teen has been a great foundation for a decades-long (still unfolding!) varied and fascinating professional career. Time and again, I've valued the structured approach economics brings to analyzing complex contexts and to drawing inference from data sets. Its frameworks are extremely useful for making decisions under uncertainty. And so, I congratulate, and hope to encourage and even inspire, those of you who are studying, and teaching economics.

Thank you for having me here to discuss this period of extraordinary uncertainty and challenge ushered in by the COVID-19 pandemic, and its implications for current and future monetary policy. Of course, uncertainty is everywhere and a fact of life. Learning, data, frameworks and flexibility can help us address it and can also enrich our lives professionally and personally.

It has been a pleasure to share my views, and I wish each of you the very best.

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