Preface

Michael D. Bordo, John H. Cochrane, and John B. Taylor

The thoughtful policy papers and the thorough policy discussions in this book come at a very important moment for economic policy. The inflation rate in the United States and many other countries had been rising for over a year and was nearing double digits as the conference began. It was clearly time to discuss the situation with policy makers, market participants, the financial press, and academic researchers in person and in the same room, and with others online and around the world. Moreover, with a dozen Hoover monetary policy conferences completed, there was a special need to come together again, as the last two years had seen a hiatus in the conference series due to the pandemic that broke out in the spring of 2020.

The message from the conference participants was nearly uniform. As the conference and book title indicates, "Monetary Policy Got Behind the Curve," with interest rates very low, a greatly expanded balance sheet, and with money growth high. These indicators of monetary ease did not correspond with the high inflation rate nor with the evidence that the recovery from the deep recession in 2020 was well under way. To be sure, there was debate about the reasons for this lack of correspondence at the conference. Some argued that expectations of higher future short-term interest rates increase the interest rate on longer-term securities, through the term structure or the futures market, and this implies that the Fed was not behind.

There was also a focus on the other theme of the conference, "How to Get Back." Indeed, soon after the conference, the Fed

began to change policy substantially with a historically large 75-basis-point increase in the Fed's interest rate instrument, the federal funds rate. The Fed also indicated that more federal funds rate increases were on the way. Moreover, the Fed, in its *Monetary Policy Report* released on June 16, put back in a whole section on policy rules, including the Taylor rule as number one on the list. It included statements that: "Simple monetary policy rules, which relate a policy interest rate to a small number of other economic variables, can provide useful guidance to policymakers." And that "simple monetary policy rules considered here call for raising the target range for the federal funds rate significantly."

The analyses presented at the conference—all recorded and summarized in this volume—are timely and original. We are confident that the message and the style is creeping through to policy actions. Indeed, with three current members of the Federal Open Market Committee (FOMC), along with two very recent members of the FOMC present and speaking, and many members of the press broadcasting or writing from the conference, we know the message of the meeting was conveyed to the Federal Reserve and to other central bankers in Europe, Asia, and the Southern Hemisphere.

The conference opened with a presentation by Condoleezza Rice, director of the Hoover Institution and former US secretary of state and national security advisor. Director Rice began by connecting the recent developments to those of terrible shocks of September 11, 2001, then to the financial crisis of 2008—which destabilized the international economy—and finally to COVID-19, which "turned out to be not just a health crisis but a crisis in every aspect of our lives: social, educational, and especially economic."

She also delved into the connection between the economic problem, and the worsening of that problem, by the war in Ukraine. "Just as the world was beginning to recover from the COVID-19 crisis, another enormous shock has occurred in the Russian war on Ukraine. The idea that a large powerful state like Russia would

decide to simply absorb its neighbor and do so by brutal military measures makes one think we are living in 1939 instead of 2022." She argued that NATO would emerge as a much stronger alliance after this episode, and that it is likely that we will see a major reshuffling when it comes to energy supply.

Following the opening by Director Rice, the conference proceeded with its first monetary policy panel, entitled "What Monetary Policy Rules and Strategies Say." The presider was the chair of the Hoover Institution Board of Overseers, Tom Stephenson, and the panel consisted of presentations by Richard Clarida, Lawrence Summers, and John Taylor.

Clarida gave the opening remarks, as he did at the 2019 Hoover conference. Having served on the FOMC during the start of the pandemic, he described what life was like on the FOMC during the "public health calamity and economic catastrophe that would, months later, befall the economy as a consequence of the COVID-19 pandemic." He then described the quick recovery and the pressing need for policy to get back to normal. The year 2021 saw "vaccines, economic recovery, and repercussions flowing from the policy response."

By the fall of 2021, monetary policy rules of his own and others were suggesting that it was time to lift off. "The Taylor-rule arithmetic is both simple and compelling: if PCE inflation a year from now is running at, say, 3%, a policy rate reaching 4% would be implied by the Taylor principle" as well as by the policy rule Clarida outlined in his opening remarks at the 2019 Hoover conference three years ago.

Lawrence Summers then made several points. He argued that the current high inflation was predictable a year ago and that the United States is now experiencing a very tight labor market, indicating that "low levels of unemployment are significant predictors of future recessions, implying a significant risk of a hard landing for the economy." He noted that there are confusions at the Fed about nominal and real interest rates and, in a practical sense, "the epistemic

approach taken by the Fed using specific numerical targets for forward guidance undermines its credibility."

Summers argued for a monetary policy with "broad objectives clearly stated," efforts to rely on "forward-looking anticipations in policy," avoidance of "specific doctrines that must be displaced when unexpected shocks occur," and utilization of "policy rules to signal when [the Fed] needs to change course."

John Taylor emphasized the advantages of thinking of and conducting monetary policy as a rule in which the interest rate reacted in predictable ways to inflation and real GDP. His paper examined the recent deviation from rules-based monetary policy in the United States, especially during the year 2021 and continuing into this year. He proposed a way for the Federal Reserve to return quickly to a more effective rules-based policy.

His paper reviewed the impact of the COVID pandemic on the economy, and the key monetary policy developments that led to an increase in inflation and today's precarious economic situation. His review set the stage and suggested ways for the Federal Reserve to improve economic performance and achieve low inflation by getting back to more rules-based policy decisions.

The next panel was on "Fiscal Policy and Other Explanations" of the increase in inflation, with presentations by John Cochrane, Tyler Goodspeed, and Beth Hammack.

Cochrane emphasized that the initial cause of our current inflation was a fiscal shock, approximately $5 trillion in newly created reserves and Treasury borrowing, mostly sent as transfer payments. The "behind the curve" question is whether the Fed's slowness to react is causing additional inflation.

Rather than simply presume the Fed is making a gargantuan and evident mistake, Cochrane presented a simple model that encompasses that traditional view, as well as the view embodied in the Fed's projections, which makes sense of the Fed's decisions. The model contains expected inflation. If one assumes that expected

inflation is whatever inflation was last year, we obtain the view of many conference participants: that the Fed's slow reaction indeed produces spiraling inflation in response to this fiscal shock. But if expected inflation in the model is equal to the model's prediction for next year, then inflation dies away even if the Fed does nothing. This version of the model fits the Fed's projections. Cochrane noted that the forward-looking model is consistent with the quiet inflation of the zero-bound era. Equivocating on which is the right model, Cochrane pointed us to this central underlying assumption.

Cochrane also addressed how higher interest rates might end inflation. He cautioned that monetary policy without fiscal backing cannot durably lower inflation, and that only a joint monetary, fiscal, and growth-oriented microeconomic reform will do so. He argued that the tax reforms and deregulation of the 1980s were crucial parts of that stabilization.

Goodspeed also emphasized that pandemic fiscal policy was the underlying shock, in particular transfers to individuals. He noted that inflation is much larger in the US than the rest of the world, while supply-chain and other explanations are global. In particular, he noted the $1.9 trillion American Rescue Plan, which arrived in March 2021 as the economy was already swiftly recovering and added to already abnormally high savings and bank account holdings that were ready to be spent.

Goodspeed noted "supply" problems, in particular the large numbers of Americans who had retired or otherwise left the labor force. He pointed to continuing subsidies that disincentivize work, and the remarkable outward shift in the Beveridge curve: the number of job openings is very high for any level of unemployment. He closed by reminding us how similar today's mindset is to that of the 1970s.

Hammack offered her view of how financial market participants who watch the Fed see the unfolding of events. She noted that Fed "dot plot" projections of future interest rates have risen substantially, along with a view that there will be one year of substantial 4.3% inflation.

Hammack noted how the unexpected emergence of inflation, and the change in expectations of Fed policy, have coincided with patterns in securities markets that were not typical of the stable expectations era. The sharp rise in long-term Treasury yields has coincided with a rise in credit spreads and a fall in the stock market. Normally higher yields come during an expansion and with lower credit spreads. The signs of a potential recession are already showing. "Yields are up, volatility is up, spreads are wider, and equities are down. The exit from the pandemic economy is quite unique, but this confluence of moves is tightening financial conditions and signaling a very challenging growth outlook at the same time." Hammack noticed a rise in risk aversion, "increased investor demand for cash," a shift from growth to value, and sharp decline in new issues, all leading to a reduction in investment. Hammack stressed the adverse effects of volatility and uncertainty in the Fed's plans on capital markets. However, she noted that the same reserves of cash that lead some to worry about inflation yet to come when it is spent, also provide a cushion against a recession induced by tighter financial conditions.

This was followed by the paper by Michael Bordo and Mickey Levy and the discussion by Jennifer Burns. Bordo and Levy studied the Fed's current delayed exit from extended monetary ease through the lens of history. They examined the Fed's exit record from 1920 to the present. They compared the timing of changes in the Fed's policy instrument relative to the business cycle trough with the timing of changes in inflation and unemployment relative to the troughs. Their empirical analysis, accompanied by historical narratives, showed that in the vast majority of cases, the Fed waited too long to tighten to stem inflationary pressure, and when it did tighten, it usually led to a hard landing, i.e., a recession.

Bordo and Levy then examined, in considerable detail, the Great Inflation period from 1965 to 1983, when the Fed's "behind the curve" policies led to a pattern of rising inflation and then recession, which has considerable resonance to the present.

They attributed the Fed's behind the curve actions to three forces. The first was the evolving and often flawed doctrine (the gold standard and real bills before World War II, Keynesian economics and the Phillips curve in the 1960s and '70s, focus on Japan's early 2000s experience with deflation and the ZLB, and the Fed's recent flexible average inflation targeting since 2020). The second force was the misreading of economic and inflation conditions, especially very inaccurate forecasts. The third was the political pressure from the executive and legislative branches of government.

They concluded that the record of too many "unforced errors" calls for a monetary policy reset—more systematic rules-based guidelines to avoid the flaws of the discretionary policies that generally followed.

Jennifer Burns in her comment focused on the Great Inflation episode. She reexamined the famous 1960 Samuelson and Solow article that posited the Phillips curve trade-off between unemployment and inflation that was used by the Kennedy and Johnson administrations and the Fed to justify inflationary policies. She then turned to Arthur Burns's role in worsening the Great Inflation in the 1970s. Despite his personal connection to Milton Friedman, Burns downplayed the role of monetary policy in causing inflation and attributed the run-up in inflation to cost-push forces. He forcefully made the case for the adoption of wage-price controls, which in the end just made things worse.

This was followed by "The Burst of High Inflation in 2021–22: How and Why Did We Get Here?" by Ricardo Reis, and the discussion by Volker Wieland. Reis told the story of how central banks let inflation emerge through the perspective of the modern Phillips curve, which is how central bankers view the economy. Inflation today is driven by expected future inflation, by the deviation of output from its potential, and by shocks away from these forces, in theory a "markup shock that introduces a gap between the potential and efficient levels of output."

First, central banks mistook the pandemic for a "demand" shock like the 2008 financial crisis and expected it to lead to years of stagnation. Governments met it with immense fiscal and monetary stimulus. It was a transitory "supply" shock, leading to a V-shaped recession. Output and employment almost completely recovered while the Delta wave of COVID was still surging.

Supply-chain problems soon emerged. Central banks interpreted this as a "transitory" shock that did not require higher interest rates, a "markup shock" in Reis's framework. They did not see the event as output persistently greater than potential, which would demand higher interest rates.

Then energy prices rose. Central banks again treated it as a temporary markup shock, to be ignored. They also had in mind the experience of the 1970s, during which higher energy prices raised inflation, central banks tightened, and the action led to recessions.

Three times in a row, then, central banks misdiagnosed the situation—perhaps understandably, as things are hard to see in real time. But this set the stage for expectations to rise.

The strategy of ignoring temporary shocks requires that the first term of the Phillips curve, expected inflation, remains "anchored." Central bankers noticed the remarkable stability of inflation expectations during the decades of little inflation and gained too much faith that those expectations could not move. The median value of survey forecasts and financial indicators also showed unchanged expected inflation through the first few shocks. Reis shows, however, how one can see expectations becoming unhinged by looking at the dispersion in survey forecasts and signals from the option markets. Also, people tend not to pay much attention to inflation when it is low, leading central banks to overestimate how sticky expectations really are. A boat may be still because it's anchored or because it is simply in calm waters.

Finally, central banks had settled too long into battling the perceived danger of a deflation spiral, and downward drift of expec-

tations. Much of this fear came from the steady downward drift of r-star (r*), the neutral real rate of interest on government bonds, pushing actual interest rates to the zero bound. But Reis points out that the rate of return on physical capital did not decline. This fact means that monetary policy raising the rate on government bonds may have less effect on the real economy than central bankers believe.

In his discussion, Volker Wieland told how both the European Central Bank (ECB) and the Fed regarded inflation as "transitory" and that inflation would pass on its own through 2021. Wieland went on to question the conventional wisdom that the central bank should "look through" or ignore cost-push shocks. He considers a simple model and adds the possibility that current inflation also depends on past inflation in the Phillips curve. He contrasted a Taylor rule that pays conventional attention to output with an output-focused rule that pays eight times more attention to the output gap, dramatically lowering interest rates to fight a recession and keeping interest rates low until output fully recovers. With the traditional forward-looking Phillips curve, this output focus and consequent delayed reaction do little harm. But as the Phillips curve adds a backward-looking term, the delay in raising rates causes more and more inflation. This finding mirrors Cochrane's analysis in which a fully backward-looking Phillips curve demands immediate and large interest rate responses to inflationary shocks to keep inflation from spiraling out of control.

Wieland extended Reis's point that central bankers had become too focused on fighting perceived deflation risks. He pointed out that the Fed's strategy explicitly called for an asymmetric, inflation-biased response, and shifted to fighting output "shortfalls" rather than symmetric deviations of output from potential. He also applied Reis's insight on the distribution of inflation forecasts and the influence of r* and zero-bound thinking to the ECB.

This was followed by the paper "Financing Big US Federal Expenditures Surges: COVID-19 and Earlier US Wars" by George Hall and Thomas Sargent, and the discussion by Ellen McGrattan.

Hall and Sargent noted that the rate of spending during the pandemic is as large as in World Wars I and II. They compared how the government financed pandemic spending to how it financed the world wars, as well as the Revolutionary War, the War of 1812, and the Civil War. That comparison can give us historical precedent for how things might turn out, and particularly how the inflation we are now experiencing contrasts with inflation following the previous wars.

The US financed the wars and the pandemic largely by issuing money and debt, not by raising taxes. Hall and Sargent summarized: "Increases in tax revenues covered 20.8% of the cost of World War I, 30.2% of the cost of World War II, and only 3.5% of the war on COVID-19. Money growth covered 6.9% of the cost of World War I, 10.1% of the cost of World War II, and 18.5% of the cost of the war on COVID-19."

Inflation also rose during the world wars. Indeed, the current inflation neatly tracks with the early years of both wars, each of which resulted in a halving of the real value of bondholders' debt. The comparison is chilling.

Hall and Sargent pointed out the "ratchet effect," that the overall size of government rose in each war and seems to be doing so again. They also noted that, unlike in the earlier wars, the gap between forecast tax revenue and expenditures has also grown, with no sign of a return to small, steady primary surpluses.

Financing a war or pandemic transfers by taxation, borrowing, or money creation, and whether to repay, default, or inflate away debt ex post are all choices. Each choice sets up reputations that frame later possibilities. Hall and Sargent took conference participants on a brilliant tour of these choices, as interpreted by economic theory. Hall and Sargent also showed how each era's accumulation of experience led to different choices. Perhaps their longer history will help our leaders to make wiser choices.

The UK famously financed much of the Napoleonic Wars by issuing notes no longer convertible to gold. By presiding over a

postwar deflation, they rewarded noteholders and earned a reputation useful for later borrowing.

The aftermath of the US Revolutionary War was different, and more subtle than the common impression. Yes, Hamilton prevailed, and the US assumed state debts. It thereby rewarded "speculators" who had bought debt at a discount, but those "speculators" are the next-time's bond buyers. But the US also inflated away its paper money, the "continentals," exactly the opposite action of the UK's. This move "was designed to intentionally poison the US government's reputation for servicing some types of debt (the despised paper money known then as 'bills of credit') while simultaneously enhancing its reputation for servicing other types of debt (interest-bearing medium- and long-term obligations, especially to foreign creditors)." The founders of Hamilton's era wanted to preclude future paper money issuance, especially interest-paying money.

Already in the War of 1812, the Madison administration thought differently. It did reward holders of short-term debt and refrained from the money issuance that the US had used in the Revolutionary War. That changed the US reputation. The Civil War was financed with both debt and paper money, greenbacks. The latter depreciated during the war, but the US eventually redeemed greenbacks at par, though only after a long and contentious political debate. The post–Civil War US had a different view of the desirability of paper money, and of establishing a reputation for maintaining a steady value of money rather than poisoning that well: "In 1790, people deplored federal paper money as 'not worth a continental'; after 1879, people trusted greenbacks to be small-denomination warehouse certificates for gold. Reputational considerations were very much on the minds of public officials in both periods."

Wartime inflation does not always lead to a permanent price level rise as it did after the world wars. Governments can acquire a different reputation for different classes of debt, sold to different investors. Our government's desire for a reputation in upholding

the value of paper currency, interest-bearing reserves, indexed and nonindexed treasury debt, and domestically vs. to foreigners as the "reserve currency" (really "reserve debt") will be important to determining how the current episode works out.

Conventional theory predicts tax smoothing, that wars should be financed by debt that is slowly repaid by higher taxes. It also predicts Lucas-Stokey defaults, that inflation (or default) occurs on the outbreak of war, not afterwards, as a form of insurance. Hall and Sargent note that we do not see this pattern. In part, debt was small on the outbreak of previous wars. (Perhaps some of our current inflation can be read as a Lucas-Stokey default on the large debt outstanding before 2020.) But "Early American policy makers did not see it [this] way. Influenced by the repudiation of the Continentals, they saw inflation as a deplorable way of abrogating contracts."

The lessons of previous episodes guided leaders:

> Memories of how the Continental currency that had financed the War of Independence from Great Britain had eventually depreciated to one penny on the dollar convinced War of 1812 decision makers to take steps to avoid that outcome. Non-callable federal bonds issued to pay for the Mexican-American War appreciated in value after the war when interest rates fell, creating ex post regrets that the bonds had not been bundled with call options, something that the Union would do early in the Civil War. . . . Rising prices and thus rising nominal interest rates after World War I delivered nominal capital losses to owners of the Liberty Bonds that had been used to finance the war, teaching Captain Harry Truman a lesson that he would remember when, as president, he insisted that the Treasury and Federal Reserve manage interest rates after World War II to prevent that from happening again.

With this learning from experience in mind, it is interesting that the Fed, ECB, and other central banks today seem to have abandoned

the standard interpretation of the 1970s and 1980s, that central banks should react quickly and systematically to inflation. The experience of the zero-bound era may be more salient. Hall and Sargent's point, though, is that a much longer experience, involving the joint fiscal and monetary policies behind inflation, will also be necessary going forward.

A broader puzzle remains. If money holders and bondholders since World War I on have routinely lost via inflation after wars, why do they continue to buy debt and hold money at the beginning and middle of wars? Why does inflation not come sooner?

Hall and Sargent close with an essential bit of wisdom: "Confused monetary-fiscal coordination creates costly uncertainties."

In her discussion, Ellen McGrattan first questioned the analogy between the pandemic and the world wars. First, the pandemic was much shorter lived. So much so, in fact, that the huge spike in spending largely disappears when one looks at annual rather than quarterly data. The pandemic looks like a larger version of the 2008 financial crisis recession. Some of the spending measured as a percentage of GDP in quarterly data looks large by the collapse in GDP, but the latter only lasted a few quarters. Second, "The main spending of World War II was purchases of goods and services by the military," along with soldiers' salaries. Much of this wartime spending was also clearly temporary, lasting only the duration of the war. By contrast, "The main spending of the pandemic is in the form of transfers and subsidies," some of which "will be hard to discontinue." Considering "who will pay," McGrattan opines that the most likely outcome is individual taxpayers, but in the far future.

The conference then turned to a monetary policy panel with current and former members of the FOMC, entitled "Toward a Monetary Policy Strategy."

The president of the Federal Reserve Bank of St. Louis, James Bullard, presented his paper, "Is the Fed 'Behind the Curve'? Two Interpretations." He started by observing that US inflation is indeed

exceptionally high, and similar to that of the years 1974 and 1983. He noted that standard Taylor-type monetary policy rules still recommend substantial increases in the policy rate, even if they are based on a very low interpretation of the persistent component of inflation. This provides one definition of "behind the curve," and the Fed is far behind.

However, Bullard also pointed out that modern central bankers are more credible than their corresponding central bankers in the 1970s: they use forward guidance. If forward guidance is credible, then market interest rates will increase substantially in advance of actual actions by the Fed. This alternative view provides another definition of "behind the curve." The Fed is not so far behind the curve if the distance in the concept is measured with this alternative definition.

Former Fed governor Randal Quarles then presented his paper, "Strategy and Execution in US Monetary Policy 2021–22." He began by recalling the titles of the conference—"How Monetary Policy Got Behind the Curve—and How to Get Back"—and of his panel—"Toward a Monetary Policy Strategy." This contrast of titles, Quarles argued, clearly presupposes that "the Fed is currently on the wrong track, but that it may not be too late to redeem the day by shifting course."

Quarles made the case that such a judgment is premature, in part because "the Fed's strategy is misunderstood." Those who said the Fed should have tightened in early 2021 were too early, "and while with the benefit of hindsight I think it is clear the Fed did move too slowly in late 2021 and early 2022 to raise interest rates (a misstep that I supported at the time), this was an error of execution, not of strategy—a tactical misjudgment in the fog of war—and what is more, it is an error that the Fed can correct, and is correcting, effectively and with dispatch."

The interest rate increases that the Fed has begun, if continued as outlined, will be quite effective, Quarles argued. "In an environment where economic actors and market participants have been

conditioned for almost 15 years to expect extremely low interest rates," he argued "even modest nominal rate increases will result in quite high percentage increases in debt service, and the effect on the economy should be both swifter and more powerful than in many prior cases of the Fed's response to inflation."

He continued, "I think it will be clear by the fall that inflation is heading into the pen, and by the first part of next year it should be effectively corralled. There are lessons to be learned from this episode, certainly. But I think it is premature to conclude that one of those lessons is that either of the two operative principles of the monetary policy framework adopted by the Fed in August 2020 was a mistake or has become outmoded."

Fed governor Christopher Waller then presented "Reflections on Monetary Policy in 2021," in which he focused on the question: How did the Fed get so far behind the curve? His response relates to how his view of the economy changed over the course of 2021, and he explained how that evolving view shaped his policy position.

When thinking about the policy question, Waller argued that there are several points that need to be considered: "First, the Fed was not alone in underestimating the strength of inflation that revealed itself in late 2021. Second, to determine whether the Fed was behind the curve, one must take a position on the evolving health of the labor market during 2021. Finally, setting policy in real time can create what appear to be policy errors after the fact due to data revisions."

In the final session, "Inflation Blues: The Fortieth-Anniversary Revival?," Monika Piazzesi made a clever analogy with the legendary blues musician B. B. King, whose song "Inflation Blues" from 1983 "mirrored Americans' struggle to pay the bills and their frustration with the government's inability to address the rising costs of living. This was just after inflation soared to more than 14% at the dawn of the decade, while unemployment peaked at about 11% during 1982. Now, 40 years after its vinyl debut, King's 'Inflation Blues' is threatening an encore."

Piazzesi asked: "Are we in a time machine on our way back to the 1970s?" A quick glance at rising ratios of house prices to rents seems to suggest that the answer to this question may be yes. However, she noted that uncertainty in the United States is relatively low now. The public still trusts the Fed to rein in inflation. Consequently, the ratio of equity values to dividends manages to stay high despite the currently high inflation. That is different from the 1970s.

"The big question in coming weeks," she argues, "will be whether the Fed will lose its reputation as an inflation fighter, especially if there are signs that inflation pressures may be more persistent." Right now, short-run inflation expectations are elevated, but "the public believes the Fed will take us back to 2% inflation over the longer run."

Let us hope she is correct, and that this belief makes the disinflationary process easier.