# GETTING GLOBAL MONETARY POLICY ON TRACK

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



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## PREFACE

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

This volume is based on the conference Getting Global Monetary Policy on Track held at the Hoover Institution May 2–3, 2024. This conference and volume are the third in a trilogy, the first two of which were *How Monetary Policy Got behind the Curve—and How to Get Back* and *Getting Monetary Policy Back on Track*. This is also the fourteenth Hoover Monetary Policy Conference and associated volume.

John Taylor offered welcoming remarks at the preconference dinner, stressing the importance of policy rules and posing a central question: Why not have a global 2% inflation target?

Condoleezza Rice offered welcoming remarks on the global strategic situation and its economic implications.

In the first panel, on Europe, Klaus Masuch and Luis Garicano spoke of the fiscal foundations of the euro, the structures that have been put in place to ensure a clear separation between monetary and fiscal policy, and how those structures were weakened through a series of crises. They also addressed how to reform the euro to avoid any temptation to print money to finance government debts.

Markus Brunnermeier discussed digital central bank currencies, in particular the euro. Among other issues, Brunnermeier highlighted the tension between private systems, which like to print money but care less about resilience, and public systems that may be less efficient and more political.

Yuriy Gorodnichenko noted how inflation is declining in Europe with no rise in unemployment. The current disinflation shows the

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opposite pattern of the early 1980s' US disinflation during the tenure of Federal Reserve chair Paul Volcker. Looking forward, however, Gorodnichenko pointed to strained public finances, commodity shocks, war, and international decoupling that could hurt economic performance and bring inflation back.

Last in this panel, Luigi Bocola also considered the fiscal limits on monetary policy for the euro. On how inflation emerged, he showed through clever asset-market estimates of monetary policy rules that the Fed and the European Central Bank became much more dovish in 2020. Both central banks may be afraid to raise rates that would hurt banks and government finances.

Emilio Ocampo began the panel on emerging markets with a description of the structural and political problems in Argentina that have led to bad policy over decades.

Juan Pablo Nicolini gave a broad picture of Latin American inflation history. Many countries have moved from habitual inflation to much better control in recent decades.

Zhiguo He gave an overview of monetary policy in China. The central bank is not independent, he asserted, and it is also charged with broad support of economic policy. Ross Levine closed out this panel with an overview of inflation and central bank actions in emerging markets. He questioned some of the premises for independent central banks and argued that the link from tools (interest rates) to inflation is vague. Most of all, he argued that financial regulation should not be pursued by an independent central bank. Other regulatory agencies have more political accountability, and he argued that that may be a good thing for financial regulation as well.

Amit Seru began the session on financial regulation with a clear and condensed version of several academic papers on banking. He argued that the entire US banking system looks a lot more like Silicon Valley Bank than we should be comfortable with, including mark-to-market losses, negative mark-to-market equity, and large uninsured deposits. Many banks are regulated alternately by federal

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and state regulators, and the switches between them reveal a lot of discretion at work. Unregulated and not-(yet)-too-big-to-fail shadow banks voluntarily fund themselves with considerably more equity than government-protected banks do. That observation contradicts the widespread assertion that banking requires massive leverage and cannot withstand higher capital requirements.

Darrell Duffie gave an overview of how US Treasury markets suffered turmoil in 2019 and 2020 and described some of the structural and regulatory causes of that turmoil, along with recommendations to fix that market. Christina Parajon Skinner focused on the foundations of bank regulation by an independent Fed, which does not have the accountability of most regulatory agencies. She noted that "financial stability" and "safety and soundness" are undefined and thus open to expansive interpretation. She pointed out that regulatory policy is closely aligned with global policy set by the Basel Committee, which has no democratic input from Congress. She also noted the great power vested in the vice chair of the Federal Reserve.

Finally, Carolyn Wilkins discussed the Bank of England's actions in 2023 when overleveraged pension funds melted down as interest rates rose. She described how the bank sold securities for monetary policy actions while simultaneously buying them to prop up the pension funds' asset values in an effort to stem the crisis.

In her lunchtime address, Hester Peirce gave a rousing talk on regulatory expansion by the Securities and Exchange Commission (SEC). She listed many examples from the humorous—the SEC's move to make animated characters the Stoner Cats a security—to the serious, such as new rules to regulate fund advisors. She stressed how the SEC is moving from rules of the game to "prudential" or supervisory regulation, directly controlling how people invest.

Opening the session on labor markets, Steven Davis discussed the recent work-from-home trend. He showed how it is increasing employee satisfaction and also allowing somewhat lower wages as workers and employers split the benefits. Marianna Kudlyak presented her research with Bob Hall arguing that the slow decline in unemployment that is characteristic of most economic recoveries does not represent a "lack of demand" remediable by more stimulus but rather reflects the slow search-and-matching process of normal labor markets. At a minimum, when the Phillips curve—the relation between inflation and unemployment—is written as inflation = expected inflation + constant times excess unemployment, and when inflation sits at 2%, one can infer that there is no "excess unemployment." Emi Nakamura presented her own research on the Phillips curve, showing that it moves around a lot and that forecasts are systematically wrong. She gave a great overview of all the theories surrounding where inflation came from in 2021.

In the session on central bank strategy reviews, Athanasios Orphanides described how interest rates deviated from most rules. He advocated improvements in how policy rules could be better integrated into the policy process to avoid a repetition of past policy mistakes.

Mickey Levy and Charles Plosser also reviewed how the current Federal Reserve strategy went wrong in the postpandemic inflation. They argued for greater commitment to the 2% inflation target, using rules as guidelines, abandoning forward guidance as a separate tool, benchmarking more closely to rules, and improving the economic projections.

Jón Steinsson emphasized the supply, fiscal, and relative demand shocks of the pandemic. He argued that a strategy focused on the worry in the late 2010s that inflation was 1.7% rather than 2% at the zero bound led to too-loose policy. He emphasized the importance of anchoring expectations and stressed that adherence to rules is only one way to achieve credibility.

Closing out the panel, Larry Summers offered a clear but dissenting view, arguing against formal targets or rules at all and suggesting that projections and forward guidance are unhelpful. This was an interesting progression. Each of the panelists dealt with an increasingly complex set of issues. Summers came up with a natural implication: give up on all this complex strategizing. He advocated five points:

- A return to humility. The Fed should just state general values: "Whatever it takes." "A strong dollar is in the national interest."
- 2. No forward guidance in normal contexts.
- No quantitative easing except when necessary to maintain market functioning and liquidity (as Darrell Duffie describes). Integrate debt-maturity management policy between the Treasury and the Fed.
- 4. No cacophony. Stop publishing competing speeches about what to do.
- 5. No specific numerical targets.

Naturally, this out-of-the-box view provoked great discussion.

Amir Yaron led off the monetary policy panel, explaining how the central bank of Israel handled the huge financial shocks of the October 7 attack by Hamas and the subsequent war, perhaps emphasizing Summers's point about the futility of rules around unexpected shocks.

Having a large part of the labor force off at war while others have been forced to leave their homes is a big negative supply shock, Yaron asserted. He went on to discuss how small, open economies must think about exchange rates in their policy strategies.

Austan Goolsbee discussed how to improve the statement of economic projections, in particular by linking Federal Open Market Committee members' inflation, employment, and interest rate projections together so that people can understand the economic reasoning behind them.

#### Preface

Finally, John Williams gave an overview of how central banks have evolved, focusing on rules, transparency, and attention to expectations and thus central banks' commitment to eventually reaching their inflation targets, even if there are bumps along the way.

Edward Nelson gave the dinner talk. Based on his outstanding two-volume intellectual biography of Milton Friedman, Nelson related how Friedman and other commentators approached the inflation of the late 1970s, a period in some ways eerily similar to the current moment. Friedman saw the inflation coming, which many others did not, and of course argued for better monetary policy to contain it. So many of the arguments of the time are still around, especially the many excuses for inflation other than monetary and fiscal policy.

It was an exciting and engaging conference. We hope you enjoy reading about the proceedings. We're looking forward to the next annual Monetary Policy Conference in May 2025.

## WELCOMING REMARKS

Condoleezza Rice

Welcome to Hoover, to Stanford, and to another Monetary Policy Conference. This annual event is the brainchild of John Taylor, who conceived it more than a decade ago, and in time it has only grown in importance and in representation by the number of you here, who are some of the world's most prominent experts. When I first agreed to open the conference, I thought the title was "Getting the World Back on Track," and I thought, well, they're going to need more than one conference to do that. But even getting a global monetary policy back on track, or anything about the international economy back on track, has to start with the fact that we are in a significant global crisis. And that, in geopolitical terms, is a crisis unlike any that we've seen since the end of World War II.

We have to remember that a lot of what we take for granted in the international system, and a lot of what we take for granted in the international economy, is now under question. It's under attack. And there are three vectors that are coming together to make this a very difficult and challenging set of circumstances globally.

The first is that we are seeing the emergence of great-power conflict for the first time since the end of World War II. Now, why do I say that? The Cold War was a great bipolar conflict between the Soviet Union and the United States, with many associated conflicts. But it's been a very long time since we've had great powers who had territorial aims—old-fashioned nineteenth-century, twentieth-century territorial aims. And, of course, it takes place in two great theaters. The first is Europe, with Vladimir Putin's decision that he needs to reestablish the Russian Empire. This is not about the reestablishment of the Soviet Union. When asked who his advisors were, Vladimir Putin said Ivan IV (Ivan Grozny, who is Ivan the Terrible), Alexander II, and Peter the Great. Putin had told me some time ago that Russia had only been great when it had been ruled by great men like Peter the Great and Alexander II. Lenin and Stalin are not his lodestars; it is the Russian Empire. And that, of course, has territorial consequences, which we see playing out in Ukraine. For anyone who thinks that this is only about Ukraine, remember that the Russian Empire, at its height, had essentially no borders in Europe. So what would it take to reconstitute the Russian Empire in his mind? We don't want to test that proposition.

The second territorial claim is in Asia, where Xi Jinping is determined to restore China to its borders before colonial collapse. This first involves Hong Kong, which has huge implications for the international economy. Hong Kong was always thought of as a kind of oasis in which the presence of the rule of law could be expected by the international community. However, in many ways, Hong Kong is now just another province of China. And then, of course, Xi's claims implicate Taiwan. In the mind of Xi Jinping, China's restoration cannot be complete without the resolution of the cross-strait problem.

These territorial issues bring with them new kinds of military challenges—not just deterrence, which is still a very important part of it, but the actual warfighting potential that could break out in Asia as it has already broken out in Europe. Regarding Europe, I was using a metaphor with one of my classes a couple of months ago, and I said the reason Europe has reacted so strongly to the Ukrainian crisis and Europe is really to be congratulated on how well it has held together about this Ukrainian crisis—is that for Europeans, it's like the negative of an old photograph. Then, I realized my students had absolutely no idea what I was talking about, referring to a negative of a photograph. But I was describing how you can vaguely see the outlines of a familiar image. I think that is the case for Europe. And in Asia, you are seeing, in places from the Philippines to Vietnam to Japan to South Korea, concerns about assertiveness on China's part in terms of territorial ambitions. So, that great-power conflict overarches all of this.

But there are a couple of other important vectors here. There is the vector of technology. We are looking at transformative technologies that have the potential to change the way that we live, to put before us ethical dilemmas that are unheard of and are, in fact, unprecedented. Those technologies—AI, synthetic biology, what we can do in space—have, of course, the possibility of making life considerably better, for healthcare, for education, for business practices. But they also bring with them the possibility that has happened throughout human history: that transformative technologies almost always end up on the battlefield. Therefore, we need to think about the implications of these transformative technologies in coordination with the great-power conflicts that we are seeing.

I want you to do a thought experiment: What if the nuclear race had been won by Nazi Germany and the Soviet Union at the end of World War II, not the United States? We would have lived in a very different world. And that is the technology race that we face today.

Now, I would be remiss if I didn't mention one power that is not a great power but a troublesome regional power: Iran. Much of what we have come to expect in the American global security commons and in the international economy has had to do with a Middle East that was always troubled but in which its sea-lanes could be defended, a Middle East in which the United States had a web of alliances that could, in a sense, ever since the Suez Crisis, be a presence to keep the region somewhat stable. Enter Iran, a regional power with ambitions to expel the United States from the Middle East and to do so while overturning governments friendly to the United States and its allies.

#### Welcoming Remarks

We are seeing the malign influence of Iran today in what we saw on October 7. It was an attack by Hamas on Israel. Still, Hamas could not have pulled off a sophisticated attack of that kind without Iranian training, weaponry, drones, and the like. And even if the Iranians did not give orders, did not say, "Go on October 7," the Iranians benefit from these proxy wars. And keep an eye on their most dangerous proxy, Hezbollah, to the north, with 150,000 rockets pointed at Israel, just waiting to get in the fight at some point.

The current geopolitical situation and the rapid advancements of transformative technologies are challenging everything we know about the international system and the American global commons of the last seventy years. And it's coming at a time when globalization itself is under challenge. Our decoupling with the Chinese economy with regard to technology is going to continue. It will continue because the Chinese have their own ideas about indigenous development and because the United States is now taking seriously the national security implications of supply chains dependent on China in everything from pharma to chips to rare earth minerals.

Now, that doesn't mean that the international system won't be able to access Chinese markets in certain areas. It doesn't mean that there will be a complete decoupling. You might remember when the Houston Rockets' general manager said something unfavorable about Hong Kong, and the Chinese government threatened to kick the NBA out. I talked to NBA commissioner Adam Silver about that and said, "Adam, they're not going to kick you out because those young princelings will not watch the Kazakh national team play the Chinese national team. They want to see LeBron, and they want to see Steph." And so, the decoupling will not be complete, but we are decoupling in these important areas of technology, communications, and energy.

So those vectors—great-power conflict that has a decidedly territorial lens this time around; transformative technologies and the race between authoritarians and democratic societies for who will control that technological future; and this continuing breakdown of the integrationist narrative about China's role in the international system—will completely shift the character of the international system as we've known it.

Now, there is some good news in all of this, and that is that if we can get through this very dangerous period, the United States, Europe, Japan—the US alliance system, if you will, plus partner countries like India—have a future that is quite a bit brighter than the future of Russia, Iran, or, for that matter, China. You know the numbers about China: about 20% youth unemployment and a demographic inversion that has not been seen by demographers except in war. You know about an economy that can't grow because it turns out Xi Jinping is actually a Marxist. It turns out that when presented with the idea that you cannot have economic liberalization and political control, Xi agreed with this maxim. He chose political control. All to say, the Chinese economy is unlikely to reach the heights we once thought.

So, for a variety of reasons, this is a dangerous period. When I see Houthis disrupting international shipping, when I see Iranian proxies coordinating attacks around the world, when I see Russia trying to make headway in a Ukrainian war that they should never have launched, and when I see China with denial exercises around Taiwan, I know it's dangerous. But I don't know how long it will last.

This leaves us with a very difficult set of choices, and I would put them this way: Are we prepared for what was called at the outset of the Cold War another "long twilight struggle"? It took forty-plus years to defeat the Soviet Union, but defeat it we did. We did it on the basis of something George Kennan said in his famous Mr. X Telegram. He said, "We have to deny the Soviet Union the easy course of external expansion until it has to turn to deal with its own internal contradictions." Think about that phrase when you think about Russia, China, and Iran. One day, they will have to deal with their own internal contradictions. The question is, can we hold them at bay until then? Can we prevent them from doing too much damage until those internal contradictions come home to roost, as they did for the Soviet Union with its collapse in 1991?

It will take US defense preparedness. It will take allied defense preparedness. It will mean defense budgets that are both larger and more sustainable. In the United States, it would mean—as we have been working on here at Hoover—a defense budget on which you can actually count, which means that you can't just have continuing resolution after continuing resolution if you're going to have a stable defense posture. It means rebuilding an American defense industrial base that can no longer build ships and that was exposed for its weakness in the inability to supply even the most basic ammunition to Ukraine. And it will mean a tightening of relations with allies.

I want to close here on that point. I am encouraged to see the word "global" in the title of this conference because this requires particularly those countries that share values and, therefore, interests to come together in ways they have not since the dawn of the Cold War. But there is good evidence that is precisely what is happening on the defense side. Whether it is AUKUS [Australia, the United Kingdom, and the United States] or the Quad [Australia, India, Japan, and the United States] in Asia, or whether it is NATO, these alliances are critical to our global future.

When I was a young graduate student, you would never have said that Sweden and Finland would end up in NATO. You would not have said that when I was a young professor. You would not have said that two years ago. Something is happening out there as allies are beginning to see the dangerous world we face, and that they have real capacity to be a part of the response in that "long twilight struggle" to keep the bad guys at bay until they have to turn to deal with their own internal contradictions.

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# Introduction: Getting Global Monetary Policy on Track

John B. Taylor

Welcome to the latest edition of the Hoover Institution's Monetary Policy Conference series, which now goes way back. Our theme for 2024 is Getting Global Monetary Policy on Track, and it follows up on the themes of the previous two years, How to Get Back on Track (2023) and How Monetary Policy Got Behind the Curve (2022). This year we include sections on how to get back on track, and stay on track, from experiences in different parts of the world, and thereby how to reduce the inflation rate without slowing down economic growth. This year the key policy issues are largely international, with special discussions on Europe and Asia. The conference builds on previous Hoover monetary policy conferences going back many years—you can read about our fifteenyear milestone for the Economic Policy Working Group in the references to this paper.

Our session topics this year are wide-ranging: opening remarks by Condoleezza Rice; Europe; global and emerging markets; financial regulation and monetary policy; micro (not macro), with Hester Peirce; employment dynamics, labor markets, the Phillips curve and inflation; the next strategy reviews; a policy panel with Amir Yaron, Austan Goolsbee, and John Williams; and concluding remarks by Edward Nelson, entitled "Milton Friedman and the Second Wave of the Great Inflation, 1976–1980."

## Recent History

Starting in the year 2017, the Federal Open Market Committee (FOMC) of the Federal Reserve Board began to move to a more rules-based monetary policy that had worked well in the United States in the 1980s, 1990s, and other years. Many papers written at the Federal Reserve and elsewhere showed the benefits of rules-based policies. In July 2017, when Janet Yellen was chair of the Federal Reserve Board, the Fed began to include a section on rules-based monetary policy in its Monetary Policy Report.

Many monetary policy experts made favorable comments about the rules-based policy, and central bankers were supportive. To emphasize this, one need only quote Jerome Powell, who followed Janet Yellen as chair of the Federal Reserve Board and said: "I find these rule prescriptions useful" (Powell 2018). The evidence was that the move toward rules-based policy was beneficial to monetary policy, and economic performance improved.

This move toward monetary policy rules was stopped, however, when the COVID-19 pandemic hit in 2020. Rules were removed from the Fed's Monetary Policy Report in July 2020. But by February 2021, they were reintroduced. However, rules were taken out again in the February 25, 2022, version of the report. But Chair Powell said on March 3 that rules would be back in the Monetary Policy Report.

In the report released on June 17, 2022, policy rules were back in, as Chair Powell had announced, including the Taylor rule, which was again first on the list. This approach has continued. As stated in the Monetary Policy Report released on Friday, March 3, 2023, "Throughout 2021 and 2022, the target range for the federal funds rate was below the prescriptions of most of the simple rules, though that gap has narrowed considerably as the FOMC has expeditiously tightened the stance of monetary policy and inflation has begun to moderate" (Board of Governors 2023, 43). Table 1.1 shows the rules

| TABLE 1.1. ${ m N}$ | /Ionetary pol | licy rules as r | eported in th | e Federal Re | serve Report, |
|---------------------|---------------|-----------------|---------------|--------------|---------------|
| March 3, 20         | 23.           |                 | -             |              | _             |

| A. Monetary policy rules            |  |
|-------------------------------------|--|
| Taylor (1993) rule                  | $R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$                  |
| Balanced-approach rule              | $R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$                  |
| Balanced-approach (shortfalls) rule | $R_t^{BAS} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2min\{(u_t^{LR} - u_t), 0\}$       |
| Adjusted Taylor (1993) rule         | $R_t^{T_{93adj}} = max \left\{ R_t^{T_{93}} - Z_t, ELB \right\}$                           |
| First difference rule               | $R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$ |
|                                     |  |

Notes:  $R_t^{T93}$ ,  $R_t^{EA}$ ,  $R_t^{E33,dj}$ ,  $and R_t^{FD}$  represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, balanced-approach (shortfalls), adjusted Taylor (1993), and first difference rules, respectively.

 $R_{t-1}$  denotes the midpoint of the target range for the federal funds rate for quarter t-1,  $u_t$  is the unemployment rate in quarter t, and  $r_t^{LR}$  is the level of the neutral real federal funds rate in the longer run that is expected to be consistent with sustaining maximum employment and inflation at the FOMC's 2 percent longer-run objective, represented by  $\pi^{LR}$ .  $\pi_t$  denotes the realized four-quarter price inflation for quarter t. In addition,  $u_t^{LR}$  is the rate of unemployment expected in the longer run.  $Z_t$  is the cumulative sum of past deviations of the federal funds rate from the prescriptions of the Taylor (1993) rule when that rule prescribes setting the federal funds rate below an effective lower bound of 12.5 basis points.

The Taylor (1993) rule and other policy rules generally respond to the deviation of real output from its full capacity level. In these equations, the output gap has been replaced with the gap between the rate of unemployment in the longer run and its actual level (using a relationship known as Okun's law) to represent the rules in terms of the unemployment rate. The rules are implemented as responding to core PCE inflation rather than to headline PCE inflation because current and near-term core inflation rates tend to outperform headline inflation rates as predictors of the medium-term behavior of headline inflation.

Source: Board of Governors of the Federal Reserve System.

included in the March 3 report. The notation is given in the footnote to table 1.1. The symbol r is the interest rate,  $\pi$  is the inflation rate, u is the unemployment rate, and the superscript *LR* means the long run. The results are similar to what one finds by looking at the Taylor rule (1993), which is listed first. The results can be compared by looking at the average gap in percentage points between the FOMC interest rate and the settings of the other rules.

Against this backdrop, the simple monetary policy rules considered in this discussion have called for elevated levels of the federal funds rate over 2021, 2022, and the first half of 2023, but the rates prescribed by these rules have now declined to values close to the current target range for the federal funds rate at 5.25% to 5.5%. In support of its goals of maximum employment and inflation at the rate of 2% over the longer run, the FOMC has maintained the federal funds rate at 5.25% to 5.5% since July while continuing to reduce its holdings of Treasury securities and agency debt and agency mortgage-backed securities.

To this we must add some recent commentary from John Williams (2023), president of the Federal Reserve Bank of New York. As Williams explained:

And so I'll start with one development that I think in important ways connects a number of changes, and that is the birth of the famous Taylor rule in 1993 when John Taylor wrote his paper "Discretion versus Policy Rules in Practice." Of course, that was an outgrowth of a lot of years of research, including by Fed economists, about thinking about monetary policy rules and strategies.

But, to me, that paper galvanized in many ways how people were starting to think about monetary policy differently. Specifically, instead of approaching monetary policy as a one-time tactical decision as to whether rates should be a little higher or lower or stay the same, the Taylor rule identified or laid out an overall strategy for setting interest rates in any circumstances in terms of a reaction function. And it spawned research on a vast collection of monetary policy rules and optimal control policies—much of that research was developed here and throughout the Fed's system. And the Taylor rule transformed policy research. The idea was simple. It had been around for a while, but I think it transformed it because it changed the language of talking about monetary policy.

We moved away from thinking about impulse response functions to thinking about longer-term issues. That includes what are effective monetary policy strategies; trade-offs between our policy goals; the effects of the zero lower bound, as was discussed earlier; and, of course, the roles of the various star variables—the inflation target, potential output, the neutral interest rate or  $r^*$ —that all appear in any policy role.

And so the Taylor rule not only altered the way monetary policy is conceptualized, it also changed the way a lot of the research in R&S, and other research divisions, approached questions related to the economic outlook and thinking about policy alternatives. Now, the Fed, the wheels of change may sometimes turn slowly, but I think the Taylor rule helped get those wheels spinning.

## Getting Back on Track

It is good that rules were in the Fed's Monetary Policy Report, and it is good that they might continue in future ones. It would be more helpful if the Fed incorporated some of these rules or strategy ideas into its actual decisions. Apparently, this has recently begun to happen, as I show below by comparing the interest rate path and policy rules for the interest rate. But at first only small changes were seen in actual monetary policy. So, a gap existed between rules-based policy and policy actions. This was the case at the Fed and at other central banks. Thus, we were still living in a high-inflation era unless monetary policy actions were taken.

Figure 1.1 shows the effective federal funds rate from late 2021 through the present. While the gap between the rules and the effective funds rate has narrowed, it still exists, as is shown in figure 1.4, which shows the federal funds rate as reported and tabulated by the Federal Reserve Bank of St. Louis. To see this, I show in figure 1.2 the Taylor rule as it originally appeared thirty years ago in Taylor (1993). The variables are defined below the equation. As shown in figure 1.2, the percentage deviation of real GDP from its potential is closely related to the deviation of the unemployment rate from the natural rate.

Now let us use the equations to see when and by how much the Fed was and is now behind the curve. Using this policy rule, we can

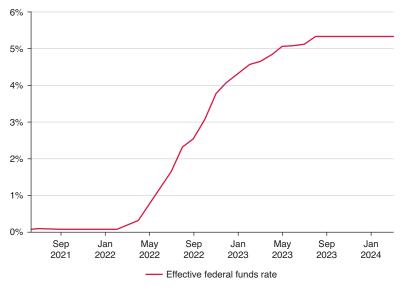


FIGURE 1.1. The effective federal funds rate. Source: Federal Reserve Bank of St. Louis via FRED.

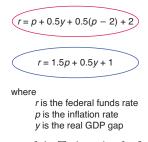


FIGURE 1.2. A simple version of the Taylor rule: if inflation is 2 (p=2) and the GDP gap is 0 (y=0), then the interest rate is 4 (r=4). Source: Taylor (1993).

see that if the inflation rate is 2% and the target for the interest rate is 2%, then the interest rate should be 4%. That is 2+2=4. If the equilibrium interest rate is 1%, then the funds rate should be 3%.

During much of 2022 the actual rate shown in figure 1.1 was thus well behind the curve. If the inflation rate rises to 3%, then

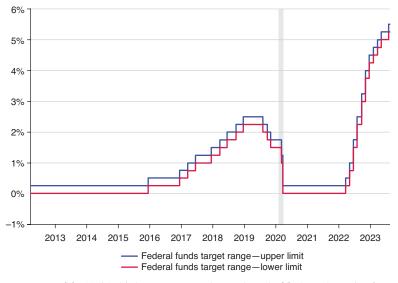


FIGURE 1.3. The Fed held the interest rate lower than the Taylor rule, and inflation rose sharply as the Fed then tightened policy. Source: Board of Governors of the Federal Reserve System via FRED.

the funds rate should be 4.5% (1+3+.5(3-2)=4.5), which is a bit below where it is now. If the inflation rate is 4%, then the funds rate should be 6% (1+4+.5(4-2)).

Thus, if we use the Taylor rule in the most recent Monetary Policy Report and plug in an inflation rate over the past four quarters of 4%, a target inflation rate of 2%, an equilibrium interest rate of 1%, and the gap between real GDP and its potential level of 0%, then you get a federal funds rate of 6%. This is within a half percentage point of where the Federal Reserve is, as shown in figure 1.3. So even with these inflation numbers, the Fed is still a bit behind the curve, though as Chair Powell indicated, the Fed may still be catching up. Note that these calculations assume that the equilibrium interest rate is 1%.

It is important to note that the situation shown in figure 1.3 was well known. Figure 1.4 was produced by James Bullard at the Federal Reserve Bank of St. Louis. It shows the actual policy rate

John B. Taylor

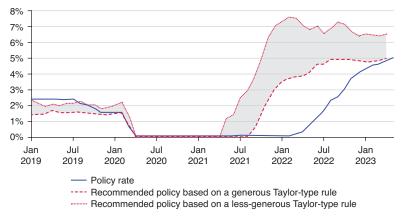


FIGURE 1.4. This chart produced by James Bullard shows that policy was too low, and this was the reason that inflation rose.

Source: James Bullard, Federal Reserve Bank of St. Louis.

of the Fed and the suggestions of policy rules. Clearly, monetary policy was not sufficiently restrictive. Bullard compares actual policy to both a general policy rule and a less-generous policy rule and finds that the situation is much the same.

What about evidence that the inflation rate was rising? Figure 1.5 shows that the actual inflation rate rose substantially and would have required a more immediate policy response. To be sure, as shown in figure 1.6, there was a lot of turbulence in the economic data as unemployment rose rapidly before coming back to normal levels.

## Conclusion

These remarks have shown that the Fed got behind the curve on rules-based monetary policy in the United States and has outlined a method to get back. A review of the years leading up to the present monetary situation provides the background needed for analyzing current and future monetary policy decisions. Using actual data from around the world also points to high inflation data from

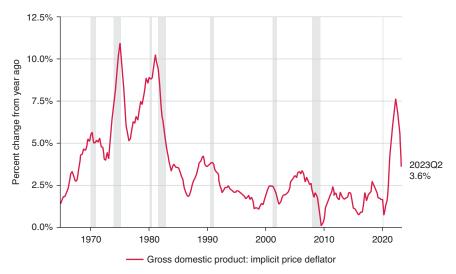


FIGURE 1.5. The inflation rate rose well above the Fed's target of 4%. Source: US Bureau of Economic Analysis via FRED.

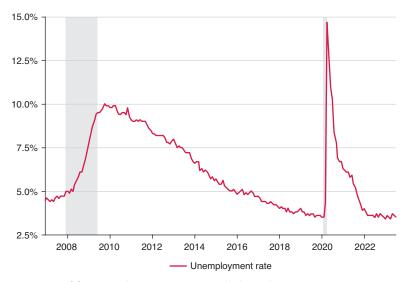


FIGURE 1.6. The unemployment rate rose well above the target range. Source: US Bureau of Labor Statistics via FRED.

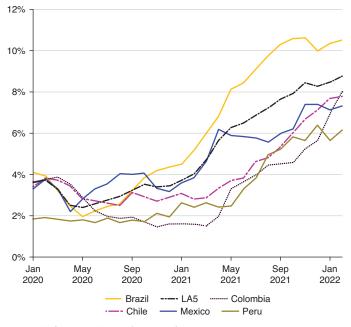


FIGURE 1.7. Inflation in Latin America from January 2020 to January 2022. Note: Peru refers to Lima.

Source: Data from Haver Analytics; national authorities; and IMF staff calculations. Graph reproduced from Maximiliano Appendino, Ilan Goldfajn, and Samuel Pienknagura, "Latin America Hit by One Inflationary Shock on Top of Another," IMF News, April 15, 2022, https://www.imf.org/en/News/Articles/2022/04/15/cf-latin-america-hit-by-one-inflation ary-shock-on-top-of-another.

other regions, with a special emphasis on neighboring countries in South America. As shown in figure 1.7, countries in Latin America such as Brazil, Colombia, Chile, Mexico, and Peru have seen high inflation. The same is true for many other regions of the world. Inflation has become a global issue.

The answer to the key question "Are we entering a new era of high inflation?" is clearly yes, unless monetary policymakers continue to adjust policy. There are now more reasons than ever for central banks to use a more rules-based policy. Central banks should start now to use rules that markets understand. The policy interest rate would increase as inflation rises, as has already happened. It would of course be a contingency plan, as are all rules. This would greatly reduce the chances of a large, damaging change later.

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#### EUROPE

#### INTRODUCTORY REMARKS

#### Michael D. Bordo

The pandemic of 2020–21 and the lockdowns (it is debatable whether they were needed) led to a massive collapse in the real economy and then a huge fiscal and monetary policy response in the United States and most other advanced economies. The situation was treated very much like World War II.

In addition to expansionary aggregate demand, significant supply shocks reflecting the disruptions to the global economy contributed to a rapid run-up in inflation, a scenario not seen since the 1970s. The pattern of inflation differed across countries, with it being higher in the European Union (EU) and United Kingdom than in the United States.

At the Hoover Monetary Policy Conference in 2021, Mickey Levy and I, and Larry Summers and others attributed the inflation in the United States to the Fed's being behind the curve and mistakenly attributing the inflation primarily to temporary supply shocks, as well as to their vision being impaired by their flawed FAIT (flexible average inflation targeting) policy.

The other countries were also behind the curve. One wonders if all their central banks were surprised by the run-up in inflation. Did they all follow the same wrong model?

The monetary authorities eventually all caught on by 2022, and now inflation is subsiding. The necessary tight monetary (less so fiscal) policies did lead to recessions in Europe but not the United States (so far). The US experience may reflect its serendipitous productivity boom and massive immigration. In Europe, the supply shocks, especially to energy after the Ukraine war, has made normalization more difficult. Other key factors in explaining the cross-country differences include the lack of a fiscal union in the EU and the lingering effects of Brexit in the UK. In this panel, these themes and others are developed in four fascinating presentations.

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# **2** After Four Crises, the Euro Needs Clearer Boundaries between Fiscal and Monetary Policy

John H. Cochrane and Luis Garicano

We present here some of the insights of our forthcoming book *The Euro: Foundations, Crises, Incentives, and Reforms* (written together with Klaus Masuch) on the interactions among monetary, fiscal, and financial policies in the euro area.<sup>1</sup> In the book, we tell the story of how, in the course of responding to four major crises (the Great Financial Crisis, the euro sovereign debt crisis, the COVID-19 pandemic, and Russia's war on Ukraine), the euro-area member states, the European Central Bank (ECB), and other European institutions made a number of decisions that, while useful to address each crisis, ended up weakening significantly the institutional framework and the incentives for the European Union's institutions and member states to be fiscally responsible.

The foundational architecture of the euro, established in the Maastricht Treaty more than three decades ago, set up a monetary union without a fiscal union. The European Union (EU) has some centralized finances and centralized functions, but it is far from a federal state like the United States. The architects of the treaty understood well the dangers of a soft boundary between monetary

This paper and the forthcoming book reflect solely the views of the authors and not necessarily those of their current or previous employers or institutions, including in particular the executive board or the governing council of the European Central Bank.

policy and independent fiscal policies of the member states. The treaty focused the central bank on price stability, prohibited monetary financing of government budgets, and set deficit and debt limits for each country. It also included a no-bailout principle that public debt would not be rescued by fiscal transfers either.

This framework implied that in cases where overindebtedness couldn't be resolved through tax increases or spending cuts, sovereigns would default just like companies do and would not be bailed out by printed money that could cause inflation. But, crucially, it made no explicit provision to deal with these cases. Neither the treaty nor subsequent secondary EU legislation established how countries could default within the monetary union. They did not establish rules that would insulate banks from government defaults. There was no crisis-resolution body at the European level akin to the International Monetary Fund (IMF), or anything resembling a banking union. These omissions, combined with shocks and crises far beyond what the initial architects expected over the last two decades, distorted incentives and created vacuums.

Initially, during its first decade, the ECB adhered to the founding philosophy, carrying a small balance sheet, in which banks held few excess reserves, and purchasing no government bonds. Its actions and communications helped to make clear that the ECB would not support individual member states in fiscal difficulties. This was seen as a responsibility of fiscal policies of member states.

However, already in 2003, France and Germany had undermined the fiscal framework by breaking the debt and deficit rules. During the crises, the missing elements of the treaty framework and the earlier weakening of fiscal rules had consequences. The ECB continued to focus on price stability but gradually moved into decisions with significant fiscal implications, effectively supporting government debt and providing balance-of-payments financing for weaker member states. Starting in 2010, the ECB bought bonds of troubled individual member states. Later, it bought bonds of all member states. So in contrast to bond purchases by the Fed, the ECB mainly bought national bonds with different default risks. These actions blurred the distinction between monetary and fiscal policy and weakened incentives for sound public finances at the individual member state level.

Bailouts are common in crises. After crises, however, must come reforms to address the moral hazard that the crisis bailouts bring. And after the sovereign debt crisis began, there were strong efforts between 2011 and 2014 to improve institutions, such as setting up the European Stability Mechanism (ESM) and the Single Supervisory Mechanism (SSM) and strengthening fiscal discipline via a new fiscal compact. Greece did eventually restructure its debt in spring 2012, with conditionality. Alas, progress on such euro-area reforms faltered post-2014. Important member states failed to reduce their debt during the good years, the ECB did not find a way to stay out of the business of buying sovereign debt, and the EU failed to complete an institutional transformation to address fiscal and financial moral hazard.

The ECB's Transmission Protection Instrument (TPI) decision in July 2022 highlighted the blurring of the fiscal-monetary boundary. The ECB announced that it would buy debt of individual countries, with the aim of supporting the smooth transmission of monetary policy by holding down sovereign debt spreads. So far the ECB has not made TPI purchases. Still, the announcement likely dampened sovereign spreads, which might have risen after the substantial increase in policy rates from July 2022 onward. The ECB justified this action as necessary to counteract "fragmentation risks" to "monetary policy transmission." Even granting the motivation, the effect is sovereign debt support. The TPI support, unlike the previous program designed in 2012 to implement then ECB president Mario Draghi's "whatever it takes" (Outright Monetary Transactions, OMT), did not require euro-area member states to agree to an economic adjustment program with the country in trouble and to put financial assistance money on the table before the ECB intervened.<sup>2</sup> Thus the TPI clearly blurred the fiscalmonetary policy distinction more than "whatever it takes."

By 2022, the ECB's balance sheet had grown significantly, with over 60% of GDP in assets, mainly government bonds and favorable loans to banks. The ECB is now exposed to sovereign risk.

Banks are hostages. They hold a lot of their own government debt, so any sovereign restructuring will imperil the banking system. This persistent risk of a "doom loop" between banks and sovereigns remained unaddressed. Strong commitments by the EU Council during the sovereign debt crisis were soon forgotten. The ECB's emergency actions blurred the boundaries between monetary policy and fiscal policy, pushing the bank into a role that effectively supported relatively weak states and banks. Banks continued to receive subsidized financing with nonmarketable collateral, distorting the price mechanism (higher interest rates for riskier investments), partly crowding out market financing, and preventing clear identification of weak banks. With large ECB sovereign bond holdings, continued gross purchases during the high-inflation period, and the announcement of the TPI, the market perceived a strong aversion of the ECB to any significant rise in sovereign spreads. And member states, particularly larger ones, may have felt less need to put their fiscal houses in order, as evidenced by recent large deviations of 2023 deficit from previous estimates in Italy and France. Spain's "counter-reform" of the pension system, which significantly increased the long-term structural budget deficit of the country, and Italy's "Superbonus" paying 110% of energy-related home upgrades, are other examples of member states not feeling any particular urgency to reform their fiscal situations.

In conclusion, the missing elements of the treaty framework, the insufficient implementation of the fiscal framework, and the ECB's response to the four successive crises have accumulated and created a situation of weak institutions providing inadequate incentives. In the book, we make several proposals to attempt to remedy this situation, in particular the following:

- 1. Establish a European fiscal institution to unburden the ECB from rescuing bondholders of member states in trouble and to implement programs, conditionality, and bank recapitalizations. This institution must be significantly larger and more powerful than the existing ESM and be able to take decisions by majority voting (rather than unanimity) to ensure its agility.
- 2. Complete the banking union by introducing European deposit insurance and addressing weaknesses in banks. Sovereign debt on banks' balance sheets should carry risk weights, or concentration charges, and thus require higher capital buffer. If banks hold sovereign debts, they should hold diversified portfolios.
- 3. Reduce the ECB's balance sheet. Outside a major systemic financial crisis, stop subsidizing banks relative to market conditions by allowing them to post weak collateral. Restrict eligibility of nonmarket-able securities to emergency liquidity assistance.

These reforms clarify boundaries by having a European fiscal institution handle fiscal tasks, completing the banking union, and ensuring that the ECB's balance sheet supports a return to a limited role without support for bond prices of individual member states or banks in trouble.

#### Notes

We thank Klaus Masuch for input and comments.

- 1. Forthcoming (Princeton University Press, 2025).
- For Mario Draghi, see "Speech by Mario Draghi, President of the European Central Bank, at the Global Investment Conference in London, 26 July 2012," European Central Bank, 2012.

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# З The Digital Euro

Markus K. Brunnermeier

## What Is Digital Money?

Today I will talk about the possible introduction of the digital euro. This raises the questions, What is digital money? and Aren't private bank deposits already digital? I would like to define digital money as money that is connected to a ledger, which in turn is connected to many other recordkeeping ledgers. These ledgers can be supply chain ledgers, big tech ledgers, credit ledgers, and platform ledgers that link to the Amazon and Alibaba tech ecosystems, which include customer ratings and other information. As soon as these ledgers are updated, an automatic digital payment can be executed. Automatic contingent payments and transactions as well as smart contracts are possible. If these ledgers are better interconnected, digital money becomes more useful (Brunnermeier and Payne 2024).

The digital euro offered by the European Central Bank (ECB) is a central bank digital currency (CBDC). To what extent it will be linked to other ledgers and how competitive it will be with other payment options are important design issues.

### Private, Public, and PPP Money

One question is, Who has the power to control this ledger where everything is recorded, and who can issue money? There are two polar views. According to the libertarian view of Friedrich Hayek, private actors should have the right to issue money. Different forms of private money should compete with each other to limit rent extraction and inflation (Hayek 1976). One challenge is that private-money issuers do not have sufficiently high incentives to invest in the resilience of the entire monetary and payment system.

The other polar case is an economy in which only the government is allowed to issue money. Private banks are only allowed to issue demand deposits in the form of inside money if fully backed by public money. The proponents of the Swiss sovereign money referendum envisioned such a monetary system (The Swiss Federal Council 2018).

Our fractional reserve banking system is a public-private partnership (PPP). The government issues public money through its central bank, while private banks can issue private inside-money claims. More recently, fintech and big tech players entered the space by issuing cryptocurrencies. Stablecoins, which are pegged to an official currency, try to serve as payment instruments but lack public liquidity support—at least as long as they are not systemic.

#### CBDC to Ensure the Uniformity/Singleness of Money

Today in the eurozone there are many issuers of money. One role of the digital euro is to maintain the uniformity of money across all issuers. All types of money should be anchored by a single form of money. There are two ways to ensure the uniformity (or singleness) of money (Brunnermeier and Landau 2023).

The first way is by convertibility—for example, deposits in a checking account can be converted into central bank cash. However, as the use of cash disappears, we need a credible substitute as anchor. A CBDC could step into this void. Convertibility into a CBDC would anchor the entire system onto a single currency. Historically, there are episodes during which the uniformity of money was sacrificed. In US history, in the free-banking era before the Civil War, multiple state banks issued their own banknotes (which often cir-

culated at a discount, reflecting the credit risk of holding them). In Europe during the euro crisis, the value of Greek euros, for example, differed from that of German euros because of the risk of a Grexit. Convertibility into a common currency—for instance, national banknotes in the nineteenth-century US case, or a common euro digital currency—would create a uniform money.

An alternative and second approach, instead of the convertibility option, is through bank regulation, deposit insurance, and lender-of-last-resort policy. All three policy instruments, combined with sufficient fiscal backing, can ensure that all bank deposits are always fully guaranteed, and hence uniformity of money is ensured.

### CBDC to Reduce Private Seignorage and Rent Extraction

Private-money issuers have an incentive to issue money during an *initial coin offering* (ICO) and promote it heavily to make their coins broadly used and systemic. Large seignorage resources thus flow to the issuer of private money. Private-money issuers do not have sufficient incentives to invest in the resilience of the entire payment system. After large parts of the population have adopted the currency, a collapse of a private coin can cause great havoc and disruptions to the economy. At this stage the money becomes systemic, and the government sector is compelled to extend guarantees to the private money. In short, private-money issuers reap the benefits from the ICOs at the beginning, while the public has to provide the guarantee at the end.

Private-money operators can also extract rents from users if competition among currencies is limited due to network externalities. Indeed, considerable rent extraction is possible because the private issuers have *exclusion power*, meaning they can exclude users from the ledger. Some of the exclusion power might be justified, if the money ledger operator also extends credit to its users. The threat of being excluded from the money ledger is very powerful and ensures that borrowers definitely pay back their loans. Default and delinquency rates can be pushed to a minimum. For example, credit extended by Ant Financial's Alipay in China has a very low default probability. A CBDC can give private users an alternative to the private-money ledger and hence limit the exclusion power of private actors.

Private banks enjoy *deposit market power*. Central banks have raised their policy interest rates to reduce inflation. However, private banks are reluctant to pass on the higher rates to their deposit account holders. The low pass-through of changes in policy interest rates to depositors hurts in particular less financially literate citizens, who suffer from inertia. Introducing a competitive CBDC that *pays some interest* could limit this distortionary power and rent extraction. However, one should be careful and introduce the interest payment on CBDC only gradually to ensure that banks make sufficient profits to sustain the current losses they incurred from acquiring fixed-interest-rate assets in the past. After a transition phase, banks knowing that in the future their deposit market power is limited will be more careful with their interest rate management.

In general, private issuers of money have incentives to maintain inefficiency that allow a larger rent extraction. This can also be seen in cross-border banking and cross-border payments in Europe today.

#### CBDC to Secure Monetary Sovereignty

The digital euro should be used to contain or maintain monetary sovereignty. Monetary sovereignty involves the collection of seignorage but, more importantly, it allows the central bank to manage the macroeconomy. If the unit of account is lost because of the universal use of different private currencies, it becomes difficult to alter interest rates and have an impact on the macroeconomy. A digital euro ensures the unit of account, so that most other forms of digital money are denominated in euros. This also empowers the ECB's lender-of-last-resort function. Having monetary sovereignty puts public money at center stage, benefiting the government. Network effects can make it more difficult for citizens to switch to non-public-money-denominated assets. This makes it easier for the government to impose an inflation tax on its citizens—a form of financial repression if combined with macroprudential regulatory measures. As history shows, this is an important way to reduce high sovereign debt levels. A well-anchored digital euro could provide more power to conduct fiscal repression and thereby avoid potential default.

# CBDC as a Catalyst to Establishing a European Payment System

Introducing a cost-efficient and coordinated payment system could reduce the expenses of many merchants for money transactions. The introduction of a digital euro could force most merchants to obtain new terminals in their shops. This could reduce the reliance on US credit card companies who dominate the credit card business. Given geopolitical uncertainty, having a European-controlled payment system strengthens Europe's sovereignty.

The digital euro would also facilitate a cross-border instant European payment system. At the moment, various private banks find it difficult to establish an efficient Europe-wide payment platform. Private banks may indeed prefer the inefficiency of the current system because it aids their rent extraction. A digital euro would be a catalyst to forcing the banks to coordinate and make payments efficient across many ledgers throughout the entire euro area.

### CBDC to Set a Privacy Standard

Digital money transactions are recorded on a ledger. Entities that have access to the ledger gain access to agents' privacy. People are afraid of becoming a "transparent citizen" (having too much of their information available to bad actors). For private digital money, private firms have access to citizens' private information. For CBDC, the central bank can in theory gain access to citizens' private transaction information. Ideally, CBDC should set itself a high standard so that citizens' privacy is protected other than in the case of money laundering and criminal activities. In general, it is helpful to citizens if they have, in addition to private payment providers, a competing CBDC environment at their disposal.

#### Interconnected Smart CBDC

If the digital money ledger can be interconnected with various other ledgers, it can become more attractive by offering greater convenience and programmability. Hence, it is decisive that the CBDC ledger or digital euro ledger will be *interoperable* with all others, including private ledgers. This ensures that all smart contracts can be enabled on the CBDC ledger. Credit could more easily be enforced. Given the current plans in Europe, it is not obvious that a smart, interconnected CBDC will be introduced.

In the US, there is considerable opposition to introducing a CBDC, a digital dollar. The political preferences seem to favor private stablecoins. They can be more easily connected to various other ledgers and made programmable. However, creating uniformity of digital money will be more difficult, and the revenue of initial public coin offerings will go to private hands instead of the public.

In the case of China, the private platforms Alipay and WeChat had the opportunity to promote the digital yuan in other countries, especially across Asia. However, the Chinese authorities have sidelined these platforms with recent regulatory policy measures. Hence, the spreading of the digital yuan across Asia is now less likely than a few years ago. That is, other emerging economies have less to fear in losing their own local monetary sovereignty.

#### Conclusion

The main takeaway is that a public-private partnership using either the convertibility or regulatory approach would create a uniform digital currency across the euro area and eliminate the denomination risk that characterized the euro crisis. A digital euro could also be used to reduce the existing dominance of US credit card companies. On the other hand, it would also facilitate the use of financial repression to reduce high sovereign debt.

In sum, the key issues are how to design a digital euro and make it an effective competitor to private players; how much interest should be paid on CBDC deposits; how to set up a CBDC ledger that provides sufficient privacy; how to contain the rents of the private sector; and how to preserve financial stability in the face of potential runs from private deposits to CBDC deposits.

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# **4** Monetary Policy in Europe: Out of the Woods?

Yuriy Gorodnichenko

The recent rise of inflation has been experienced by many advanced economies. While there is variation in the timing and magnitude, inflation was breaching 10% (see figure 4.1, panel A) and thus bringing back memories of the Great Inflation in the 1970s. The good news is that inflation has been falling sharply since peaking in 2022–23. What are the sources of this rapid disinflation? Some credit surely goes to the central banks. Policy rates increased from zero to 5% or higher rather briskly (see figure 4.1, panel B). However, the credit is likely only partial, for several reasons.

First, we know from Milton Friedman that monetary policy works with long and variable lags. Various estimates suggest that an interest rate hike generates a tangible decrease in inflation after 1.5 years or so. Furthermore, nominal interest rate increases have only recently led to positive real interest rates: figure 4.1, panel C, shows that inflation has been above short-term interest rates even when inflation has started to fall. This tightening of monetary policy appears to be quite modest given previous experience. Figure 4.2 plots the time series of inflation and real interest rates during the Volcker disinflation in the 1980s and the current episode. Paul Volcker raised rates to 5% for about five years to conquer inflation. In contrast, the real rate during the current episode is only lately, and modestly, above zero.

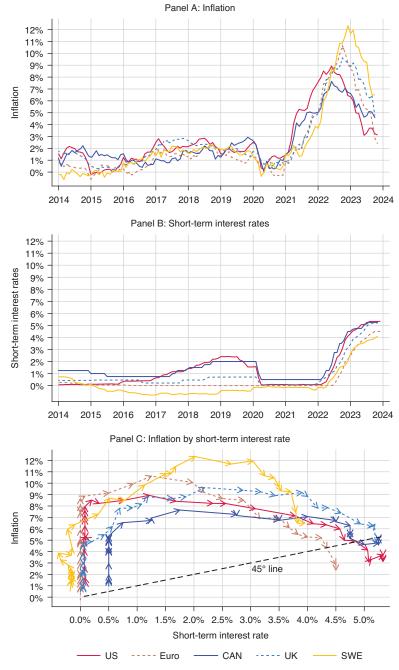


FIGURE 4.1. Dynamics of inflation and interest rates. Source: Created by the author from publicly available data.

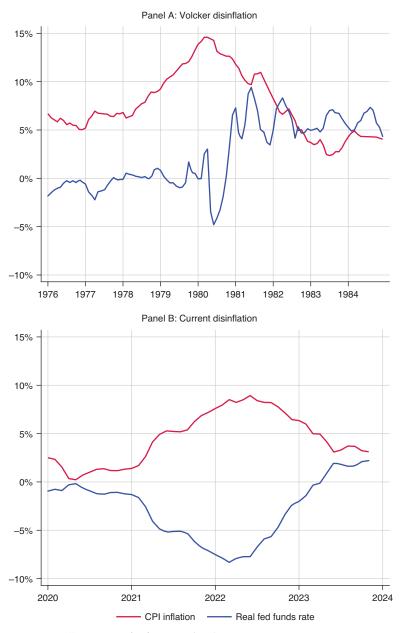


FIGURE 4.2. Dynamics of inflation and real interest rate. Source: Created by the author from publicly available data.

Second, one should look at the joint dynamics of inflation and other macroeconomic variables to better understand sources of disinflation. To this end, figure 4.3 reports the evolution of the inflation gap (inflation rate  $[\pi_t]$  minus expected inflation  $[\pi_t^e]$ ; expected inflation is the average one-year-ahead inflation forecast in the University of Michigan consumer survey) and the unemployment gap (unemployment rate  $[UE_t]$  minus the natural rate of unemployment  $[UE_t^*]$  estimated by the Congressional Budget Office). Red arrows show the dynamic when inflation is rising, while blue arrows describe the evolution when inflation is falling. Again, we compare the Volcker disinflation (figure 4.3, panel A) and the current episode (figure 4.3, panel B).

The Volcker disinflation is a textbook case. Inflation increases are vertical shifts in the  $(\pi_t - \pi_t^e, UE_t - UE_t^*)$  space. These shifts are consistent with cost-push shocks, that is, upward shifts in the Phillips curve. To disinflate, Volcker created a great deal of slack in the market. At that stage,  $(\pi_t - \pi_t^e, UE_t - UE_t^*)$  is moving down and to the left. One can interpret these dynamics as movements along the Phillips curve. In contrast, the current episode has movement along the Phillips curve when inflation is rising and a downward shift in the Phillips curve when inflation is falling. We do not have "Volcker" data for the eurozone in the 1980s, but the current experience in Europe is very similar to the US experience (see figure 4.3, panel C).

These dynamics suggest that a chunk of disinflation in the euro area and other advanced economies was due to forces beyond the reign of monetary policy. While these forces are welcome developments, this also means that central banks are not fully in control, and falling inflation can turn into rising inflation or stubbornly high inflation. Unfortunately, the balance of risks for the eurozone is such that these scenarios could be more likely than many observers think.

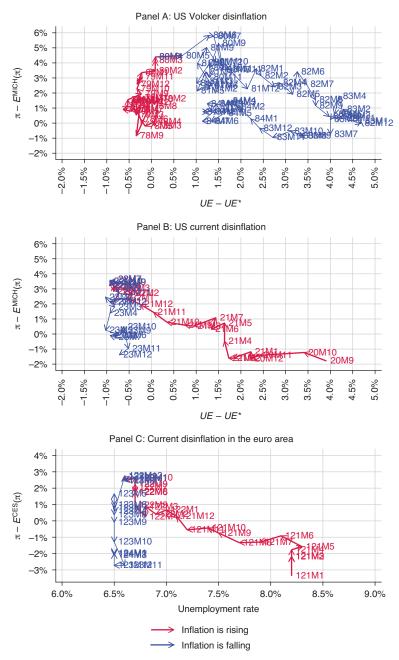


FIGURE 4.3. Dynamics of inflation and unemployment gaps. Source: Created by the author from publicly available data.

After Russia invaded Ukraine on February 24, 2022, Europe could successfully decouple from Russian energy, but war-related risks were not eliminated. Many European businesses are still dependent on Russia. For example, Raiffeisen Bank, a systemically important Austrian financial institution, generates more than 50% of its profit in Russia. One can expect that these businesses likely face significant future losses, as Russia can seize their assets to pay for the war. The Black Sea is a major route for grain exports, not only for Ukraine but also for Russia (~70%). If these routes are disrupted (for example, in April 2022, insurance increased by a factor of ten and made commercial shipping infeasible), food prices are likely to soar. Russian oil refineries, depots, and terminals continue to catch fire, which may drive energy prices up again. In addition to potential increases in commodity prices, the shooting war creates immediate security risks for Eastern Europe (Russian drones and missiles occasionally fly into the European Union airspace) and beyond (Russia occupies a huge nuclear power plant in Zaporizhzhia and an accident can pollute much of Europe). Furthermore, Russia creates instability in the European Union by weaponizing refugees, spreading disinformation, and interfering with political processes. If the Cold War is any guide, defense spending in Europe can increase by 50% or even double. Public finance could be further strained if the flow of refugees returns to or exceeds the level observed in April 2022 (Germany alone spent more than 20 billion euros on Ukrainian refugees in 2022-23). This expansionary fiscal policy can again ignite inflationary fears. In general, one may be concerned that the "Korea discount" can be applied to Europe as well, and so the cost of doing business in Europe could get higher.<sup>1</sup>

These developments may seem to be low-probability events, but the job of central banks is to think the unthinkable and be prepared for negative scenarios. Russian aggression in Ukraine turned into a war of attrition that may be hard to contain. As a result, the European Central Bank and other central banks on the continent should hope for the best but prepare for the worst.

#### Note

 The Korea discount refers to a lower price-earnings (PE) ratio of Korean stocks relative to their global peers. For more details, see Romain Ducret and Dušan Isakov, "The Korea Discount and Chaebols," *Pacific-Basin Finance Journal* 63 (October 2020): 101396.

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# 5

## Monetary Policy in a Sustainable Union

Luigi Bocola

This chapter focuses on understanding how sustainability considerations—which I will define more clearly below—interact with the price-stability mandate of the European Central Bank (ECB). As discussed by John Cochrane and Luis Garicano in chapter 2, a key institutional feature of the European Monetary Union is the coexistence between a single monetary authority and many independent fiscal policies. Aside from being independent, fiscal policies have also been quite different across countries, leading over time to heterogeneous fiscal positions in the euro area with some countries characterized by very high levels of public debt and others by quite sustainable public finances. Starting in 2010, the high-debt countries have faced quite volatile interest rate spreads and occasional debt crises, with all the negative spillovers that these events have on their economies and on the whole union.<sup>1</sup>

When you put together these institutional features, a crude way of thinking about the conduct of monetary policy over the past fifteen years is that the ECB has tried to keep inflation at its target, and at the same time has tried to "preserve the euro," using the words of Mario Draghi, by making sure that these occasional debt crises do not lead to financial meltdowns or disorderly exits from the union. For lack of a better term, I am going to refer to these considerations as *sustainability constraints* for the union.

What I want to discuss is to what extent these sustainability constraints interact with the price-stability mandate. When we think

about this question, there are two possible angles. On the one hand, fiscal shocks in high-debt countries may make this sustainability constraint more relevant and force the ECB to take policy actions that are not necessarily consistent with price-stability considerations—think about all the bond-purchasing programs designed over the years to reduce the volatility of sovereign spreads. On the other hand, the presence of these sustainability constraints may affect the response of the ECB to more traditional shocks. For example, when facing a negative supply shock, the ECB may not want to raise rates as much as they should for price stability, because increasing interest rates will have negative spillover effects on the public finances of high-debt countries and potentially tighten the sustainability constraints.<sup>2</sup>

In what follows, I will present some data to assess how these different types of shocks affect the ECB's ability to deliver price stability. Specifically, I'm going to look at two different event studies. The first will be the formation of the Italian government in 2018, which I will interpret as a direct shock to sustainability constraints. The second will be the liftoff event in the summer of 2022, which will fall squarely in the second type of shocks discussed earlier. My reading of this data will be that the European Monetary Union was able to manage the first type of shocks much better than the second type.

Before going there, let me give a brief explanation of the data that I will be using. In order to understand how the monetary stance of the ECB changes when sustainability considerations come into play, we need to have data on a monetary instrument—say, nominal interest rates—and an outcome—say, inflation. Rather than using realized data, I will be assessing the monetary stance of the ECB using expectation data. Specifically, I will use the expectation of future nominal interest rates and future inflation that are implied by the term structure of nominal and inflation-protected bonds.<sup>3</sup>

In Bocola et al. (2024), we use this data to test for the stability of the US monetary reaction function post-2020. The basic idea can

be illustrated with a simple example. Suppose that the monetary authority follows a Taylor rule,

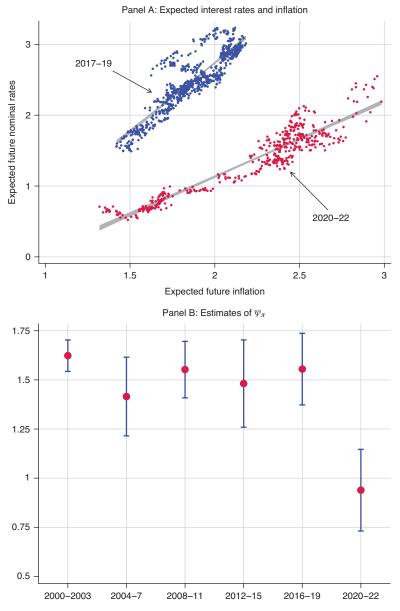
$$i_t = \overline{\iota} + \psi_{\pi} \left( \pi_t - \overline{\pi} \right) + \epsilon_t,$$

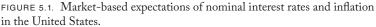
where  $i_t$  denotes the nominal interest rate,  $\pi_t$  inflation,  $\overline{\pi}$  the inflation target, and  $\varepsilon_t$  an independent and identically distributed monetary shock. Taking expectations of both sides of the above relation k years from now, we can restate this relationship in the *expectation* space as

$$E_t[i_k] = c + \psi_{\pi} E_t(\pi_k)$$

We can then use the above relation, coupled with high-frequency bond market data on expected future nominal interest rates and expected future inflation, to learn what bond market investors in any given day *t* are thinking about the monetary stance—which in this example is parameterized by  $\psi_{\pi}$ .

Figure 5.1 reports this data for the US economy. In panel A, we have a dot plot of  $E_t[i_k]$  against  $E_t(\pi_k)$  for two different samples, January 2017 to December 2019 and August 2020 to February 2022. Each dot in the figure corresponds to a specific day in these two windows. First, we can see a very strong relationship between these two variables, consistent with what the simple Taylor rule described earlier. Second, we can see that the slope of this relationship becomes much flatter postpandemic. If we do this analysis more systematically over the 2000–2022 sample, we see in panel B that for almost twenty years the estimates of  $\psi_{\pi}$  were remarkably stable over time, and then dropped in the post-COVID-19 period. In Bocola et al. (2024), we argue that this finding is consistent with the introduction of the flexible average inflation targeting and a shift toward a more dovish policy stance by the Federal Reserve.





Notes: Panel A shows a scatterplot of daily market-based expectations of average nominal interest rates and average inflation over a ten-year horizon for two subsamples, 2017–19 (blue dots) and 2020–22 (red dots). Panel B reports estimates of  $\psi_{\pi}$  computed using the same data in different subsamples for the 2000–2022 period.

Source: Bocola et al. (2024).

Consider now performing the same analysis for the euro area. Figure 5.2 reports the results. We still estimate a striking and stable positive relationship between expected nominal interest rates and expected inflation, and a substantial reduction in the slope coefficient post-2020. Could such a reduction in the sensitivity of nominal interest rates to inflation be related to private sector worries of tighter sustainability constraints for the monetary union, perhaps due to the large observed increase in public debt after 2020?

To explore this question, I will start with the first event study, the formation of the Italian government in 2018. For those who are not familiar with these events, the 2018 elections in Italy resulted in a major political stall. You had three main players: the Five Star Movement, a center-right coalition of parties, and a center-left coalition, each with roughly one-third of the votes. In that landscape, none could govern independently. After two months of major political uncertainty, the Five Star Movement began talks to form a new government with a faction of the center-right coalition, the League, on a platform that was markedly anti-austerity/anti-EU establishment. During this period, we observed major volatility in Italian sovereign spread—a proxy for the likelihood of a debt crisis in Italy-mostly driven by political news about the likelihood that this coalition would be formed and what its policies would be (see, for example, Martin, Allen, and Politi 2018). I am going to think about this as a shock to the sustainability constraint of the euro area.

To explore the implications of this type of shock for euro-area inflation and nominal interest rate, I estimate by ordinary least square the relationship

$$\Delta E_t[x_k] = a + \beta \Delta s p r_t + e_t,$$

where  $x_k$  is variable x in year k. Panel A of figure 5.3 reports the regression line when using daily revisions in expected future inflation on the left-hand side of the above equation, alongside a scatterplot of

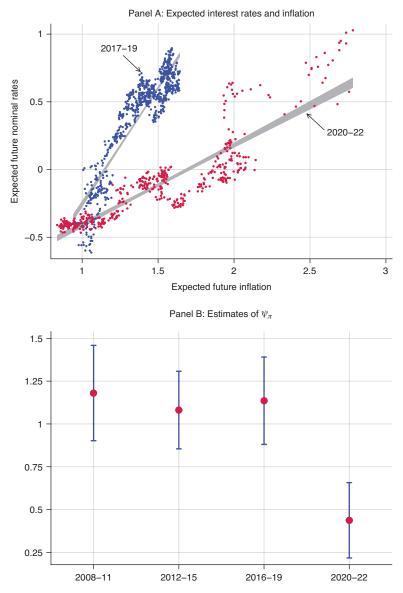
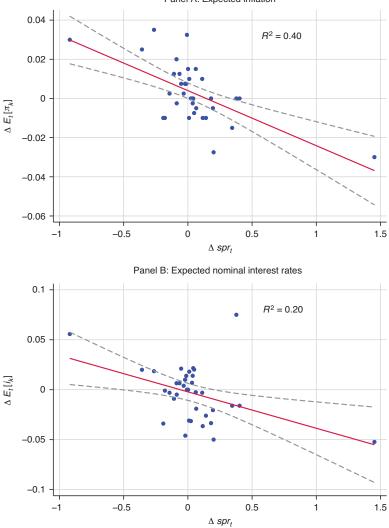


FIGURE 5.2. Market-based expectations of nominal interest rates and inflation in the euro area.

Note: This figure replicates figure 5.1 using euro area data. Expected nominal interest rates are computed using overnight indexed swap (OIS) rates while expected future inflation is computed using inflation-linked swap (ILS) rates. These contracts are denominated in euros and have a ten-year maturity.

Source: Figure by the author based on Bocola et al. (2024), using data from Bloomberg.



Panel A: Expected inflation

FIGURE 5.3. The regression of daily changes in Italian sovereign spreads on daily changes in expected future inflation and expected future nominal interest rates. Note: Panel A shows daily revisions in expected future inflation, and panel B shows nominal interest rates, with daily revisions in Italian sovereign spreads for the months of May and June 2018, along with the regression lines in each plot. Expected future inflation and nominal interest rates are computed over a five-year horizon using the data described in the note of figure 5.2. Italian sovereign spreads are defined as the interest rate differential between an Italian and a German zero-coupon bond with a residual maturity of five years. Both variables are expressed in percentage points.

Source: Figure by the author, using data from London Stock Exchange Group.

the underlying data. Panel B of the figure reports the same information when we instead use daily expectations of future nominal interest rates as a left-hand-side variable.

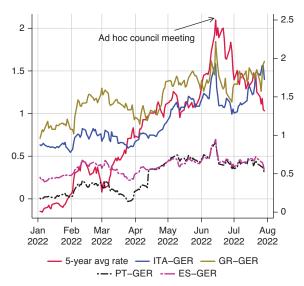
There are two main takeaways from the figure. First, news about the Italian political landscape was quite predictive of inflation expectations and nominal interest rates for the euro area—with an  $R^2$  in the 0.2–0.4 range at the daily frequency. Second, we can see that following an increase in the likelihood of an Italian default (an increase in spreads), expectations of future inflation and of future nominal interest rates fell, with nominal interest rates being more reactive.<sup>4</sup>

My reading of this evidence is that financial markets view an isolated debt crisis in the eurozone as a negative demand shock for the union, and they expect the ECB to accommodate these shocks. Accordingly, inflation expectations for the euro area do not move much despite the sizable movements in Italian spreads. In this sense, these direct shocks to the sustainability constraint do not appear to present major interferences with the price-stability mandate, at least when they are affecting only one country, as in this example.

I will now look at a different type of event, the liftoff of the summer of 2022. In figure 5.4, panel A, the red line plots the expected nominal interest rate over the next five years for the euro area and sovereign spreads for a subset of euro-area countries. On June 5, the ECB decided to end net purchases of sovereign bonds under an important pandemic program and to increase the policy rate. Following that decision, we can see sovereign spreads in Italy, Greece, and other countries increasing. Shortly thereafter, the ECB held an emergency meeting in which they partly reversed that decision on the bond-purchasing program and introduced the Transmission Protection Instrument (TPI).

A possible interpretation of this episode is that the ECB became more dovish toward inflation because increasing interest rates would make public debt less sustainable for countries in the eurozone—a case in which sustainability constraints interact





Panel B: Real rates vs. inflation expectations: eurozone vs. US

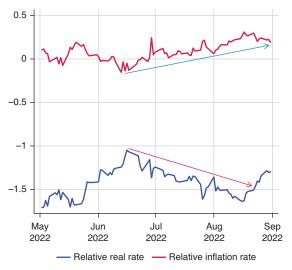


FIGURE 5.4. The expected nominal interest rate (%) over the next five years for the euro area and sovereign spreads for high-risk euro area countries, with a residual maturity of five years.

Note: The red line in panel A reports yields on a zero-coupon bond (left *y*-axis), while the remaining lines report the yield differentials between a zero-coupon bond issued by a selected euro-area country and Germany (right *y*-axis). The blue line in panel B plots the yield differential between inflation-protected bonds in the euro area and in the United States, while the red line reports the differential in expected inflation in the euro area and in the US computed using inflation-protected bonds.

Source: Figure by the author, using data from Bloomberg and London Stock Exchange Group.

#### Luigi Bocola

meaningfully with the price-stability mandate. This interpretation is consistent with the behavior of bond prices. Indeed, from figure 5.4, panel B, we can see that after June 15 of 2022 expectations of future nominal interest rates by the ECB fell relatively more than their US counterpart, despite the fact that inflation expectation in the euro area increased by more than in the US.

To conclude, aside from price stability, the ECB wants to avoid disruptive debt crises and keep the monetary union sustainable. These two objectives may clash at times, leading to a trade-off. The ECB has designed institutions, such as the TPI, over time to ameliorate this trade-off. These institutions appear to have worked, especially when considering idiosyncratic shocks to high-debt countries. However, there are still areas of concern, especially during tightening cycles: the fact that you have countries with public debt well in excess of 100% of GDP in the European Monetary Union is bound to constrain the ability of the ECB to act swiftly by raising rates when facing inflationary shocks. These concerns are, in my view, amplified by anemic growth and the already high level of taxes and political difficulties in cutting spending—factors that make it unlikely that we will observe major reductions in debt-tooutput ratios in most euro-area countries going forward.

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#### Notes

- There is a large body of literature documenting large negative spillovers of sovereign risk to private sector firms during the European debt crisis. See, for example, Corsetti et al. (2012); Bocola (2016); Bottero, Lenzu, and Mezzanotti (2020); and Arellano, Bai, and Bocola (2024).
- 2. See, for example, Wolf and Zessner-Spitzenberg (2021) for a recent analysis of the nexus between interest rate and public debt sustainability in the euro-area context.
- 3. In what follows, I will assume for simplicity that the expectation hypothesis holds, so that we can read market-based expectations from yields of nominal and inflation-protected bonds. See Bocola et al. (2024) for a discussion of the role of risk and liquidity premia for this type of analysis.
- 4. The point estimate of  $\beta$  is –0.037 for nominal interest rates and –0.028 for inflation.

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## GENERAL DISCUSSION

- MICHAEL BORDO: This was great. So we have about fifteen minutes or so for Q and A. I will take my prerogative as chair and ask a question and then we will go around the room. And when you raise your hand, please identify yourself. In 1999, Europe created a monetary union, but it did not create a fiscal union. And that has been a source of difficulties, at least ever since the global financial crisis. The question I have for people on the panel is: What is the likely path forward to creating a monetary fiscal union like the US had, like Alexander Hamilton envisaged?
- LUIS GARICANO: Yes, the moment was very promising. We responded to COVID by issuing common debt. I was in parliament then, and I thought this would indeed be the Hamiltonian moment for Europe, with the first large bond issuance in Europe, 750 billion. But in fact it was half a step, because, yes, we put the debt issuance in place and we have spent it, but we didn't decide how to fund it. We did the easy part. The revenue side was forgotten. The politicians' view of the time was: let's put this issuance in place, and we'll find the money later. Right now, let's just get this thing going. Remember the bicycle metaphor: Europe is always falling forward and building in each crisis. But of course finding this money now is more difficult than anticipated, because we are facing all of these problems Yuriy mentioned and we have to find the money for defense and all the rest.

My view in that sense is that we wasted a very good opportunity to take that first Hamiltonian step you're talking about. And the fact is that the recovery plans have not entirely run well—think of the Italian budget deficit, a consequence of the "Superbonus," where basically the Italian government pays 110% of your house renovations, so that you have an incentive for your home builder to make a renovation as expensive as possible because both of you can split that extra money. So the fact that this didn't work very well and that we didn't put the revenue in place probably means that a fiscal union is further away than it was before the crisis. And I am not very optimistic about the political will; the resistance in Europe to this as societies age is becoming stronger.

BORDO: Okay, does anyone want to jump in on that, or I can move to the next question?

SEBASTIAN EDWARDS: Thank you. Sebastian Edwards from UCLA. Very interesting panel. I have a question about CBDCs [central bank digital currencies]—an issue addressed by all panelists—and currency substitution. In the eighties, Michael Bordo wrote some great work on currency substitution. We are going to hear about Argentina later today. So, once CBDCs are around and there are digital euros backed by the ECB [European Central Bank] or digital dollars or digital loonies, why would Argentinians hold any pesos?

And one of the things that we learned from Milton Friedman is that in order to undertake monetary policy in an effective way, the demand for money has to be stable and predictable. There is a lot of early empirical evidence in his famous book with David Meiselman. So the question is: what are the implications of launching CBDCs in the advanced countries for Asia, Africa, and, mostly, Latin America? And I think that that's still something that hasn't been addressed, and I would be very interested in the panel's opinion. Thank you.

MARKUS BRUNNERMEIER: This is a big issue for the emerging economies. And that's why they were very afraid of others' digital money and they developed their own CBDCs to prepare for the case in which their citizens don't use their own currency anymore. The central bank loses the power to conduct monetary policy. You lose your monetary sovereignty. Of course you can still outlaw others' currencies; for example, nobody in Argentina can hold a digital euro by law. However, such laws cannot easily be enforced. Overall, emerging countries are most threatened when it comes to losing the unit of account role of their official currency. That's why initially when the whole wave came, the emerging markets were the first ones to set up CBDCs, just a defensive measure to protect their unit of account in order to be able to conduct monetary policy. This was a valid concern.

VOLKER WIELAND: Maybe two brief questions to Luis and Klaus [Masuch]. First, it seemed to me that the ESM [European Stability Mechanism] worked reasonably well. It did require the backup of the member countries for funding. You propose a stronger European financial institution, a fiscal institution, and you propose to change the voting rights. But then where would that institution get its funds? For example, in Germany the Federal Constitutional Court clarified that in order for such an institution to be able to call on the German budget to increase the capital of the ESM, you need a parliamentary vote. This approach worked, right? But if you want to do away with this requirement, don't you need some extra funding directly, say, some taxation powers?

The other question concerns the TPI [Transmission Protection Instrument]. It seems to me with the OMT [Outright Monetary Transactions], the ECB was much better protected because they required the country to request an ESM program. But now the ECB itself preferred to create a new program which does not rely on that. Klaus talked about this a little bit, but could you give us the reason why the ECB wanted to have this additional flexibility and give up on the backing of an ESM program?

KLAUS MASUCH: Volker, thanks a lot. That's of course a key question. The setting up of the ESM improved the situation in the sense that it took the burden from the central bank and moved it to the fiscal authorities that created the ESM as a crisis-management institution. So that was a good development. The ESM got capital from the member states, but you could read in the press that it may not have enough firepower if a big country has to be funded by the ESM. What we suggest is certainly that member states will have to fund the European fiscal institution, which could be intergovernmental like the ESM.

But you are right, our proposal is that there is a qualified majority voting. That means that decisions can be taken swiftly, which is needed in a crisis, and which requires moving away from giving every single country a veto right. We see this as allowing an unburdening of the central bank. If the fiscal institution is not strong enough and cannot act quickly, there will always be an argument that the central bank is much quicker, can much faster decide and act. And before I hand it over to Luis, on the Transmission Protection Instrument, which was needed in the view of the central bank to ensure that the expected increase in monetary policy rates is transmitted smoothly across the whole euro area, I think markets understood that the TPI was designed to help the ECB to get interest rates up significantly without triggering undesirable differentials in yields.

GARICANO: The difference between TPI and ESM is exactly as you're saying. When [Mario] Draghi announced "whatever it takes," he demanded fiscal backing, so that the member states would be on the hook, and also demanded conditionality. This means that the ECB is protected because the ECB can say, well, you're not doing the right thing; I withdraw my support and then member states are on the hook. The difference is that now, with TPI, there is no fiscal backing, member states are not on the hook, and there are no conditions. So basically, if the member state that is receiving this support for their bonds doesn't actually behave and continues doing crazy stuff, the ECB doesn't really have the possibility of getting out because it's going to create a financial crisis. The ECB is now on the hook. Why did they do that? I think it's politics. When Draghi was president—this was during the whole sovereign crisis—he had a lot of power and he was able to persuade governments: if you want me to support you, you're going to have to create this institution, the ESM, and accept these conditions. When the crisis period that was discussed in two of the panel's papers started, there was no political strength to do the same. Member states just thought, okay, ECB can do it, let ECB do it.

ATHANASIOS ORPHANIDES: We hear about all of these difficulties with the incomplete project in Europe, and it is very useful to hear proposals. But many of the proposals require cooperation by governments and other institutions and so forth. Since this is a conference on monetary policy, I thought I would ask a specific question about one of the issues that the ECB could fix on its own and improve the functioning of the euro area. That is a known vulnerability that has not been addressed very well in recent years. It's very simple. We need to look at the plumbing of how policy works. The ECB is the only central bank on the planet that relies on credit rating agencies to determine the collateral eligibility of government debt. This is a known source of fragility. It has created multiple episodes of crisis in the past. And we have this wonderful experiment with the pandemic that Luis mentioned. The ECB suspended the use of credit ratings for government debt during the pandemic, and this wonderfully stabilized government bond markets.

And then, unfortunately, for reasons that have not been explained or mentioned in the policy review documents that the ECB has completed since then, in the spring of 2022 the governing council announced that it would return to the prepandemic collateral framework with full knowledge that this would create instability. And, of course, the instability came. I was interested in the case study of the TPI, but of course the TPI was introduced in order to partially solve a problem that the ECB had created just a few months earlier by reintroducing the reliance on credit rating agencies for government debt.

So I ask this to those of you who have proposed solutions for the ECB: isn't this a fairly easy thing that the ECB could fix on its own? What is the justification for current practice? And Luis, I understand politics is part of the answer, but when we're talking about an independent central bank, I don't think that's a satisfactory answer.

GARICANO: You got rid of my get-out-of-jail card! I think that the rating agencies are a very bad solution. We saw it during the financial crisis. The problem is that I don't think a better solution has been found in Europe that avoids political interference. Using volatility or other similar measures would probably be preferred.

But I think it's a question of what we can agree on as different countries that's not manipulable by all of us and that is external to us. That kind of external instrument hasn't been found apart from the credit rating agencies, which, I agree with you, have been followers, creating procyclicality and all these problems that you're mentioning. I agree with you, it's not a satisfactory solution, but I think the absence of any collateral framework would be worse, or the absence of any guide to the collateral framework would be worse. So yes, I guess politics is the answer. STEVEN DAVIS: Thank you. My question is directed mostly to Luigi. As I understand it, the ECB took upon itself the sustainability constraint, and it did so at least as far back as the Greek sovereign debt crisis in 2010, 2012. The ECB could have taken a different response to that crisis-in particular, it could have facilitated a temporary or permanent exit of Greece from the eurozone. Of course, that would've involved some sovereign default and a major banking crisis inside Greece, and perhaps beyond. But all of the difficulties, the lack of fiscal discipline that you mention and that have come up before, they flowed from the ECB's decision to self-impose the sustainability constraints. Those constraints have

grown more challenging, more encumbering over time. They've evolved into new ways for political leaders to avoid fiscal discipline. So I just would like to get your response to that perspective. LUIGI BOCOLA: I agree with you that the sustainability constraint is partly self-imposed, and I believe that this was a rational calculation of the ECB chairman during the 2010 to 2012 sovereign debt crisis. Many often forget that the sentence next to "we will do whatever it takes" in the famous speech by Mario Draghi was "to preserve the euro." And I believe that, in the mind of Draghi, preserving the euro meant that there is no possibility of an exit by any of its members: the moment you have the possibility of exit, the monetary union becomes merely a fixed exchange rate regime, and this creates all sorts of problems for the countries that are in it.

This was quite tangible at the time because financial markets were pricing the possibility of an exit not only for Greece, but also for other eurozone countries. So, what you are saying is probably right: the ECB decided to place this "sustainability constraint" on themselves, and they decided to do so because they wanted to preserve the euro.

MASUCH: Two points on sovereign default. First, our proposal— John, Luis, and myself—is to make it possible to default inside the monetary union without triggering a major financial crisis. The missing parts of the treaty and the secondary legislation meant that there was no possibility of an up-front debt restructuring in Greece in early 2010. And that added a lot to the economic and social costs of the Greek crisis. For two years bondholders had to be repaid in full, and thus all the adjustment burden fell on taxpayers, recipients of social transfers, and workers. So these missing parts of the treaty can have high costs.

Second, exit from the euro area is a very bad solution and should be excluded. But then you need to have the option, in an extreme case, to have an orderly sovereign debt restructuring within the euro area.

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## GLOBAL AND EMERGING MARKETS

## INTRODUCTORY REMARKS

Peter Blair Henry

So we transition now from Europe to emerging markets. We're very fortunate to have a great panel. I will not introduce the speakers in detail, their bios are in the program. But we're very fortunate to have Emilio Ocampo from Universidad Centro de Estudios Macroeconómicos de Argentina, Juan Pablo Nicolini from the Federal Reserve Bank of Minneapolis and Universidad Torcuato Di Tella, Zhiguo He from Stanford University, and Ross Levine from Stanford University. And so we'll begin with Emilio Ocampo.

# **6** Dollarization as an Effective Commitment Device with Time-Inconsistency Disease and Institutional Anomie: The Case of Argentina

Emilio Ocampo

Once credibility has been lost, economists don't know much about how to restore it.

-Finn E. Kydland (2004)

A noncredible policymaker may have to tie himself firmly to the mast to get any results.

-Guillermo A. Calvo (2001)

Fifty years ago, before Congress, Milton Friedman argued:

The whole reason why it is an advantage for a developing country to tie to a major country is that, historically speaking, the internal policies of developing countries have been very bad. US policy has been bad, but their policies have been far worse. There are no gyrations in American monetary policy which can hold a candle to the gyrations which have occurred in Argentinian domestic monetary policy. So, the whole reason why tying to a major currency would be an advantage to Argentina is that precisely that [*sic*] it would

The views presented here do not necessarily represent those of Universidad del CEMA (UCEMA).

prevent them from following bad domestic monetary policies. They would have less of an adjustment problem simply because our policy will prove to be more stable than theirs. (1973, 127)

Not much has changed in Argentina in this respect since Friedman's testimony. In fact, when it comes to inflation, things have gotten worse. The abandonment of Convertibility in January 2002 marked the beginning of a new inflation cycle that peaked in December 2023 with a 25% monthly inflation rate. During the 2023 presidential campaign, the centerpiece of Javier Milei's platform was official dollarization, which prompted a heated debate among economists about its advantages and disadvantages (see Nicolini 2021 and 2022; Ocampo and Cachanosky 2022; Uribe 2022a and 2022b; Sturzenegger 2023). It is unclear whether Milei's government will proceed with dollarization. The current strategy to eliminate inflation involves a crawling peg with tight fiscal and monetary policy, as a "transition towards a new monetary regime (involving currency competition)" (International Monetary Fund 2024).

The idea of adopting the dollar as legal tender is not new. W. S. Jevons (1875) was one of its earliest proponents. At the beginning of the twentieth century, several countries in Central America adopted the dollar and kept it until after World War II (Helleiner 2003 and 2005). In the early 1970s, Friedman (1972) recommended dollarization as the best option for developing countries with a history of high and volatile inflation. However, it was not until the late 1990s that dollarization was seriously considered in policymaking and academic circles (see United States Congress 1999a and 1999b). The debate about its cost and benefits was largely prompted in early 1999 when President Carlos Menem announced that Argentina would adopt the dollar as legal tender. Although it never happened, Ecuador dollarized in January 2000 and El Salvador followed suit twelve months later.

The terms of the dollarization debate as defined a quarter of a century ago can be summarized as follows. On the cost side, dollarization can entail (1) loss of seignorage revenues; (2) loss of lender-of-last-resort capabilities; (3) loss of exchange rate policy as a shock absorber; and (4) inability to reduce the value of public debt in domestic currency via devaluation or inflation. The potential benefits include (1) eliminating inflation permanently; (2) lower transaction costs; (3) lower interest rates due to the elimination of devaluation risk; (4) a more favorable environment for investment and growth due to price stability; (5) elimination of currency mismatches in the country's balance sheet; and (6) a reduction of country risk and rollover risks of sovereign debt. Two related implementation issues are (1) whether certain ideal preconditions are necessary for dollarization to be viable and successful, and (2) whether in countries with a long history of high, persistent, and volatile inflation, dollarization is an effective commitment device (ECD), that is, a mechanism, technology, constraint, or process that can credibly resolve the time inconsistency of economic policy (Kydland and Prescott 1977; Calvo 1978).

Regarding the need for preconditions, one side argued that adopting the dollar as legal tender only made sense in the presence of fiscal equilibrium, trade openness, limited public indebtedness, and flexible labor markets. On the other side were those who argued that dollarization did not require any ideal preconditions. In fact, one of the key reasons to dollarize is a proven inability to attain such preconditions. In other words, if the ideal preconditions are present, there is no need to dollarize.

If inflation is essentially a fiscal phenomenon, it would seem logical to conclude that dollarization is not an ECD since it cannot solve the time-inconsistency problem. At most it can only transfer it to the fiscal authority. However, the same argument can be made against central bank independence (Castellani and Debrun 2005). Interestingly, Ecuador's government dollarized in January 2000 with a fiscal deficit, and during his ten-year presidency, Rafael Correa (2007–17) doubled government spending as a percentage of GDP, which led to persistent and substantial fiscal deficits. However, the annual inflation rate during this period averaged 3.8%. If dollarization is an ECD, the debate about its costs and benefits can be summarized as a trade-off between flexibility and credibility. Without credibility, the benefits of flexibility are nonexistent.

The relevance of the above considerations also depends on the rationale for adopting the dollar as legal tender. If the decision is driven by the need for greater trade integration, whether dollarization is an ECD would not be much of an issue. On the other hand, if the objective is to achieve lasting price stability, which is the case in Argentina, it is the central issue.<sup>1</sup>

Mostly absent from the debate was any discussion of the different ways in which dollarization could be designed and implemented to be more effective as a commitment device. In theory, there are many ways to officially dollarize an economy, and not all have the same expected probability of being reversed (or financially degraded).<sup>2</sup> Two institutional factors can alter such probability: (1) how the banking system is structured (fractional vs. 100% reserves) and (2) whether the central bank is eliminated.

Argentina's traumatic exit from Convertibility in January 2002 dealt a blow to proponents of dollarization and hard pegs and bolstered the case for flexible exchange rate regimes (Cohen 2003; Jameson 2003). Among academics, the debate was settled in favor of the latter: flexibility became more valuable than credibility. But, as I will explain below, the demise of Convertibility had to do more with politics than economics. Be that as it may, the profession did not hold high hopes for the survival of dollarization in Ecuador (January 2000) and El Salvador (2001).

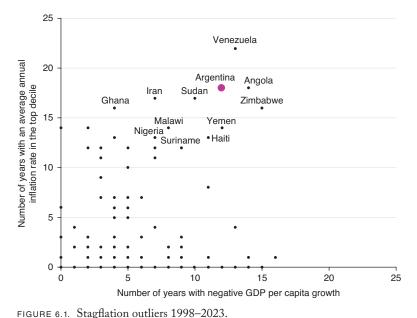
At the beginning of the twenty-first century, the only country in Latin America that had a sufficiently long track record using the dollar as legal tender was Panama, a small economy that for most of its history had been economically dependent on the United States and therefore was not a useful comparable.<sup>3</sup> We now have a substantial, although still insufficient, dataset to reevaluate many of the unresolved questions raised in the debate.<sup>4</sup>

The objective of this paper is twofold. The first is to reopen the debate about dollarization in light of new evidence and a reassessment of the collapse of Convertibility. The second is to argue that dollarization is the most effective commitment device for countries that suffer from two conditions rarely explored by economists: "time-inconsistency disease" (TID), as described by Kydland (2004), and acute institutional anomie (AIA), as articulated by Nino (1992) and Waldmann (2004 and 2006).

The countries in this category are outliers in terms of inflation and GDP growth. Within this group, Argentina is an outlier given its GDP per capita, level of education, and institutional development. Given the relatively low morbidity of both conditions, it is reasonable to question the usefulness of studying their origins and possible cures. There is an advantage in studying the experience of countries that exhibit extreme economic and institutional pathologies because the nature of their interaction is more visible.<sup>5</sup> The rise of populism in Europe and North America in the last twenty years confirms that advanced economies are not immune to such pathologies. In 1980, Paul A. Samuelson warned that Argentina's experience with endemic populism perhaps offered a window into their future (see Ocampo 2021b). Until recently, this prediction seemed widely off the mark.

## Time-Inconsistency Disease and Institutional Anomie

Can official unilateral dollarization be a "solution" for countries with a long history of high, persistent, and volatile inflation such as Argentina, Nigeria, Venezuela, or Zimbabwe? A typical characteristic of these countries, whether democratic or autocratic, is a history



Source: Graph created by the author based on data from International Monetary Fund World Economic Outlook as of April 2024 and Inflación Verdadera data for Argentina between 2008 and 2015 (http://www.inflacionverdadera.com/argentina).

of policy or reform reversals. Policymakers, even if well intentioned, cannot fulfill their promises and, as a result, they have zero credibility.

The graph in figure 6.1 shows, for the last quarter of a century, the number of years in which a country had negative GDP per capita growth (horizontal axis) and an annual inflation rate in the world's top decile (vertical axis). The clearest stagflation outliers are Angola, Argentina, Nigeria, Sudan, Venezuela, Yemen, and Zimbabwe. If we plot the data for the period 1966–90, a different picture emerges. The inflation outliers include Argentina, Bolivia, Brazil, Chile, Democratic Republic of the Congo, Israel, Peru, Turkey, and Uruguay. The only country that is a clear stagflation outlier in both periods is Argentina.

### Time-Inconsistency Disease (TID)

Kydland (2004, 2008, and 2014) coined the term "time-inconsistency disease" (TID) to describe a situation where policymaking is driven by short-term political and/or economic considerations. Typical symptoms of the disease are high, volatile, and persistent inflation and recurrent sovereign debt defaults. TID means loss of credibility and a persistent inability to recover it. Policymakers have no ECDs under domestic jurisdiction, and externally imposed commitment devices tend to be politically unviable. In such situations, to eliminate inflation rapidly and permanently requires policymakers to "tie their hands" with a currency board or a currency union (Calvo 2000, 4).

Of the three countries that dollarized in the twenty-first century, only Ecuador and Zimbabwe seem to have been suffering from TID. In Ecuador, dollarization was accompanied by structural reforms that were reversed under the presidency of Rafael Correa (2007-17). However, dollarization survived despite a series of demand and supply shocks (the 2008 Global Financial Crisis, two sovereign defaults, the reversal of the commodity cycle, an earthquake in 2016, COVID-19, etc.) and several attempts by Correa to reverse or degrade it. The annual inflation rate since 2000 has averaged 4.8% and GDP per capita has grown at an annual rate of 1.25%, which in a regional context is an average performance. This compares to a 36% annual inflation rate and no growth from 1980 until 1999. Persistent popular support for dollarization suggests that in Ecuador it was successful not only economically but also politically, that is, it was an ECD. Zimbabwe, which in early 2019 fully reversed its decade-old dollarization, provides a counterexample. Since then, the economy has been in a slump and the inflation rate is among the highest in the world. The experience of Ecuador, El Salvador, and Zimbabwe suggests that different levels of democratic development go a long way toward explaining whether dollarization can serve as an ECD.

A potential cause for TID in democratic societies is the prevalence of hyperbolic discounting among a majority of voters (Thaler 1981; Laibson 1997). In such a situation, if electoral democracy works relatively well, politicians will act in accordance with the preferences of a majority and the political process will favor fiscal profligacy, particularly in the form of higher public consumption expenditures. If time-inconsistent voters constitute a majority, it is also likely that politicians will adopt policies that promote private consumption expenditures at the expense of private investment (see Drometer 2006; and Bisin, Lizzeri, and Yariv 2015). In Latin America, such policies have been traditionally associated with populism (Dornbusch and Edwards 1991).<sup>6</sup> The available evidence suggests that by magnifying an economy's structural imbalances (monetary and fiscal imbalances, relative prices, exchange rates, etc.), populism tends to exacerbate TID. By introducing volatility and uncertainty, populist policies also tend to exacerbate hyperbolic discounting among voters, setting off a vicious, mutually reinforcing policy loop.

As Kydland noted, TID can be difficult to cure. Only an ECD can restore credibility. But, by definition, with TID, an ECD is not available. In such a scenario, even the best-intentioned politicians pay the cost of past misdeeds, and their policy announcements lack credibility.

#### Institutional Anomie

TID is related to another condition that has seldom been explored by economists: institutional anomie. The term *anomie* dates to ancient Greece, but was popularized in the late nineteenth century by French sociologist Émile Durkheim. Etymologically, *anomie* is derived from the Greek word *anomos*, which means lawlessness. In sociology, it is a social condition defined by a breakdown of moral values, standards, or rules of interpersonal behavior required for constructive social interaction. Argentine jurist Carlos Nino (1992) expanded the concept of anomie and defined it as "massive recurrent illegality," or a situation in which most of the population lives "outside the law." Nino distinguished between institutional and social anomie. The former concerned the executive and government officials, and the latter, the general population. According to Nino, "dumb" social anomie occurred when noncompliance with rules led to collective results that were inferior to those achievable with compliance. Building on Nino's work, Waldmann (2004 and 2006) argued that the anomic state was common throughout Latin America but singled out Argentina as a paradigmatic case. In his view, there was no contradiction between anomie and state power. The modern state was imposed artificially and did not emerge out of institutional evolution as in Europe and the United States.

Whatever its origins, when acute institutional anomie exists, government officials not only fail to enforce the laws, but break them whenever it suits their purposes. As to the executive, when laws constrain its behavior, it ignores them with impunity thanks to a compliant judiciary or "forces" a subservient congress to modify or abrogate them. This happens when de jure separation of powers is not operational.

In the present context, the clearest evidence of AIA is the coexistence of de jure central bank independence and high, persistent, and volatile inflation.<sup>7</sup> As Tucker explained, "In a fiat money system the independence of the monetary authority is a corollary of the higher order, constitutional separation of powers" (2016, 6). In the presence of AIA, de jure central bank independence is irrelevant and de facto central bank independence a chimera. Such a scenario renders the traditional solution to time inconsistency in monetary policy ineffective (Rogoff 1985).

## Argentina: A Paradigmatic Case

Acute institutional anomie eliminates the possibility of curing TID. Endemic populism promotes time-inconsistent policies and

institutional anomie, triggering a vicious circle. Not surprisingly, Argentina is also the paradigmatic case of endemic populism and institutional anomie. Since 1945, the country has had only forty years of functional electoral democracy and fifteen presidential elections. Populism has had a 50% success rate at the polls. This success seems to be associated with the upswing of commodity cycles (Ocampo 2015a and 2015b).

According to Kydland (2004), the origin of TID in Argentina can be traced to "past hyperinflations, devaluations, deposit freezes and defaults on government obligations." This in turn explains the country's poor growth performance since 1945. As mentioned earlier, hyperbolic discounting by voters and policymakers is one of the factors that may explain TID. In a recent study of sixtyone advanced and developing countries, Argentina was an outlier in terms of impatience (Ruggeri et al. 2022). Plenty of past and present anecdotal evidence as well as public opinion surveys suggest that short-termism is deeply rooted in Argentine history and culture (Shumway 2005; Aguaysol 2021). However, this condition seems to have been exacerbated by populism. Hyperbolic discounting is a rational response to endemic populism.

With respect to institutional anomie, Nino (1992) argued that Argentina suffered an "institutional imbalance" due to the gradual absorption of Congress's normative and legislative prerogatives by the executive branch (73). In his view, this partly explained Argentina's economic decline since 1945. Waldmann (2004 and 2006) agreed that in Argentina, social and institutional anomie was particularly strong.

Plenty of evidence confirms that Argentina suffers from acute institutional and social anomie. In an economic policy context, the clearest, and perhaps most relevant, indication of the former is the contrast between de facto and de jure central bank independence. Romelli (2022 and 2024) provides the most updated survey of de jure central bank independence (CBI). In the case of Argentina, the

| Argentina | UK   | US  | World median  |
|-----------|--|---|---|
| 0.56      | 0.28   | 0.75  | 0.56  |
| 0.55      | 0.15   | 0.81  | 0.70  |
| 0.53      | 0.21   | 0.74  | 0.68  |
| 0.65      | 0.23   | 0.66  | 0.69  |
| 0.63      | 0.35   | 0.63  | 0.67  |
| 0.80      | 0.40   | 0.40  | n.a.  |
| 0.78      | 0.48   | 0.48  | n.a.  |
|           | 0.56<br>0.55<br>0.53<br>0.65<br>0.63<br>0.80 | 0.56         0.28           0.55         0.15           0.53         0.21           0.65         0.23           0.63         0.35           0.80         0.40 | 0.56         0.28         0.75           0.55         0.15         0.81           0.53         0.21         0.74           0.65         0.23         0.66           0.63         0.35         0.63           0.80         0.40         0.40 |

TABLE 6.1. Comparative measures of de jure central bank independence (2008–15).

Note: UW is unweighted; W is weighted.

Source: Romelli (2022 and 2024) and Garriga (2016).

CBI index dates to 1935, when the central bank was created as a mixed-ownership entity. During the first Perón regime (1946–55), Argentina had higher de jure central bank independence than the United States or Switzerland.<sup>8</sup> During the regime of Cristina Fernández de Kirchner (2007–15), Argentina's index of de jure CBI was close to the world median. According to certain methodologies, it was comparable to that of the US Federal Reserve and in all cases higher than the Bank of England's (see table 6.1). During this period, Argentina's inflation rate was among the ten highest in the world.

Most people in Argentina take institutional anomie as a fact. Recent surveys by Latinobarómetro indicate that the country has the lowest percentage of respondents who consider judges to be lawabiding in Latin America. Rhodes and Streb (2014) provide evidence of the judicial impunity of government officials in Argentina. These findings are also confirmed by indices of judicial and legislative constraints on the executive. As can be seen in table 6.2, such indices are significantly lower in Argentina than in any of her neighbors. Interestingly, during the 1900–1929 period the opposite was true, at least with respect to the judiciary. Constraints on the executive were also higher than at present, which suggests institutional anomie can be moderated.

|         | Legislative constraints on executive |        |       | Judicial constraints on executive |           |        |       |         |
|---------|--------------------------------------|--------|-------|-----------------------------------|-----------|--------|-------|---------|
| Period  | Argentina                            | Brazil | Chile | Uruguay                           | Argentina | Brazil | Chile | Uruguay |
| 1900–29 | 61%                                  | 16%    | 65%   | 66%                               | 87%       | 52%    | 64%   | 84%     |
| 1930–42 | 62%                                  | 1%     | 67%   | 53%                               | 81%       | 47%    | 65%   | 80%     |
| 1943–45 | 20%                                  | 0%     | 64%   | 84%                               | 78%       | 46%    | 68%   | 82%     |
| 1946–55 | 35%                                  | 65%    | 66%   | 84%                               | 41%       | 54%    | 66%   | 85%     |
| 1956–83 | 30%                                  | 29%    | 46%   | 51%                               | 56%       | 44%    | 53%   | 59%     |
| 1984–99 | 68%                                  | 81%    | 80%   | 89%                               | 66%       | 86%    | 85%   | 89%     |
| 2000–20 | 74%                                  | 85%    | 96%   | 90%                               | 69%       | 90%    | 95%   | 93%     |

TABLE 6.2. Indicators of institutional anomie.

Source: Author, based on data from V-Dem Institute.

The cultural roots of Argentina's institutional anomie can be traced back to the colonial period. Throughout the Spanish colonial empire, the practice of "obeying but not complying with the law" became institutionalized (Fernández and Monteserin 2014; Wasserman 2022, 12–13). During his visit to Argentina in 1833, Charles Darwin observed clear signs of institutional and social anomie: "Police and justice are quite inefficient.... Nearly every public officer can be bribed. The headman in the post-office sold forged government franks. The governor and prime minister openly combined to plunder the state. Justice, where gold came into play, was hardly expected by anyone" (1839, 171).

Darwin also noted that these attitudes were related to *caudi-llismo* (the cult of the strongman), another legacy of the Spanish conquistadors. As I have explained elsewhere, this is a key ingredient of populism (see Ocampo 2018). In a populist regime, the will of the leader (who supposedly incarnates the "will of the people") supersedes any written or unwritten norms or laws. In this sense, populism can be viewed as a regression to a more primitive form of political and social organization: the law of the strongest.

One factor may explain why institutional and social anomie manifested themselves more strongly in Argentina than in other Latin American countries: Buenos Aires, the capital of the Viceroyalty of the River Plate, was the center of contraband in the Spanish South American colonial empire. Smuggling was the backbone of its economy. Breaking the law was an economic necessity. The local elites not only dominated the contraband business but were embedded in the local government structure (Moutoukias 1988). As observed by one of the first sociological studies of Argentina, "Society is brought up to disregard the law; an idea so dominant and ingrained that after a short walk it became a feeling, it became ingrained, perverting the intelligence and morality of the *porteño*" (García 1900, 208).<sup>9</sup>

Juan Bautista Alberdi, who drafted Argentina's first constitution in 1853, believed a century of strict enforcement would be necessary to completely eradicate the cultural legacy of Spanish colonialism (1854, 57). After its enactment, Argentina started a virtuous institutional and cultural evolution culminating with the electoral reform of 1912, which extended the voting franchise. Unfortunately, the election of Hipólito Yrigoyen to the presidency in 1916 reinvigorated *caudillismo*. It is a tragic irony that Yrigoyen, a champion of electoral reform, would be responsible for reintroducing a cultural trait so inimical to liberal democracy. The military coup that ousted him in 1930 marked the end of a virtuous process of economic and institutional development that had transformed Argentina from a backward pastoral society into an economic powerhouse. After the Great Depression, the stage was set for the emergence of endemic populism, which in many ways incarnated many institutional and cultural vices reminiscent of the Spanish colonial system. All that it needed to materialize was a catalyst, which World War II provided.

The ascendancy of Juan Perón to power through a military coup in June 1943 firmly established *caudillismo* as a permanent feature of Argentine political life and put a definitive end to nine decades of virtuous institutional evolution. Perón not only emulated Mussolini's corporatist system, but also, thanks to the decisive influence of his wife, institutionalized nepotism, clientelism, and patrimonialism, typical features of the Spanish colonial system. The Perón regime pursued economic policies that reinforced and promoted cultural values that supported it (Ocampo 2018). As populism became endemic, social and institutional anomie gradually coagulated into Argentine culture and politics. A vicious cycle of economic stagnation, financial crises, social frustration, and institutional and cultural degradation followed. Entrenched interests and a weak political system with perverse incentives forged a status quo that was resistant to change. Persistent instability also infected voters with time inconsistency, which in turn contributed to the electoral dominance of populism. Argentina's history since 1945 provides strong evidence in support of the hypothesis that persistent populism exacerbates time inconsistency, and, by fostering institutional anomie, degrades the mechanisms that could moderate it.

## Dollarization as an ECD: Theory and Evidence

In the present context, a commitment device is any formal or informal constraint on the ability of governments and/or politicians to renege on their promises or reverse existing policies due to short-term considerations. Not all commitment devices are equally strong. An ECD is a device that achieves the objective of reducing or eliminating time inconsistency. Commitment devices can be domestic, external, or a mix of both. Formal domestic devices are typically laws that give independence to the central bank, establish monetary rules, fix the exchange rate, or limit fiscal profligacy. Informal domestic devices originate in customs and are enforced by a disciplining electorate or a strong interest group that is highly intolerant of inflation, for instance the banking system (Posen 1995 and

|          | Internal          | Mixed            | External                                  |
|----------|-------------------|------------------|---|
| Formal   | CB independence   | Currency union   | Bond covenants                            |
|          |                   | (e.g., eurozone) | IMF conditionality                        |
|          | Fiscal rules      | Gold standard    | External supervision (e.g., Austria 1922) |
|          | Currency board    | Dollarization    | International agreement (e.g., Bretton    |
|          |                   |                  | Woods)                                    |
| Informal | Voter intolerance |                  | Reputation                                |
|          | Banking lobbying  |                  | Financial markets                         |
|          |                   |                  | High trade and financial integration      |

TABLE 6.3. A menu of commitment devices.

1998). In a working democracy, the strongest commitment device is the vote of the majority. However, as discussed in the previous section, certain voter preferences such as hyberbolic discounting can contribute to time inconsistency. Sometimes, countries have no option but to consider commitment devices imposed from abroad (Santaella 1993, 589), but such commitments tend to be highly unpopular with the electorate. See table 6.3.

Until 1914, the gold standard was the most common ECD used around the world to maintain price stability (Bordo and Kydland 1990). It had both an internal and an external component. In modern times, external commitment devices have generally been implemented by foreign creditors through bilateral or multilateral treaties or as loan or bond covenants. In the 1920s, certain European countries—most notably Austria and Hungary—surrendered monetary sovereignty to the League of Nations to restore price stability (Santaella 1993; Marcus 2020). More recently, International Monetary Fund (IMF) conditionality attempted to fulfill a similar role but has been much less effective (see Edwards 1989, Sachs 1989, and James 1998). After the demise of Convertibility, Caballero and Dornbusch (2002) proposed a rescue plan for Argentina inspired by the Austrian 1920s scheme. As with many other ECDs, this one was not politically viable.

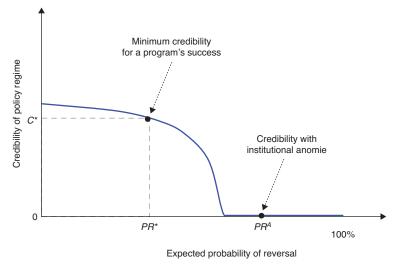


FIGURE 6.2. Credibility as a function of probability of reversal.

In countries that suffer from TID and AIA, such as Argentina, monetary sovereignty is costly because policymakers lack credibility, and, by definition, no domestic ECD exists. Even the best-intentioned policymakers with well-designed stabilization plans cannot generate the minimum credibility needed for success. Given the impossibility of having a de facto independent central bank, the intersection of macroeconomically viable and politically viable stabilization plans is an empty set. The graph in figure 6.2 illustrates this point. For policies to be successful they must generate a minimum credibility of  $C^*$ . However, given chronic TID and AIA, the expected probability of reversal is too high. Policymakers are stuck in a suboptimal situation,  $PR^A$ , and therefore have no way of generating sufficient credibility to successfully eliminate inflation.

Dollarization as a commitment device has an internal and an external dimension. By eliminating the possibility of monetizing fiscal deficits, it can serve as an ECD. Often conflated with a currency board, it is essentially different. I shall explore these differences in more detail in the section that explains the demise of Convertibility. As mentioned earlier, the structure of the banking system and the role played by a central monetary authority under dollarization are not trivial matters. Even under dollarization, any fractional reserve banking system with a high ratio of inside money to outside money and a tendency to originate assets of poor credit quality would be unstable and prone to bank runs. Therefore, to be an ECD, dollarization must, among other things, be designed not only to ensure financial stability, but also to (a) minimize the degree of "crowding out," and (b) prevent policymakers from misappropriating banks' reserves to finance persistent budget deficits. In their analysis of the experience of Ecuador, Romero and Sandoval (2019) concluded that it is advisable to eliminate the central bank.

## Reassessing an Old Debate with Recent Evidence

Friedman (1972) was among the first to argue that in developing countries with a long history of high inflation, such as Argentina, dollarization was the best option to eliminate inflation. Anticipating the dollarization debate that would take place decades later, Fischer (1982) recognized that a government "that could not control itself might want the discipline of using a foreign money" (296). He argued that although there was "no absolutely guaranteed way of providing discipline for governments determined to avoid it," the discipline imposed "by use of a foreign money is greater than that imposed by fixity of the exchange rate, which is greater than that imposed under a flexible-rate system. This is, therefore, a serious argument for use of a foreign money" (300).

Cukierman, Kiguel, and Liviatan (1994) developed a model to analyze how policymakers choose the strength of a commitment to an exchange rate regime. The stronger a policymaker "ties his hands" to a certain regime, the more likely he or she is "to successfully affect inflationary expectation" (3). Dollarization was the "strongest form" of commitment to a fixed exchange rate but was not irreversible. It could be abandoned, "in the same way that countries in the past renege [sic] from strong commitments, such as during the gold standard" (2). They concluded that "the difficulties and costs of reneging on such a commitment when the country faces large adverse shocks, whose adverse effects can be alleviated, at least temporarily, by a devaluation" partly explained why policymakers had not pursued dollarization.

In January 1992, at an event organized by the World Bank in Washington, DC, several distinguished economists discussed the pros and cons of currency boards and dollarization (Liviatan 1993). The debate that took place remains relevant today. As Meltzer pointed out, "the improvement that results from a currency board (or some other system of credible rules), depends on the belief that the rule will be followed consistently.... If people believe that the policy is time-consistent, they will go to a lower rate of inflation than they would if they believed that the policy was going to be abandoned at some point" (1993, 83).

Leading the skeptical camp, Fischer revisited his 1982 paper and argued that, although dollarization and currency boards enabled "policymakers to impose discipline on themselves or make the government more credible than any other system," governments "determined to break legal arrangements can usually do so" (1993, 8, 9). Mundell agreed that there had to be "a confidence-building legal mechanism" to prevent a government from abandoning a currency board when it was convenient to do so. He recognized that even "constitutions can be changed" and therefore proposed the introduction of "some external constraint" not specified (1993, 11). Overall, he believed dollarization and currency boards could effectively discipline governments (27). The decision of the Argentine government to default on its debt in December 2001 and scrap the currency board the following January refuted such an optimistic view. In countries that suffer from TID and AIA, legal constraints, including constitutional amendments, tend to be insufficiently binding. Commitment depends not so much on legal constraints as on political constraints. Instead, as Cukierman observed, "the commitment level is determined by the political cost of breaking it" (1993, 33).

The experience of Zimbabwe in 2015–19 suggests that in nondemocratic countries, dollarization can be reversed even if the economic and political cost is high. On the other hand, the experience of many Central American countries in the 1940s and 1950s—such as the Dominican Republic in 1947—confirms that dollarization can be reversed at low economic cost if fiscal discipline prevails. What makes reversal costly is lack of fiscal discipline.

The Tequila Crisis rekindled the debate. Zarazaga (1995a) warned that currency boards or other legal constraints on policymakers' discretion were ineffective mechanisms to resolve time inconsistency. In his view:

Depictions of currency boards—or any other ironclad rule, for that matter—as powerful devices that will magically restore investors' confidence and, therefore, prosperity almost overnight and without pain do not help. On the contrary, this optimistic assessment may have the perverse effect of providing policymakers with the incentive to abandon their commitments on the mistaken impression that later, simply by institutionalizing a rule such as a currency board, they can quickly and painlessly restore lost credibility. (Zarazaga 1995b, 21)

The experience of Ecuador, El Salvador, and Panama with dollarization since 2000 suggests that this view was overly pessimistic. Also, as already mentioned, a currency board regime is different in key respects from a dollarization regime. Therefore, any conclusions about the latter, particularly if drawn from the Argentine experience, have limited value.

By the end of the 1990s, partly due to President Menem's announcement that Argentina would adopt the dollar as legal tender, the dollarization debate again heated up. Mundell argued that for a developing country, dollarization provided "a rudder for its monetary policy, a stable rate of inflation, and discipline for its fiscal policy" (Friedman and Mundell 2001). In Dornbusch's view, dollarization is a way of "outsourcing" monetary policy to a credible central bank and "gaining credibility and stability automatically" (International Monetary Fund 2000, 340). The gains from abandoning the national currency came from "enhanced credibility in the exchange rate and hence inflation performance" and are "inversely proportional to its quality, past, current and prospective." Eliminating inflation was a big step "toward pervasive and deep reform" (Dornbusch 2001).

Velde and Veracierto (2000) argued that in the presence of time inconsistency, dollarization could achieve the best outcome for society. Alesina and Barro (2002) argued that the "type of country with the strongest incentive to give up its own currency is one that has a history of high inflation and is close in a variety of ways to a large and monetarily stable country" (435). Alesina, Barro, and Tenreyro (2002) were emphatic about the strongest benefit of dollarization: "If an inflation-prone country adopts the currency of a credible anchor, it eliminates the inflation-bias problem" of discretionary monetary policy (308).

Calvo and Reinhart (2001) also came strongly in favor of dollarization. They argued that in emerging markets, in which trade is generally invoiced in dollars, liability dollarization is high, and policymakers are not credible, exchange-rate volatility is very costly. Floating regimes may be more of an "illusion," and full dollarization "might emerge as a sensible choice for some countries, especially in Latin America." Calvo (2001) emphasized that extensive liability dollarization strengthened the argument in favor of dollarization. According to Mendoza (2000), dollarization could generate potentially large benefits in developing countries with a long history of monetary and price instability by (1) eliminating price and wealth distortions induced by the lack of credibility, and (2) improving the efficiency of financial markets though weakening informational or institutional frictions that constrained credit to the private sector. Using a model calibrated for Mexico, he estimated net welfare gains of between 6.4% and 9% of trend consumption through the elimination of policy uncertainty and 4.6% through weakening of credit constraints. He concluded that dollarization could cure TID. Calvo (2002) argued that any flexible exchange system would likely face serious "credibility problems" in countries that have not yet reached "a national accord on the size and nature of the public sector." Under such circumstances, a noncredible policymaker may have "to tie himself firmly to the mast" to get any lasting results in terms of price stability.

The opposite argument was articulated by Schmitt-Grohé and Uribe (2001), who compared the welfare costs of business cycles in a dollarized economy to those of economies in which monetary policy took the form of inflation targeting, money growth rate pegs, or devaluation rate rules. They reached their conclusion based on a model calibrated for the Mexican economy and simulated three external shocks: terms of trade, an interest rate hike, and importprice inflation.<sup>10</sup> They concluded that dollarization was the least successful of all the monetary regimes they considered. In further support of their argument against dollarization, they also raised the issue of conflicting fiscal policies at the national and provincial levels.

The Ecuadorian experience refutes these arguments. Dollarization initially brought fiscal discipline, but in the medium term it was not able to constrain populism and/or eliminate fiscal profligacy and sovereign defaults, which undoubtedly contributed to unimpressive rates of growth of GDP per capita. However, it did reduce the macroeconomic cost of populist policies.<sup>11</sup> Ecuador's annual inflation rate has averaged 3% (even lower than in the United States in recent years) and, up until now at least, a large majority of the population supports maintaining the dollar as the only legal tender. Rafael Correa tried to introduce a new digital currency and failed.

He also attempted to circumvent the financial constraints imposed by dollarization. He temporarily achieved this objective by selling forward oil contracts to China and expanding the central bank's balance sheet (Erráez and Reynaud 2022). His successor and erstwhile vice president, Lenín Moreno, who took office in 2017, had no option but fiscal austerity and a sovereign default.

With respect to the issuance of provincial quasi-monies, it was not a problem in Ecuador, where despite a unitarian constitution, provincial governments are allowed to issue their own debt. With respect to Argentina, issuance of provincial quasi-money has been a recurrent issue under fixed and floating exchange rate regimes (see Theret 2020). The key point is that the monetary impact of such issuance under dollarization is different from that under a currency board: a US dollar-denominated short-term note issued by a profligate Argentine provincial government would always trade at a discount unless its yield reflects the risk of default (if such notes do not constitute legal tender, no one is obligated to accept them at face value).

In connection with the above, Cooper and Kempf (2001) analyzed dollarization as a commitment device when a conflict exists between the federal and provincial governments and concluded that dollarization could effectively serve as an ECD. Gale and Vives (2002) analyzed dollarization in the context of recurring banking crisis and moral hazard. They concluded it could "alleviate the commitment problem faced by a central bank" when the costs of establishing a reputation for the central bank are high and the risk of moral hazard is moderate or low. Although generally not sympathetic to dollarization, Chang and Velasco (2002) raised an important point sometimes overlooked in the debate. The theoretical potential losses of seignorage caused by dollarization are irrelevant except in the context of a realistic and viable set of options available to policymakers to stabilize the economy. In their view, the option to dollarize the economy may be valuable if a government is incapable of generating credibility. Makarski (2014) argued that dollarization

served not only as an ECD but also, and more importantly, as a signaling device that could reduce macro uncertainty.

Using an asymmetric two-country model, Guidotti and Powell (2002) argued that unilateral dollarization would not eliminate devaluation risk. In their view, in the case of Argentina, the credibility of dollarization depended critically on signing a monetary treaty with the United States that ideally had to include (a) a seignorage-sharing agreement, and (b) a backstop liquidity facility. Although undoubtedly such a treaty would bolster the credibility and effectiveness of an official dollarization scheme, it proved politically unviable in the United States. Also, the experiences of Ecuador and El Salvador show that unilateral dollarization is not only viable but also resilient in the face of adverse internal and external shocks.

Grandes (2002) argued that since dollarization was not the best policy "to improve fiscal discipline and push forward structural reforms," one of its "most valuable" benefits—a reduction in country risk premium—would fail to materialize. However, a comparison of Ecuador to Argentina suggests that dollarization with populism and no reforms is superior to populism with a domestic currency and fiscal dominance.

Cabral (2010) demonstrated that although dollarization can generate credibility and achieve price stability, a small open economy might be better able to absorb shocks under a flexible regime. Although theoretically plausible, the argument falls into a "nirvana fallacy." First, it assumes not only that a flexible exchange rate regime is attainable, but also that an independent central bank exists and will always adopt optimal rules of intervention. In emerging markets, "fear of floating" prevails, particularly in countries such as Argentina (see Calvo and Reinhart 2002). Second, central bank competence and de facto independence tend to be the exception rather than the rule (certainly in the case of Argentina). Third, the evidence does not necessarily support the argument in favor of flexible exchange rates, particularly for countries suffering from TID and AIA. As pointed out by Dornbusch (2001), in such countries "exchange rates have been the dominant instrument of destabilization."

The experience of Ecuador since 2000 proves that a dollarized economy is not necessarily more vulnerable to asymmetric shocks than a nondollarized one. In the last twenty-two years, the Ecuadorian economy has sustained several real shocks: the Global Financial Crisis of 2008, a sovereign debt default in late 2008, a reversal of the commodity cycle from mid-2012 until early 2017, a massive earthquake in 2016, a sovereign debt default in 2020, the COVID-19 pandemic in 2020, and a political crisis in 2022 that led to the resignation of the president. Most importantly, it endured ten years of left-wing populism. Cachanosky, Salter, and Savanti (2022) concluded that even if dollarization does not improve economic outcomes, "it can perform a useful role in credibly constraining the state from populist policy excesses."

Cachanosky, Ocampo, and Salter (2023) highlighted certain design features that would make dollarization more effective as a commitment device: (1) eliminating the central bank, (2) liberalizing the banking sector, and (3) ensuring bank reserves cannot be used to finance recurrent fiscal deficits. With TID and AIA, the effectiveness of dollarization as a commitment device in the short term may depend critically on such design features. However, in the medium and long term, electoral support provides the most effective insurance against reversal.

In the three countries that dollarized in the twenty-first century, governments at some point attempted to reverse dollarization (a) directly, with the introduction of a new currency, or (b) indirectly, by degrading its financial integrity. The first strategy proved successful only in Zimbabwe, where in March-April 2019 the government implemented complete dedollarization (following Argentina's 2002 playbook). It is important to emphasize that when the Zimbabwean government announced dollarization in

2009, it made it clear that it viewed it as a transitory measure, leaving the door open for the reintroduction of a domestic currency as early as 2012 "if the macroeconomic situation allowed" (International Monetary Fund 2011, 18). This announcement obviously made dollarization less effective as a commitment device. Not surprisingly, the reversal of dollarization in Zimbabwe originated in recurrent fiscal imbalances (International Monetary Fund 2020, 5).

The experience of Ecuador yields other valuable lessons. The severity of Argentina's 2002 crisis (triggered by a disorderly exit from Convertibility) was fresh in the mind of presidents Lucio Gutiérrez and Rafael Correa when they pondered whether to reverse dollarization (El Nuevo Herald 2003; BBC 2015).12 Correa had opposed dollarization as a professional economist (Correa 2004), as minister of economy in 2005, as a presidential candidate in 2006, and as a two-term president from January 2007 until May 2017. He was the most popular president in his country's history and managed to amend the constitution in order to get reelected for a second term. He had more control over the legislature and the judiciary than Cristina Fernández de Kirchner at the height of her power. However, he never attempted to reverse dollarization openly (although he tried indirectly). It wasn't because Ecuador's dollarization had been optimally designed, but was due to the simple fact that the dollar was more popular than he was (Calderón de Burgos 2007). The same voters who overwhelmingly reelected Correa in the 2013 election wanted to continue earning their salaries in dollars. In early 2015, eight years into Correa's presidency, opinion polls showed that 85% of the Ecuadorian population was in favor of maintaining the dollar as legal tender (BBC 2015).

Correa also failed in his attempts to dedollarize the economy with the introduction of a central bank digital currency (see Arauz, Garratt, and Ramos F. 2021). However, he successfully undermined the financial viability of dollarization by appropriating bank reserves to finance growing fiscal deficits (Romero and Sandoval 2019; Erráez and Reynaud 2022). These measures imposed a heavy burden on the Ecuadorian economy that have severely constrained its long-term growth prospects and led to another sovereign default in 2020.

In the case of El Salvador, President Nayib Bukele's attempts to replace the dollar with bitcoin also failed given the resistance of the population (Alvarez, Argente, and Van Patten 2022). As in the case of Ecuador, these efforts had a significant impact on the economy. Since the approval of the Bitcoin Law in September 2021, El Salvador's country risk premium has averaged 1,150 basis points, compared to an average of 658 basis points during the presidency of Bukele until then.

The experiences of Ecuador and Zimbabwe strongly suggest that keeping a nonindependent central bank after dollarization makes it easier for politicians to reverse it and/or degrade its financial integrity, and in the process damage its credibility and limit its effectiveness (see Cachanosky, Ocampo, and Salter 2023). The reason is simple. Freezing bank deposits and appropriating bank reserves are two of the most effective measures to dedollarize, and the central bank is the most efficient tool to implement such measures. However, as already mentioned, the most effective deterrent to the reversal of dollarization in Ecuador and El Salvador proved to be the electorate. An ample majority of voters refused to replace their dollars with the bogus currencies sponsored by their governments.

The gradual reversal of dollarization in Zimbabwe also yields valuable lessons. First, it confirms that it is macroeconomically costly: real GDP per capita contracted 7.8% in 2019 and 6.9% in 2020, and the annual inflation rate, which averaged 4.5% during the period 2009–18, increased to 521% in 2019 and has remained one of the world's highest since then.<sup>13</sup> Second, the political cost is not as high when electoral democracy is not fully operational.

In contrast to a currency board, reversal of dollarization hurts not only bank depositors but the entire population. Everybody would feel its impact, since it would entail taking dollar bills out of people's pockets.<sup>14</sup> Politicians can estimate ex ante the electoral cost of doing so through public opinion polls. Correa did, and deemed it too high.

The logistics of reversal impose difficulties that are not trivial. If the banking system is financially integrated with the rest of the world, the longer it takes a government to introduce a new currency, the lower the probability that dedollarization can achieve its intended objectives. As the recent collapse of Silicon Valley Bank shows, technology has made it much easier to move money from one bank to another. Depositors can anticipate the government's intention to reverse dollarization by transferring their savings abroad. Relocating bank reserves offshore and putting them beyond the reach of the government would also make it more difficult to dedollarize.

Although it is impossible to reduce the expected probability of reversal to zero, there are certain design features that can significantly reduce it in the short term. Such features would include (1) the elimination of the central bank, (2) the creation of an independent bank supervisory and regulatory agency to ensure financial stability, (3) the privatization and relocation of bank reserves to a safe jurisdiction to prevent their appropriation by the political system for deficit financing (as Correa did in Ecuador), and (4) a full liberalization of the banking system and capital flows (full financial integration). Ocampo and Cachanosky (2022) provide a blueprint for such a dollarization scheme.

The experiences of Panama, Greece, Ecuador, and El Salvador show that in a working democracy, the best insurance against reversal of dollarization is the electorate. On the other hand, the experience of Zimbabwe shows that in a fledgling electoral democracy such insurance does not exist or is not strong enough (see table 6.4). It also confirms that the survival of a nonindependent central bank after dollarization facilitates dedollarization. The available data seems to support this hypothesis. Given the traumatic experiences of Argentina (2002) and Zimbabwe (2019), any politician would

| Country     | Index of electoral<br>democracy (IED)<br>(2000–21) | Index of<br>judicial<br>constraints<br>(2000–21) | Index of<br>central bank<br>independence<br>(2000–21) | Index of<br>financial<br>openness<br>(2000–20) | Dollarization survived? |
|-------------|--|--|---|--|-------------------------|
| Zimbabwe    | 27.5   | 0.43   | 0.45  | 0.22   | No                      |
| Ecuador     | 59.3   | 0.31   | 0.68  | 0.68   | Yes                     |
| El Salvador | 64.2   | 0.61   | 0.67  | 0.87   | Yes                     |
| Panama      | 74.7   | 0.60   | n.a.  | 1.00   | Yes                     |

TABLE 6.4. Dollarization and institutional quality indices.

Note: The IED is scaled from 1 to 100.

Source: Author, based on data from V-Dem Institute, Garriga (2016), and Ito and Chinn (2023).

think twice before attempting to reverse a dollarization or a currency board. Higher financial integration also seems to strengthen the effectiveness of dollarization as a commitment device. Further research is needed to confirm both hypotheses.

In a relatively well-functioning electoral democracy, any politician intent on forcibly replacing the dollar with a domestic currency would face several obstacles. First is the opposition of a majority of the electorate.<sup>15</sup> Second are the serious logistical complications of introducing a new currency and generating demand for it. Third is a significant and negative economic impact on economic activity.<sup>16</sup>

# The Case of Argentina

In Argentina, economists and policymakers are again debating the advantages and disadvantages of dollarization. Given the experience of 2002, when a disorderly exit from Convertibility led to a deep crisis, one of the key issues being discussed is whether dollarization would be more effective as a commitment device than a currency board would be.

Years before the demise of Convertibility, Zarazaga (1995a) argued that the track record of a country was "far more important for policy credibility than the particular label (central bank

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or currency board) of the institutions that conduct policy" (9). He also warned about the ineffectiveness of a currency board or any other "ironclad" monetary rule to resolve time inconsistency. Given Argentina's dismal track record, if no ECD is available, this conclusion leaves little hope that policymakers will ever be able to reduce inflation, least of all under a regime in which the peso survives. The notion that it would be possible to establish a track record gradually to gain credibility without an ECD is illusory. The failure of the gradualist strategy followed by the Macri administration (2015–19) shows that inflation must be reduced quickly and permanently. It is not a macroeconomic requirement but a political necessity.

## Why Did the 1899 Monetary Reform Succeed?

As explained in the previous section, the notion that ironclad rules are ineffective is refuted not only by the experiences of Ecuador, El Salvador, and Panama since 2000 but also by early Argentine history. The monetary reform of November 1899—by which Argentina effectively joined the gold standard—imposed previously unattainable fiscal and monetary discipline on policymakers for almost three decades.<sup>17</sup> It is worth comparing this regime with Convertibility to try to understand why it lasted much longer.

Argentina ended the nineteenth century as one of the world's worst abusers of inflationary finance. In the first eight decades of Argentine monetary history, which started in 1822, the peso lost 98% of its value. There were only two brief periods of currency stability and several crises, most notably in 1873–75 and 1890–91. During these periods, a depreciating and volatile peso was "almost part of the normal life" (Martinez and Lewandowski 1911, 334). By the end of the century, time inconsistency was high and institutional anomie prevailed. As a London-based financial journalist explained at the time the new reform was announced: "[Argentina] is one of the most unfortunate victims of parliamenteering run wild" (Lawson 1899). After the 1890 crisis, which brought down the venerable House of Baring, all hope of monetary stability in Argentina was lost. To many foreign observers, the Argentine government's manifest inability to manage responsibly its fiscal and monetary affairs threatened to derail the country's extraordinary economic expansion driven by commodity exports. A foreign observer pessimistically warned that if Argentines "are allowed to retain the undivided control of the administration, that faith will not easily be restored. . . . The Argentine is incapable of administering anything—financial affairs least of all." The solution was to "let able and honest resident Europeans step forward and take in hand the control of affairs which are in jeopardy, so long as they are managed by men with whom governor is but a synonym for robber, and government but a system of organized rapine, political obfuscation, and terrorism" (Turner 1890, 344–45).<sup>18</sup>

At the turn of the century, a contemporary scholar of Argentine monetary history pointed out that inconvertible paper money had "served the official finances of all times as a contribution required from the country in difficult circumstances of its political life" (Pillado 1901, 1). Juan B. Justo, a leading socialist politician, described the inconvertible peso as "a curse for the people" and argued that monetary instability was a "calamity directly attributable to governments, which, with the unconsciousness of children, have played with the most elementary laws of currency, or have violated them with the conscience of villains" (1921, 30, 36–37).

Despite this dismal track record, at the end of 1899, Argentina's Congress approved a monetary reform that fixed the parity of the peso to gold and established full convertibility. The announcement was met by skepticism in London. An article in the *Bankers' Magazine* by W. H. Lawson—an influential journalist who for years had closely followed Argentine financial affairs—described Argentina's new regime as a "clumsy" copy of India's convertibility scheme and the zenith of "a long line of quack remedies." He confidently predicted its inevitable demise (Lawson 1899).

Despite this dire warning and an initial lack of gold reserves, in a short period of time the Argentine peso became one of the strongest currencies of the world. As Della Paolera and Taylor (2001) noted, one of the key factors that explained the success of the 1899 reform was "the degree of independence from political interference granted to the Conversion Office" (120). In other words, an ECD under Argentine jurisdiction was found and institutional anomie was neutralized (for a while). Between 1899 and 1914 the economy experienced extraordinary growth and Argentina's GDP per capita was among the highest in the world.

Ford (1962) argued that the gold standard "worked" in Argentina for two reasons. First, the new regime didn't face a critical test until mid-1913 and was abandoned a year later when World War I started. In other words, it was a "fair weather" regime. Second, exporters and the land oligarchy controlled the political system, and it was in their interest to keep the system afloat. In Ford's view, in a primary export economy with a large foreign debt burden such as Argentina, the gold standard accentuated boom-and-bust cycles.

Bordo and Kydland (1990) conjectured that political stability was a key factor that explained why the gold standard was so durable, particularly in the UK and the United States. In their view, "countries fraught with unstable internal politics found it difficult to refrain from running budget deficits, ultimately financed by paper-money issue (for example, Italy and Argentina), although the benefits of convertibility likely placed some constraints on their behavior" (33).<sup>19</sup> According to these authors, another factor that explains the durability of the gold standard was the centrality of England. This factor certainly played a big role in Argentina, whose economy was closely tied to England's. Interestingly, in the 1930s, Argentina abandoned the gold standard almost two years before England did.

However, neither the abandonment of the gold standard in 1914 nor the emergence of a new power structure in 1916 significantly altered Argentina's monetary dynamics. As pointed out by Della Paolera and Taylor (2001), between 1914 and 1927 there was "strict adherence to the [monetary] rule [implied by the gold standard]" (197). It is important to note that during this period there was a major shift in political power. Also, contrary to Ford's assertion, after 1916 Argentina was governed by the Radical Party, which represented the interests of urban middle classes. In other words, even though the peso convertibility ended in August 1914, Argentine policymakers continued to adhere—albeit less strictly to principles of fiscal and monetary orthodoxy. As a result, in the first three decades of the twentieth century, "as a measure of value and as a store of value the Argentine peso was comparable on the exchanges to the Swiss franc, the pound sterling and the United States dollar" (Ferns 1992, 272).

In 1927, Argentina returned to the gold standard, only to abandon it forever at the end of 1929. However, two years passed before there was an unbacked expansion of the money supply (Salama 2000). According to Della Paolera and Taylor (2001), in 1930 almost 80% of the monetary base was backed with gold, a ratio significantly higher "than in any other gold standard country" (192). And even during the worst years of the Great Depression, Argentina maintained a "basic orthodox fiscal stance" (193). The first clear sign of a regime change took place in April 1931, when the Caja de Conversión (conversion office) started rediscounting commercial paper (188). The creation of the Argentine central bank in April 1935 was also a milestone in the country's return to monetary and fiscal indiscipline. Be that as it may, until 1942 Argentina's inflation rate did not diverge significantly from that of Australia, Canada, Great Britain, and the United States. During this period the central bank had mixed ownership and remained de facto independent (although de jure it was less independent than today). In fact, the League of Nations praised its prudent countercyclical management of monetary policy before the onset of World War II (League of Nations 1944, 84-85).

As mentioned in a previous section, the June 1943 military coup led by Juan Perón was a major turning point in Argentine history. Under Perón's leadership, in a short period of time the country rose to the high position in the global inflation rankings that it still holds today. During the Perón regime (1946–55) the central bank became an agency of the executive, and the inflationary tax became a recurrent source of deficit financing.<sup>20</sup> Since then, the only lasting period of price stability occurred between March 1991 and December 2001 (see Ocampo 2017 and 2021a).

## Why Did Convertibility Fail?

The main reason the gold standard worked in Argentina is that during the period 1900–1929, the rule of law and the constitutional principle of separation of powers—particularly as it relates to the independence of the judiciary—carried more weight than today, even though the quality of electoral democracy was weaker (voting franchise was more restricted). Economic and financial integration also strengthened the effectiveness of the gold standard. Institutional degradation started with the 1930s military coup and deepened with the 1943 military coup. However, after the democratically elected Perón dismissed the Supreme Court in 1947, institutional anomie became a chronic feature of Argentine life (for the impact of this decision on institutional quality, see Alston and Gallo 2010).

When Convertibility was launched on April 1, 1991, the public believed that a law approved by Congress prohibiting the central bank from financing the government was a sufficient guarantee. This belief was shared by most economists, who considered the new currency regime one of the strongest commitments ever made in Latin America (Cukierman, Kiguel, and Liviatan 1994). The traumatic end of Convertibility proved them wrong. It is important to distinguish the factors that triggered a crisis in Argentina in 2000 from those that led to the reversal of Convertibility two years later. They are related but conceptually different. A crisis can trigger demands for regime reversal, but whether those demands are met depends on political and institutional factors.

When explaining the end of Convertibility, most economists have highlighted growing fiscal imbalances at the provincial level, deteriorating fiscal sustainability at the national level, strong appreciation of the real exchange rate, currency mismatches in the banking sector, vanishing credibility, impact of foreign shocks, and so forth (see Fanelli 2002; Hausmann and Velasco 2002; Mussa 2002; Powell 2002; Calvo, Izquierdo, and Talvi 2003; Damill, Frenkel, and Juvenal 2003; De la Torre, Levy Yeyati, and Schmukler 2003; Della Paolera and Taylor 2003; Galiani, Heymann, and Tommasi 2003; López Murphy, Artana, and Navajas 2003; Schuler 2003; Kiguel 2011; Cavallo and Cavallo Runde 2017; and Teijeiro 2022). Another strand of research focused on the institutional design of Convertibility. Hanson (1993) and Hanke (2002a, 2002b, and 2008) argued that it did not behave as a "true currency board" (for example, the Argentine central bank sterilized capital inflows). According to Hanke, it would be a mistake to conclude "that currency boards are inherently dangerous and bound to end in Argentine-like upheavals" (2008, 56). Although this is true, the heterodox features of Convertibility cannot explain why it was reversed in such a traumatic way.

Few studies highlighted political factors. Powell (2002) made the case that a double vicious cycle of political risk "fed through to worsened economic fundamentals and these fed back to increased political risk." Corrales (2002) argued that "two political shocks killed Convertibility: infighting between the Executive and the ruling party, and the 'toughen-as-you-sink' policy experiment undertaken by the IMF and the U.S. Treasury." Della Paolera and Taylor (2003) emphasized how the conflict between the national government and that of the province of Buenos Aires (governed by the opposition) contaminated the banking system, undermined internal convertibility, and contributed to a lethal deposit run and raised doubts about external convertibility. Several weaknesses in Argentina's institutional fabric magnified the impact of these political shocks and made it politically viable to repeal the Convertibility Law. First, the decision was made by a president who had publicly opposed the currency regime but had not been elected by a majority of voters. Second, the design of the electoral system weakened the link between voters and legislators. Third, AIA prevailed. The central bank, although de jure independent, after April 2001 became, de facto, an appendix of the executive.

This paper argues that institutional anomie is a key factor that explains the reversal of Convertibility. In April 1991, having experienced democracy for only seven years, most Argentines still believed in the constitutional separation of powers. However, by design, the electoral system (particularly the so-called *lista sábana* or closed party list ballot) ensures that legislators are beholden not to voters but to the governing party's bureaucracy. Although the 1994 constitutional reform limited the ability of the executive to appoint or remove Supreme Court justices, it was packed before its enactment. Under President Menem, the appointment of judges, particularly at the federal level, was driven mostly by politics. Weakened de jure and de facto legislative and judicial constraints opened the doors to executive overreach.

Despite these institutional flaws, the Convertibility plan successfully confronted its first existential test in early 1995 with the Tequila Crisis. At the time, doubts started to emerge about the plan's longterm viability, which proved prescient in 2001 (Zarazaga 1995a, 9). A succession of foreign-exchange crises in Southeast Asia (1997), Russia (1998), and Brazil (1999) put a dent on capital flows to emerging markets, limiting Argentina's growth prospects and its ability to finance growing fiscal imbalances. With a looming change of government, the sustainability of the currency regime was put into question. Particularly damaging in this regard was the strong and public opposition to Convertibility within Menem's own party led by Eduardo Duhalde, his most likely successor, who had the support of powerful industrial groups and union leaders. Former president Raúl Alfonsín, an influential opposition leader, also shared this view.

Aware of the problem, in early 1999 President Menem announced dollarization and encouraged his ministers to accelerate its implementation by paying salaries to public employees in dollars (Rosales and Obarrio 1999). But the political dynamics generated by a looming election worked against his plan. Both presidential candidates reacted unfavorably, and the project was soon abandoned.

In November 1999, Fernando de la Rúa of the opposition Alianza coalition won the presidential election in part because he publicly supported Convertibility in contrast to Duhalde, who openly criticized the currency regime and hinted at a possible sovereign default.<sup>21</sup> More problematic were the deep divisions within the governing party about the currency regime. In an interview he gave in October 2000, Alfonsín declared that the 1930 military coup and Convertibility were "the two gravest" episodes in Argentine history and described the latter as "a deadly trap" (La Nación 2001). Alfonsín's diatribes against the currency regime echoed the complaints of several industrial groups that since 1999 had been lobbying for a devaluation. On this issue, Alfonsín was much closer to Duhalde than to De la Rúa, since he could not conceive of politics without soft money. Consequently, until the last days of De la Rúa's presidency, "the most relentless critic of the government's economic policy was the ruling coalition itself" (Corrales 2002, 35). One cannot underestimate the Alfonsín factor in any explanation of the demise of Convertibility. When Rudiger Dornbusch visited Argentina at the end of 2000, he said that one of the most important measures the government could take to stabilize the economy was to get Alfonsín "to shut up" (Dattilo 2000).

Alfonsín's public criticism of Convertibility in late 2000 coincided with the resignation of Vice President Carlos Álvarez. The ensuing political crisis highlighted the deep fissure within the Alianza and triggered a bank run that, after undergoing varying degrees of intensity, did not stop until December 2001. Ironically and tragically, the reappointment of Domingo Cavallo as economy minister in March 2001 contributed to an undermining of the credibility of the regime. After 1996, and as recently as 1999, Cavallo had publicly stated that the Convertibility Law needed to be modified to allow the peso to float (Lapper 1999; Powell and Sturzenegger 2002).<sup>22</sup> Not surprisingly, Cavallo's appointment fueled expectations that such a scenario could materialize, which led to a higher devaluation premium and a rise of peso interest rates.

One of Cavallo's first measures was to fire the president of the central bank. This decision not only made "a mockery of central bank independence" but also further eroded the "already shaky reputation of institutions in Argentina" (Powell 2002). At the end of April 2001, the devaluation risk premium crossed the 10% threshold for the first time since the Tequila Crisis. Two months later, Cavallo confirmed investors' worst fears when he successfully pushed through Congress an amendment to the Convertibility Law to change the parity of the peso to an average of the dollar and the euro.<sup>23</sup> He also announced an export subsidy that implied an effective devaluation. It was evident after these measures that Convertibility was not an ironclad currency regime. To make matters worse, a debt restructuring increased the banking system's exposure to the government at a time when investors entertained increasing doubts about its solvency.<sup>24</sup> By mid-July 2001, the devaluation risk premium had reached its highest level ever.<sup>25</sup> A sound defeat of the Alianza in the October legislative elections sealed the fate of De la Rúa's presidency and Convertibility.

The events of December 2001 and January 2002 confirmed that in Argentina, the decisions of a president backed by the Peronist Party, however arbitrary, would prevail over any formal or informal constraints.<sup>26</sup> A glaring example of the high degree of institutional anomie that prevailed at this time was the fate of the so-called Intangibility of Deposits Law, approved in literally three minutes by a majority of the Argentine Senate in August 2001. This law was meant to increase depositors' confidence in the banking system by protecting their assets against any attempt by the government to confiscate them or change their contractual nature. It was hoped that the law would halt the steady deposit withdrawals that had started in October 2000. The new law only served to fool depositors for a short while. On January 7, 2002, the Argentine government froze all deposits and forcibly converted all US dollar deposits into pesos at a below-market rate, imposing a 30% capital loss on their holders.<sup>27</sup> The Supreme Court later ruled that this measure was unconstitutional, but very few depositors benefited from this ruling (see Marval O'Farrell Mairal 2004 and Clarín 2017).<sup>28</sup>

The only barrier to reversing Convertibility had been its high popularity among voters. However, this factor was not such a strong deterrent in December 2001. First, as already mentioned, legislators, particularly in the largest districts, had a stronger allegiance to the party cadres than to voters. Second, the unfortunate and unnecessary resignation of De la Rúa created a major political crisis that elevated Duhalde to the presidency. Ironically, Duhalde had lost the 1999 election in part due to his opposition to Convertibility. Thanks to a palace coup he orchestrated with the help of Alfonsín, he managed to do what a majority of the electorate opposed.

It is evident from this chain of events that without radical changes in the institutional and electoral framework, a currency board regime with a bimonetary banking system will remain a suboptimal commitment device for Argentina. Convertibility is different from dollarization in an important respect that made it particularly vulnerable to reversal: the bimonetary nature of the banking system. When, thanks to Alfonsín and Duhalde, fears of devaluation resurfaced, financial dollarization increased. At the beginning of Convertibility, US dollar–denominated M3 was 33% of the total, but by November 2001 the percentage had doubled. As Della Paolera and Taylor (1997, 2001, and 2003) have pointed out, there is a potentially lethal inconsistency between any fixed exchange rate regime and a fractional reserve banking system with (a) a high ratio of inside money to outside money, and (b) a large currency mismatch. External convertibility becomes unsustainable when the deteriorating quality of bank assets puts internal convertibility in doubt. In turn, internal convertibility becomes unsustainable when fears of devaluation increase the currency mismatch in banks' balance sheets. Such inconsistencies would be eliminated under dollarization because external convertibility would disappear. However, even under dollarization, a banking system prone to originating bad-quality assets (aka *gaucho banking*) will always pose a threat to financial stability.<sup>29</sup>

The probability of reversal of a currency board regime with a bimonetary system can increase rapidly when an external shock and/or internal political opposition creates uncertainty. Lower credibility inevitably leads to (a) higher financial dollarization, and (b) a growing devaluation premium. The former increases currency mismatches in banks' balance sheets, and the latter leads to higher interest rates that hurt private companies and deteriorate loan quality. This combination can put the soundness of the banking system into question and trigger a bank run, creating a dangerous feedback loop. Also, as dollar deposits grow, so does the political temptation to confiscate them, particularly if they are concentrated in a relatively small number of individual holders who are electorally irrelevant.

The magnitude of the political cost of reversing Convertibility was directly proportional to how many voters held US dollar bank deposits, which in December 2001 amounted to US\$42.3 billion. According to official figures, individual holders (i.e., excluding legal entities), who accounted for 50% of this amount, were broken down as follows: 67,441 checking accounts, 3.5 million savings accounts, and 1.1 million time deposit accounts.<sup>30</sup> These deposits were highly concentrated: only 14,320 checking accounts, 549,800 savings

accounts, and 903,376 time deposits had a balance in excess of US\$3,000. These depositors bore the brunt of the government's decision to repeal the Convertibility Law in January 2002. The amount effectively confiscated by the government can be estimated at US\$13 billion. From an electoral standpoint, these depositors represented only 18% of registered voters.<sup>31</sup> Given that Peronist Party voters were underrepresented among them, the political cost of reversing Convertibility was not high for Duhalde.

The reversal of the Convertibility Law in January 2002 suggests that strong voter support for a currency board regime will not be an effective deterrent against reversal if (a) institutional anomie prevails, (b) there is a bimonetary banking system, (c) financial dollarization is high, and (d) dollar deposits are held by a relatively small percentage of voters.

It is also important to point out that, in this instance, the electoral system did not serve as a restraining mechanism because Duhalde was not elected but was installed in the presidency thanks to a palace coup.<sup>32</sup> The other deterrent to reversing Convertibility was its expected economic cost. At the end of 2000, Dornbusch (2001) had warned that a devaluation would accomplish little and would destroy the banking system. This prescient warning was ignored. Alfonsín and Duhalde and the many economists, businessmen, and politicians who advised and supported them underestimated the economic consequences of devaluing the peso. In fact, they believed it would be a magical cure to a long recession. In his first press conference on January 6, 2002, Duhalde's economy minister Jorge Remes Lenicov stated that the planned devaluation of the peso would have "a reactivating effect" on the economy, as had happened in 1967 (La Nación 2002; Edwards 2002). Two months later, government officials reaffirmed "their confidence" that the GDP contraction would "not be greater than 4.9 percent" (Oviedo 2002). A month later, Remes Lenicov resigned. His projections turned out to be widely off the mark: in 2002 GDP fell by a staggering 11% while the poverty rate jumped to 50%, setting a historical record.<sup>33</sup> Several factors may have contributed to this error. First, the Brazilian devaluation, viewed by many as the example Argentina had to emulate, was followed by a relatively rapid economic recovery.<sup>34</sup> Second, during 2001, several foreign "experts" had argued that a devaluation of the peso and an orderly sovereign default would have a stimulating effect on an economy that had stagnated for almost two years (see Zarazaga 2003). Be that as it may, Argentine politicians were able to blame the Convertibility regime for the 2002 megarecession when the true cause was the disorderly way in which they decided to scrap it.<sup>35</sup>

An important lesson from Convertibility is that in countries that suffer from acute institutional anomie with a political system that has incentives to spend excessively and procyclically, any fixed exchange rate regime with a bimonetary banking system will be inherently unstable and likely to be reversed. The bifurcation of the economy and the banking system into two currencies reduces the electoral base that supports the hard peg, while simultaneously contributing to the emergence of a confiscating coalition.

Why did the 1899 regime last longer than Convertibility? Different degrees of institutional anomie. Although the quality of electoral democracy was lower in the 1900–1929 period, judicial constraints on the executive branch and compliance with the Supreme Court and judicial decisions were stronger (i.e., institutional anomie was weaker). Also, from 1900 until 1929 the banking system was not bimonetary, that is, assets and liabilities were only denominated in gold-backed pesos. See table 6.5.

# Can Dollarization Work Where Everything Else Has Failed?

The events of January 2002 confirmed that a currency board regime with a bimonetary banking system is not an ECD, at least

|  | 1900–1929 | 1991–2001 |
|--|-----------|-----------|
|  | 1900-1929 | 1991-2001 |
| V-Dem Indices                                      |           |           |
| Electoral democracy (0 to 1)                       | 0.4       | 0.8       |
| Judicial constraints on the executive (0 to 1)     | 0.9       | 0.6       |
| Legislative constraints on the executive (0 to 1)  | 0.6       | 0.7       |
| Compliance with high court decisions (1 to 4)      | 3.1       | 2.6       |
| Compliance with judiciary (1 to 4)                 | 3.2       | 3.1       |
| Aráoz  |           |           |
| Institutional quality (0 to 1)                     | 0.9       | 0.6       |
| Independence of the judiciary (1 to 10)            | 10.0      | 6.2       |
| Independence of the monetary authorities (1 to 10) | 8.6       | 7.6       |

TABLE 6.5. Caja de Conversión (1900–1929) versus Convertibility (1991–2001).

Source: Aráoz (2013) and V-Dem Institute.

in Argentina. The key question is whether this conclusion also applies to dollarization. Economists generally lump them together, but as Powell (2021) pointed out, the "experience of the currency board is only partially informative regarding the possible success of dollarizing." The experience of Ecuador and El Salvador suggests it is "much more difficult" to reverse official dollarization than a currency board. Among other things, dedollarization requires creating demand for a new currency, a problem that proved insoluble to both Correa and Bukele. Most importantly, it requires taking dollars out of people's pockets, which entails a high political cost.

Given that Argentine policymakers have proved incapable of using fiscal and monetary policy effectively, it makes sense to look for an alternative regime. Argentine history shows that any policy rule would be better than arbitrary and suboptimal discretion. It also shows that de facto central bank independence is a chimera in the presence of acute institutional anomie. Despite these facts, some of the most respected Argentine economists oppose dollarization (see, for example, Nicolini 2021 and 2022, Uribe 2022a and 2022b, and Sturzenegger 2023). Although most recognize that it would eliminate inflation, they considered it a costly policy choice due to its supposed procyclicality and the loss of flexibility and seignorage revenues. As an alternative, and despite overwhelming evidence, they propose monetary restraint under an independent central bank. Since 1943, the only period when Argentina had de facto and de jure central bank independence started in September 1992 and ended in April 2001 with an arbitrary presidential decree. Moreover, during this period, monetary policy was constrained by the Convertibility Law.

With respect to seignorage revenues (Cukierman, Kiguel, and Liviatan 1994), in a scenario of price stability, they generally amount to around 1% of GDP annually.<sup>36</sup> In the case of Argentina, due to de facto dollarization, most of the seignorage revenue (understood as central bank revenue and not inflationary tax) has already been lost. The monetary base represents 2% of GDP. Most arguments against dollarization fall into a "nirvana fallacy." A flexible exchange rate regime with an independent central bank that follows optimal intervention rules is not a realistic policy option. While it is true that almost anything can happen in Argentina and that it would be dangerous to underestimate the power of the "devaluation lobby," a properly designed dollarization can significantly reduce the risk of reversal. It would also be wrong to conclude that dollarization would be easily "reversible" based solely on the experience of Convertibility. Another effective deterrent would be the negative impact that reversal would have on economic activity. Finally, as Cukierman (1993) noted, the strongest policy commitment is the one with the highest political cost of reversal. The Ecuadorian experience strongly suggests that no other currency regime has a higher political cost of reversal than dollarization.

# Conclusions

Over two centuries of Argentine monetary history, high, persistent, and volatile inflation has been the norm. Lasting stability was only achieved when (a) the value of the peso was fixed by law to an international currency standard, and/or (b) there was a competent and de facto independent central bank. The experience of Convertibility shows that with high levels of institutional anomie—a legacy of enduring populism—any monetary and banking regime in which the dollar coexists with the peso will be inherently unstable and highly vulnerable to reversal, and therefore unlikely to be credible.

The dynamics of the electoral calendar—with midterm elections every two years—and Argentine politics make it very unlikely that even a well-intentioned and determined president will be able to bring inflation down rapidly and permanently and complete all the reforms needed to put the economy on a path of sustainable growth if the peso survives. As long as de facto central bank independence remains chimerical, the intersection of macroeconomically and politically viable stabilization plans with traditional policy tools is an empty set.

Convertibility also proved that, in Argentina at least, eliminating inflation is the only policy that consistently garners the support of a majority of voters. Therefore, achieving price stability is a necessary political precondition for a program of fiscal adjustment and structural reforms.

It would be naïve to assume that fiscal responsibility will seep into Argentine politics without an external disciplining factor. No other currency regime can impose a stricter discipline than dollarization. In a relatively well-functioning electoral democracy, in the medium and long term the best insurance against reversal of dollarization is strong voter support. In Ecuador, dollarization has lasted more than two decades despite having suffered the impact of several shocks and attempts by a populist government to undermine its financial soundness and introduce a new currency. In El Salvador, dollarization has not only fiscally constrained ten years of left-wing government but has also resisted Bukele's plans to introduce a new currency. Although neither country has reached a macroeconomic nirvana, it is hard to argue that if they had kept their own currency they would be better off today. Even with a decade of virulent populism, Ecuador has grown faster and with a significantly lower inflation rate than Argentina, which during this period also experimented with populism and a variety of discretionary policy regimes.

In the short run, certain design features can strengthen the effectiveness of dollarization as a commitment device. By enhancing credibility, these features can help it deliver more rapidly the twin goals of economic growth and lower inflation, which in the medium and long term strengthen "voter insurance" against reversal. Over time, both elements virtuously reinforce each other to reduce the probability of reversal.

To conclude, in countries that have experienced for decades high, persistent, and volatile inflation, low or negative GDP growth, high levels of de facto dollarization, and low credibility due to time-inconsistency disease and acute institutional anomie, a well-designed de jure dollarization scheme offers the best, and possibly only, hope for lasting price stability and growth. Endemic populism has pushed Argentina into a suboptimal situation in which there is a very limited menu of viable policy options to stabilize the economy with any chance of success. Among such options, dollarization offers the most realistic chance of delivering lasting price stability and sustained economic growth. History suggests any associated costs are unlikely to be higher than those imposed by a discretionary policy regime.

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## Notes

This paper was prepared with valuable comments from Nicolás Cachanosky and Jorge M. Streb.

- A detailed discussion of all of these issues can be found in Cukierman, Kiguel, and Liviatan (1994); Liviatan (1993); Hanke and Schuler (1999); Bergsten (1999); Goldfajn and Olivares (2000 and 2001); Velde and Veracierto (2000); Berg and Borensztein (2000); Alesina and Barro (2001); Calvo (2000 and 2001); Calvo and Reinhart (2002); Chang and Velasco (2001); Dornbusch (2001); Eichengreen (2001); Antinolfi and Keister (2001); Grubben, Wynne, and Zarazaga (2001); Guidotti and Powell (2002); Karras (2002); Levy Yeyati and Sturzenegger (2002); Salvatore, Dean, and Willett (2003); Jacome and Lönnberg (2010); Lindenberg and Westermann (2012); and White (2014).
- 2. Official or de jure dollarization is a government decision imposed by law. Spontaneous or de facto dollarization is voluntary and not legally binding.
- 3. Since the nationalization of the Panama Canal in 1999, Panama has regained its economic autonomy and has become a thriving regional banking center and trade hub. Its experience since then is relevant to address the issues discussed in this paper.
- 4. The modern literature on dollarization has not fully explored the experience of many countries in Central America, which in the first half of the twentieth century had adopted the dollar as legal tender (see Helleiner 2003 and 2005 and Schuler 2005).
- 5. Lionel Robbins made a similar argument in the foreword to the study of the German hyperinflation by Bresciani-Turroni (1937).
- 6. A recent study confirms that European populism is also characterized "by short termism, the denial of intertemporal budget constraints, the failure to evaluate the pros and cons of different policy options as well as trade-offs between them" (Andersen et al. 2017, 53).
- 7. Only if price stability is not part of a central bank's mandate could such inconsistency be explained.

- In their seminal paper on measures of central bank independence, Cukierman, Webb, and Neyapti clarified that "the actual independence of the Argentine central bank is substantially lower than the legal indicators imply" (1992, 363).
- 9. A porteño is a native of Buenos Aires.
- Schmitt-Grohé and Uribe (2001) calibrated their model for Mexico under the assumption that dollarization was equivalent to a hard peg. However, dollarization entails more than simply a foreign currency regime.
- 11. A forthcoming paper by Cachanosky, Gibson, and Ocampo (2024) estimates that dollarization reduced the cost of populism in terms of GDP growth rates by almost half.
- 12. In contrast with Correa, former president Lucio Gutiérrez, who initially opposed dollarization, has become one of its most vocal advocates (see Castiñeiras 2021).
- 13. Dedollarization doesn't necessarily need to be traumatic if done by a fiscally responsible government at nonconfiscatory foreign exchange rates (Helleiner 2003). This was the case in most of Central America after World War II. As an example, in the Dominican Republic, dictator Rafael Trujillo reintroduced the Dominican peso in 1947 after almost four decades of having the dollar as legal tender. In the decade that followed, the inflation rate did not significantly diverge from that of the United States.
- 14. Reversal of dollarization means salaries will no longer be paid in dollars.
- 15. To the extent that reversal of dollarization entails violating property rights, the legal costs might not be insignificant. However, in the presence of institutional anomie, they can be deemed irrelevant by politicians considering reversal. Even if the constitutional separation of powers and the rule of law are operational, judicial decisions take time and the final cost is unlikely to be borne by the actual decision maker (in fact, taxpayers will end up paying the cost of adverse verdicts).
- 16. The key issue is the reason behind dedollarization (see footnote 17).
- 17. Gold convertibility was suspended with the onset of World War I but was reintroduced in 1927 and was finally abandoned after the Wall Street crash of 1929.
- 18. Caballero and Dornbusch (2002) arrived at a similar conclusion in 2002.
- 19. As it relates to Argentina, this statement is only valid until 1899. Also, political stability decreased markedly in the years following the monetary reform.

- 20. Although at the time Perón did not hold any position in government, he had won the presidential election handily and the military regime followed his orders.
- 21. Formed in 1997, the Alianza was a center-left coalition that was led by the Unión Cívica Radical (UCR), Argentina's oldest political party, and also included FREPASO (Frente País Solidario), formed in the mid-1990s by dissident "progressive" factions of the Peronist Party, and the Socialist Party.
- 22. At the time, Cavallo's statement had a significant positive impact on the devaluation risk premium (see Schmukler and Servén 2002).
- 23. If Convertibility had survived, the inclusion of the euro as a reserve would have led to an even stronger appreciation of the peso, which these measures aimed to neutralize.
- 24. Another unfortunate and unintended consequence of this restructuring was the automatic cancellation of a liquidity facility set up by the central bank with international financial institutions.
- 25. As Corrales (2002) pointed out, the confluence of external and domestic political shocks forced Cavallo "to try every possible gimmick" to save Convertibility, but some key decisions he took during 2001 contributed to the opposite result. For Cavallo's own interpretation of the crisis, see Cavallo 2002b.
- 26. Non-Peronist presidents do not have such a luxury.
- 27. The government basically converted dollar bank deposits into pesos ("pesified") at an exchange rate that resulted in a confiscation. As is common in Argentina, the mechanism to repudiate the law was an "emergency law" approved by a majority of Congress.
- 28. The "nationalization" of the private pension fund system in 2008—which implied a significant confiscation of private savings—is another clear example of institutional anomie.
- 29. Narrow banking, or any other variant of the 100% reserve system, is not a viable option for Argentina, least of all in the current circumstances if the government proceeds with dollarization. There are three major problems. First, it would increase the financial cost of dollarization (it would be necessary to replace M1, commonly known in any article on economics as a monetary aggregate that comprises physical currency in circulation plus demand deposits, as opposed to the monetary base). Second, it would lead to a significant credit contraction, as banks would not be able to raise the necessary capital to sustain current loan levels. Third, it could lead to costly

and lengthy litigation, which would generate doubts about reversal and thus undermine credibility.

- 30. In contrast, the figures for peso-denominated deposits as of December 2001 were as follows: 1,139,522 individual holders of checking accounts, 8,855,364 individual holders of savings accounts, and 160,039 individual holders of time deposits.
- 31. In the 2003 election, Ricardo López Murphy, a right-of-center politician, got slightly over three million votes, which probably included most of the "victims" of the government's confiscation.
- 32. As Cavallo (2002a) has forcefully argued, what happened in Argentina in December 2001 can be described as a civil and bloodless coup d'état.
- 33. Argentina's GDP per employed person grew 23% between 2002 and 2005. However, Zarazaga (2006) estimated that it should have grown by about 35% during this period.
- 34. By mid-2001, the evidence in emerging markets suggested that devaluations were contractionary in the first year and slightly expansionary afterward, with any real effects disappearing rapidly (Kamin 1988). The most immediate precedent was Brazil's devaluation in early 1999, which was followed by a rapid economic recovery (Fraga 2000; Gruben and Welch 2001). There were many obvious reasons why the Brazilian experience could not be extrapolated to Argentina, particularly regarding the high levels of dollarization in the banking system. However, some well-known economists suggested otherwise (Krugman 2001).
- 35. Besides this tangible economic cost, the disorderly exit of Convertibility also inflicted significant damage on the country's institutional fabric. The government infringed property rights with impunity.
- 36. The caveats raised by Chang and Velasco (2001) when estimating the seignorage losses generated by dollarization are applicable to all these arguments.

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## **7** Getting Global Monetary Policy on Track: The Case of Latin America

Tobías Martínez González and Juan Pablo Nicolini

The purpose of this chapter is to offer a quick review of the inflation and monetary policy experience of several Latin American countries during the most recent decades. The period we review is full of diverse inflationary experiences and policy experiments. It therefore provides a natural laboratory to evaluate inflation—its causes, consequences, and cures. We believe that those experiences shed light on our current predicament with inflation in developed economies.

Specifically, we use these experiences to address the two central topics the conference was centered around: to get monetary policy on track and to explore how to reduce inflation without output losses or slowing down economic growth. On a more general note, we celebrate the global approach adopted for the conference: we too often get the impression that policy debates in the United States fail to profit from relevant worldwide experiences (fortunate or unfortunate). Having been exposed to economic policy debates in other countries, we believe that sin to be relatively common, but more so in the US.

As is well known, several Latin American countries went through hyperinflationary episodes during this period. Some of the countries in the sample had more than one hyperinflation during the period, notably Argentina and Brazil. Table 7.1 reports data on the ones with the highest yearly inflation rates.

The views expressed herein are those of the authors and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

| Country   | Year | Inflation |
|-----------|------|-----------|
| Chile     | 1974 | 600%      |
| Bolivia   | 1985 | 11,700%   |
| Argentina | 1989 | 4,900%    |
| Peru      | 1990 | 7,500%    |
| Brazil    | 1994 | 2,200%    |
| Venezuela | 2018 | 63,400%   |

TABLE 7.1. Hyperinflation in Latin America.

Source: Kehoe and Nicolini (2021).

In order to summarize this history of inflation in a single plot, we need to cap the inflation rate at some value. Otherwise, only the very high values would be visible. Thus, we chose to graph the series

$$\Pi_{t,j}^* = \max\left\{\Pi_{t,j}, 100\right\}$$

for j=1, ..., 11 and t=1960, ..., 2023. The result is depicted in figure 7.1, where we also include the annual inflation rate for the United States, represented by the solid black line.

There are four discernible stages in the figure. The first coincides with the Bretton Woods period and is characterized by inflation rates predominantly below 30%. We label that period "Managing 'Moderate' and Chronic Inflation." After the end of the Bretton Woods period, inflation rates rise considerably, with many instances in which it surpasses the bound. We label this as the "Inflation without Control" period. By the mid-1990s, the efforts to control fiscal deficits and curb very high inflation pay off, and by the early 2000s, for the first time in all the periods analyzed, the inflation rate is below 20% in all countries. We label this as the "Taming Inflation" period. Finally, starting around 2004, we observe a clear convergence of inflation to levels very similar to those observed in the United States for all countries, barring two notable exceptions: in both Argentina and Venezuela, fiscal deficits went again beyond control, and the

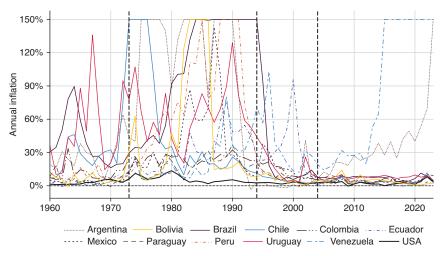


FIGURE 7.1. Annual inflation in the United States and Latin American countries, 1960–2023.

Source: Kehoe and Nicolini (2021), World Bank, and World Bank via FRED.

age of high inflation came back with fury. We label this as the "A Lesson Learned" period. In doing so, we are obviously excluding the two failed students, Argentina and Venezuela.

An alternative view is presented in figure 7.2, which depicts the frequency distribution of annual inflation rates across these stages. The first bin includes all inflation rates below 5%. We consider this range to be well within the targets of the central banks of the region, and with values consistent with the ones observed in developed economies. The second bin considers one-digit inflation rates but above 5%. These values are within the range of possibilities following large shocks, like the large primary commodity shocks these countries were exposed to. The third bin includes moderately high inflation rates, ranging from 10% to 40%, and the last two bins consider high and very high inflation rates, respectively. We excluded from this figure the cases of Argentina and Venezuela.

In order to address the degree to which monetary policy may have gotten off track in recent years, we now focus in further detail

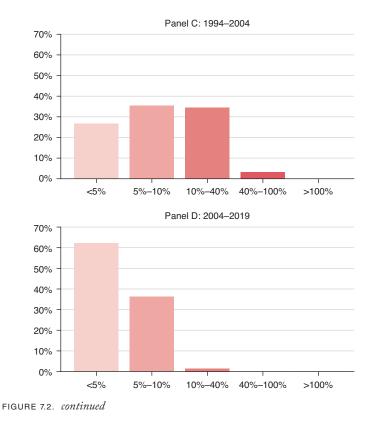


FIGURE 7.2. Frequency distribution of annual inflation in Latin America, 1960–2019.

on the period after 2004. We consider only the nine countries that "learned the lesson" and compare their experiences with that of the US.

There is some heterogeneity in the inflation targets for these countries. The highest target is 4.5% (Uruguay) and the lowest is 2% (Peru), like the one in the US. Two of the countries (Ecuador and Bolivia) do not have explicit inflation targets. A measure of success in monetary policy is not the level of inflation, but the difference between inflation and the target of the central bank. Thus, in figure 7.3 we plot the deviation of inflation from the tar-

Source: Kehoe and Nicolini (2021), World Bank, and World Bank via FRED.



get (*IT*), that is, dev<sub>t</sub> =  $\Pi_{t,j} - \Pi_{t,j}^{\text{tar}}$ , for the nine countries and the United States from 2004 onward. To consider all the countries, we assumed for Bolivia and Ecuador a target of 2%, which is the smallest target in the sample.

The United States is among the countries with the lowest value for most of the sample, but overall, it behaves like the rest of the countries. We can see this argument more clearly in figure 7.4. There, we plot the average deviation of inflation from the inflation target for these nine countries along with an upper and lower limit equal to one standard deviation. The solid black line represents the deviation of inflation from the inflation target for the United States. Throughout almost the entire period, the deviation for the

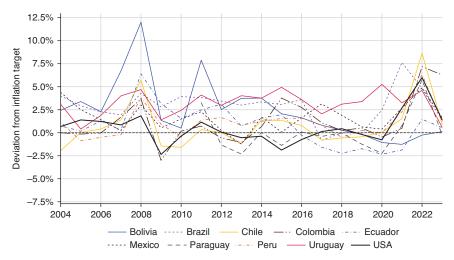


FIGURE 7.3. Deviation of inflation from the inflation target in Latin America (excluding Argentina and Venezuela) and the United States.

Source: Kehoe and Nicolini (2021), World Bank, World Bank via FRED, Banco Central de Uruguay, Banco Central del Paraguay, Banco Central do Brasil, Banco Central de Chile, Banco Central de la República, Banco Central de Reserva del Perú, Banco de México, and CentralBanksNews.info.

United States falls within the interval of the average deviation for Latin America.

It is worth noticing that the lower limit of the average deviation for Latin America usually oscillates around zero except for two periods: 2008 and 2022. It is also interesting to note that the upper limit, the average, and the lower limit for Latin America are practically identical in those two episodes. These were years where commodity prices were very high. Many of the countries in our analysis are commodities producers and exporters, and commodity production constitutes a high percentage of their GDP. Thus, commodity price shocks are very large, and they have large effects in these economies. The clearest example is Chile, a major copper producer. Copper prices were very high in 2008 and 2022, and if we refer back to figure 7.3, we can see that the highest value is indeed Chile in mid-2022. The 2021 inflation shock in Chile came

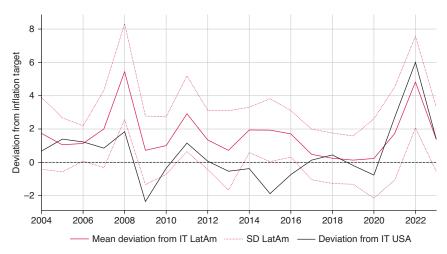


FIGURE 7.4. Mean deviation from inflation target (IT) in Latin America and the United States.

Source: Kehoe and Nicolini (2021), World Bank, World Bank via FRED, Banco Central de Uruguay, Banco Central del Paraguay, Banco Central do Brasil, Banco Central de Chile, Banco Central de la República, Banco Central de Reserva del Perú, Banco de México, and CentralBanksNews.info.

with large increases in copper prices. And the deviation of inflation from target was very similar in 2021 to what it was in 2008. These experiences suggest that even well-functioning and credible central banks—as many central banks in Latin America are, in particular the Central Bank of Chile—may not be able to keep inflation at the target when their economies are subject to massive real shocks. The 2008 commodity price shock was not very important for the US, but it was important for Chile. The COVID-19 shock was clearly important for both.

The question we are interested in addressing now is whether monetary policy in Latin America effectively got off track during the COVID crisis. In figure 7.5, the monthly inflation for the nine countries of interest is shown, together with the one for the United States. As before, we exclude Argentina and Venezuela from this part of the analysis since their monetary policies got off track long, long ago.

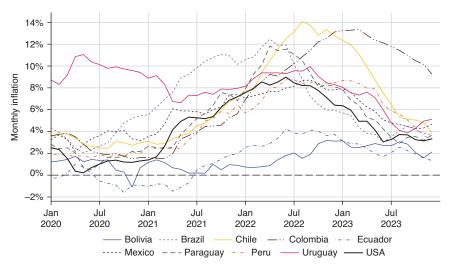


FIGURE 7.5. Monthly inflation in Latin America (excluding Argentina and Venezuela) and the United States, 2020–2023.

Source: Instituto Nacional de Estadística, Banco Central del Paraguay, Fundação Getulio Vargas, Instituto Nacional de Estadísticas, Departamento Administrativo Nacional de Estadística, Instituto Nacional de Estadística y Censos, Banco Central de Reserva del Perú, Instituto Nacional de Estadística y Geografía, Instituto Nacional de Estadística, and US Bureau of Labor Statistics via FRED.

Although a marked increase in monthly inflation can be seen during the COVID-19 pandemic period, this graph is strong evidence that in these countries inflation was "conquered" and that it behaved very similarly to how it behaved in the United States. In addition, as becomes clear from figure 7.5, the post-COVID experience is not different from the one in 2008.

To evaluate the behavior of monetary policy, we now show the difference between the monthly inflation rate and the monetary policy rate,  $\Pi_{t,j} - i_{t,j}^{\text{policy}}$ . The reason to do so is that the policy framework in most of these countries (including in the US) prescribes strong increases in the policy rate as the effective way to contain inflation in the short run. One way to simplify the policy reaction function of the central banks is through a linear relationship between the policy rate and current inflation, the so-called Taylor rule. If the coefficient

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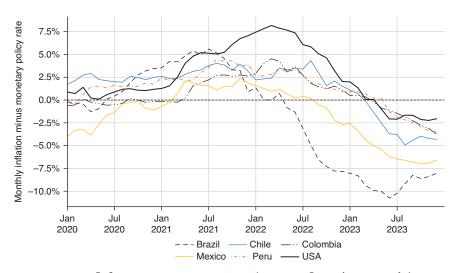


FIGURE 7.6. Inflation rate minus monetary policy rate in Latin America and the United States.

Source: Instituto Nacional de Estadística, Banco Central del Paraguay, Fundação Getulio Vargas, Instituto Nacional de Estadísticas, Departamento Administrativo Nacional de Estadística, Instituto Nacional de Estadística y Censos, Banco Central de Reserva del Perú, Instituto Nacional de Estadística y Geografía, Instituto Nacional de Estadística, US Bureau of Labor Statistics via FRED, and BIS Data Portal.

on inflation in the Taylor rule is equal to 1, we should observe no movement; if it is greater than 1, it should move downward.

The analysis that follows focuses exclusively on the countries that explicitly use the short-term interest rate as the policy instrument. The results are depicted in figure 7.6. In the case of all Latin American countries, the curve is slightly increasing at the beginning, picking up by July 2021, barely a quarter after inflation rates start to increase. They then start decreasing and become lower than their initial values within a year or so. They all begin to descend before it does for the United States, indicating that those countries started tightening monetary policy earlier. This allows us to conclude that while monetary policy in Latin America never got off track, in the United States it did, at least for a while. Today we can say that we are all back on track.

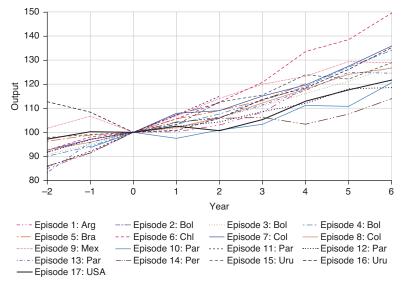


FIGURE 7.7. Output during inflation-stabilization episodes in Latin America and the United States. Source: Penn World Table.

To conclude, we endeavor to explore the feasibility of reducing inflation without incurring real output losses or dampening economic growth. Our approach involves identifying various episodes across the eleven Latin American countries considered, characterized by what we term "inflation stabilization." This designation applies to periods where annual inflation peaked between 13% and 150%. The lower bound, set at 13%, corresponds notably to the peak inflation experienced by the US during the "Volcker stabilization" of 1982. By comparing these Latin American episodes with the aforementioned US stabilization episode, we aim to shed light on the belief stemming from the US experience that stabilizing inflation necessarily entails enduring a recession.

The upper limit of 150% excludes hyperinflation episodes from our analysis, as these extreme cases may obscure the true costs associated with inflation-stabilization efforts. Notably, we anchor

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the year of peak inflation as year zero, setting the output of that year to one hundred to facilitate meaningful comparisons across episodes. We then analyze output dynamics from two years prior to peak inflation (year -2) to six years after (year +6).

In figure 7.7, we present the depicted episode corresponding to the US alongside sixteen other episodes from Latin American countries. Upon scrutiny, we observe four episodes where output is lower than that observed in the US one year after the peak of inflation. However, a deeper examination reveals that two years poststabilization, the US exhibits the lowest output among all considered episodes. This finding suggests that the recession following the Volcker stabilization may represent more of an exception than a rule. Alternatively, based on evidence from Latin America, instances abound where inflation was stabilized without incurring output losses.

In conclusion, our study reveals two primary insights. First, for the majority of Latin American countries that "learned the lesson" (nine out of eleven), monetary policy, unlike the temporary departure observed in the US, likely remained on track throughout. Second, numerous episodes demonstrate that inflation reduction can be achieved without significant real costs or output losses. These findings, gleaned from Latin America's rich empirical landscape, offer valuable insights into the nuanced approach to monetary policy going forward.

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## 8

### China's Monetary Policy: Where Are We Now?

Zhiguo He and Wei Wei

China's monetary policy, overseen by the People's Bank of China (PBC, China's central bank), differs significantly from US practices in several ways. First, unlike the highly independent Federal Reserve System, the PBC is not a legally independent central bank, resulting in a monetary policy with multiple objectives aimed at achieving national economic goals. Second, although the PBC has been increasing the use of price-based policy instruments, it still predominantly relies on quantity-based tools. Third, in recent years, the PBC has been increasingly tasked with facilitating structural changes in the economy using monetary policy tools.

The PBC does not function as a legally independent central bank. Instead, it is one of the twenty-six ministerial-level departments under the State Council. According to the PBC Law, the PBC formulates and implements monetary policy under the guidance of the State Council. Consequently, China's monetary policy encompasses multiple objectives, including maintaining price and currency stability, boosting economic growth, promoting employment, broadly maintaining balance of payments, and, in recent years, facilitating structural changes and improving social welfare (Wang 2019). The decision-making process requires approval from the State Council to adjust significant policy instruments, such as the benchmark deposit and lending rates and the reserve requirement ratio (RRR). However, the PBC enjoys a certain degree of operational autonomy regarding other policy tools.

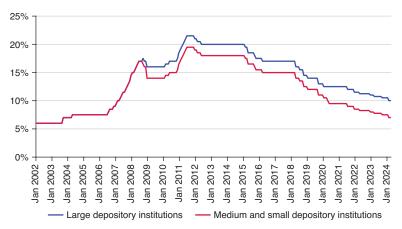


FIGURE 8.1. Reserve requirement ratio (RRR). Source: Wind Financial Terminal.

For the US monetary authority, the intermediate target of monetary policy is the federal funds rate, whereas for China, the intermediate target has been the growth of the monetary aggregate (M2) (Chen, Ren, and Zha 2018). The RRR is an important instrument in China to manage liquidity and control the money supply. From 2006 to 2011, the RRR was used as a liquidity-management tool to sterilize the persistently large foreign exchange (FX) inflows. Afterward, it was gradually lowered to release liquidity in response to declining FX reserves (figure 8.1).

Open market operations (OMO) are important and frequently used instruments in China due to the operational autonomy granted to the PBC. The PBC conducts OMO by trading with primary dealers, which currently include forty-eight policy/commercial banks, two security companies, and one state-backed entity (China Bond Insurance Co., Ltd.). OMO mainly includes repurchase agreements (repos), central bank bills, and outright bond transactions. In China, the terminology for repos differs from that in the US, with China's reverse repo being equivalent to the US repo in monetary policy, as China defines the terms from the central bank's perspective. The PBC conducts repos to withdraw liquidity by selling securities to primary dealers with an agreement to buy them back later, while reverse repos involve buying securities from primary dealers to inject liquidity into the market. Central bank bills were previously used as a sterilization instrument to manage the funds outstanding for FX. In recent years, the PBC has not actively used central bank bills in the domestic market. Instead, the use of central bank bills has shifted to the offshore renminbi (RMB) market (Bahaj and Reis 2024). Historically, the PBC has rarely used outright bond transactions as a monetary policy tool, but it has recently hinted at the possibility of adding treasury transactions to its policy toolkit.<sup>1</sup>

Over the past decade, the PBC has introduced a range of liquidity facilities to increase its domestic asset holdings on the balance sheet, in response to a slowdown or reversal in net FX asset flows. Notable among these tools are the Standing Lending Facility (SLF), Pledged Supplementary Lending (PSL), and Mediumterm Lending Facility (MLF) (table 8.1). The SLF provides shortterm liquidity to commercial banks, typically overnight, to address temporary funding needs. The MLF offers medium-term lending, usually with maturities ranging from three months to one year, to ensure reasonable liquidity levels in the financial system. The PSL, which has longer maturity terms, typically exceeding three years, facilitates lending to particular sectors or regions. While the SLF and MLF are comprehensive liquidity tools, the PSL is a structural tool aimed at supporting specific sectors or regions. The PSL offers collateralized lending facilities to banks, with eligibility currently limited to three policy banks.<sup>2</sup> So far, the PSL has been used mainly to fund policy banks' special loans for shantytown renovation projects. Similarly, the PBC introduced the Targeted Medium-term Lending Facility (TMLF), another structural tool that provides cheaper funding to banks for lending to small and micro enterprises.

|   | Introducing year    | ,<br>Introducing year Usage of funding                                 | Banks  | Collateral required                                | Tenor             | Balance, by<br>March 2024 |
|---|---------------------|--|--|--|-------------------|---------------------------|
| Standing Lending<br>Facility (SLF)                | Early 2013          | 1  | Policy banks and<br>national commercial<br>banks | High-quality bonds 1 day–1 month and credit assets | 1 day-1 month     | 3.42 billion              |
| Pledged Supplementary April 2014<br>Lending (PSL) | April 2014          | Specific policy targets/<br>programs such as the shantytown renovation | Policy banks                                     | Adjustable by the PBC Normally > 3 years           | Normally >3 years | 3,370 billion             |
| Medium-term Lending<br>Facility (MLF)             | September 2014      | I  | Qualified commercial<br>banks and policy banks   | High-quality bonds                                 | 3–12 months       | 7,198 billion             |
| Targeted Medium-term<br>Lending Facility (TMLF)   | December 2018       | Private sector and SMEs Qualified commercial banks                     | Qualified commercial<br>banks and policy banks   | High-quality bonds                                 | 3 years           | 0                         |
| Source: PBC and Wind Financial Terminal.          | Financial Terminal. |  |  |  |                   |                           |

TABLE 8.1. China's liquidity facility instruments.

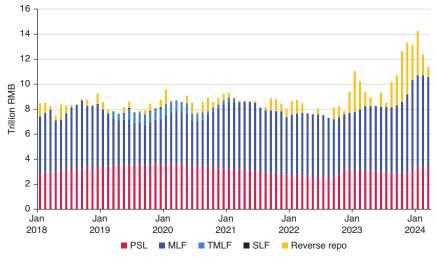


FIGURE 8.2. Outstanding amounts of liquidity facilities and reverse repos. Source: Wind Financial Terminal.

Figure 8.2 depicts the outstanding amounts of various liquidity instruments over the period from 2018 to 2024. It shows that the reverse repo and MLF have been the PBC's primary tools for managing overall liquidity levels in China's financial system, especially since 2023. In contrast, the balance of the PSL has remained relatively stable, while the size of the SLF is comparatively small. Additionally, the TMLF was only temporarily employed as a targeted lending facility from 2019 to 2021.

Although China has traditionally relied on quantity-based instruments, interest rates are playing an increasingly significant role. The country's interest rate liberalization reform, initiated in the 1990s and progressively advanced, has aimed to transition from a centrally controlled system to a market-oriented one. Key milestones of this reform include the liberalization of lending rates in 2013 and deposit rates in 2015, as well as the establishment of the Loan Prime Rate (LPR) as the benchmark for the credit market

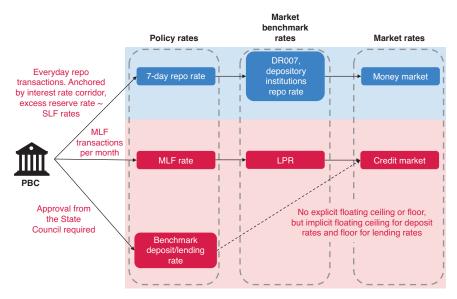


FIGURE 8.3. Transmission of monetary policy.

in 2019. From then on, the PBC has been influencing market rates in the base money supply adjustments.

Figure 8.3 illustrates the transmission mechanism of monetary policy in China. In the money market, the PBC uses the interbank seven-day repo rate as a reference rate, anchoring it as a quasipolicy rate through an interest rate corridor. This corridor uses the remuneration on banks' excess reserves as the lower bound and the SLF rates as the upper bound. In the credit market, the PBC influences the LPR, the benchmark rate, through the MLF rate. Although there is no explicit floating ceiling or floor for lending and deposit rates, the PBC still publishes official benchmark deposit and lending rates as an implicit reference, with adjustments to these official benchmarks requiring approval from the State Council. Currently, the two markets are highly segmented. This segmentation exists because Chinese banks, even those operating as conglomerates, have distinct departments, one handling bond

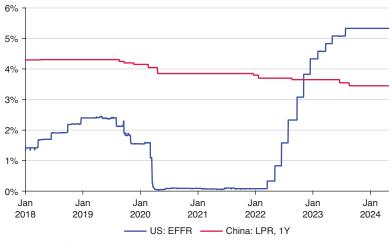


FIGURE 8.4. Benchmark rates. Source: Wind Financial Terminal.

trading and another focusing on lending. The limited communication and coordination between the two departments results in a dichotomy where one side is market driven and the other remains relatively sluggish in monetary transmission.

Amidst high inflation, the US has sharply increased its benchmark interest rate, as shown by the rising effective federal funds rate (EFFR) in figure 8.4. In contrast, China, grappling with the specter of deflation, has been decreasing the LPR. However, the PBC finds itself constrained in its ability to decrease rates more forcefully due to its critical mandate of maintaining currency stability. The widening divergence between US and Chinese interest rates could exert significant downward pressure on the RMB, a concern that is particularly acute in China's offshore RMB market.

The RMB circulates in two distinct forms: the onshore RMB (CNY) and the offshore RMB (CNH). The CNY is used within mainland China and is subject to capital controls, while the CNH is freely tradable in offshore markets, primarily in Hong Kong. In recent years, the offshore RMB market has developed rapidly.

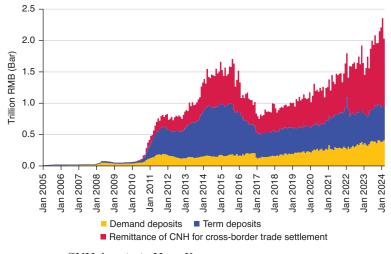


FIGURE 8.5. CNH deposits in Hong Kong. Source: Wind Financial Terminal.

As depicted in figure 8.5, CNH deposits have grown substantially since 2005. Notably, the CNH is also being increasingly used for cross-border trade settlement, with the remittance of CNH for this purpose climbing sharply to around 1 trillion RMB in 2024, underscoring its expanding role in international trade.

Despite the segmentation of the CNH and CNY markets, Chinese authorities aim to maintain a close peg between the two currencies through coordinated monetary and liquidity policies. The PBC adjusts the CNH money supply by issuing offshore central bank bills, temporarily expanding or decreasing the money supply by redeeming maturing bills or issuing new bills. Concurrently, the Hong Kong Monetary Authority (HKMA) manages liquidity in the offshore CNH market through repurchase agreements and liquidity facilities with selected banks. See Bahaj and Reis (2024) for a detailed description of the CNH monetary framework.

During turbulent times, the PBC could decisively intervene in the CNH interbank market, acting through state-owned banks in the territory, to curb short positions. Figure 8.6 depicts the log

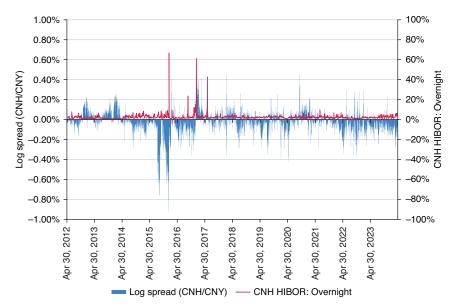


FIGURE 8.6. CNH/CNY spread and borrowing cost. Source: Wind Financial Terminal.

spread between CNH and CNY and the overnight CNH Hong Kong Interbank Offered Rate (HIBOR), highlighting the possibility and impact of such interventions. Following the 2015 exchange rate reform announced on August 11, 2015, which introduced a more market-oriented mechanism, the CNH faced significant depreciation pressure. Evidence shows that the PBC might intervene by raising CNH borrowing rates (HIBOR) to discourage short CNH positions. In figure 8.6, we observe several unusual spikes in the HIBOR rate, exceeding 20%, indicating a significant tightening of liquidity in this market.

Overall, the PBC (and Beijing) have shown considerable responsiveness to economic challenges over the past decades, with the PBC standing out as one of the most professional teams among China's bureaucratic agencies. While professionals, practitioners, and economists are advocating for more substantial fiscal policies akin to the 2009 four trillion RMB stimulus to address the slowing down of

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economic growth, we firmly oppose such measures due to the current limited fiscal capacity. Instead, we believe that monetary responses are more appropriate, as they are more benign and less likely to create a burdensome overhang for the future.

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### Notes

- 1. For more details, see Bloomberg News (2024).
- 2. China has three major policy banks that play a crucial role in implementing the government's economic policies and driving investment in strategic sectors and regions, including the China Development Bank, the Export-Import Bank of China, and the Agricultural Development Bank of China. For a comprehensive review of China's banking system, see He and Wei (2023).

### **9** Central Bank Independence in Emerging Economies: Recent Successes and Future Challenges

Ross Levine

# The IMF's View on Central Bank Independence, Inflation, and the Pandemic

In response to the COVID-19 pandemic, many emerging-economy central banks reduced interest rates to dampen the adverse effects of the pandemic on their economies. Subsequently, they raised policy rates as inflation accelerated during the worldwide economic recovery. As the International Monetary Fund (2024) documents, most emerging economies kept peak inflation rates below 20% during 2022–23 and reduced them to under 4% by early 2024. However, there were exceptions, such as Turkey, where the central bank lowered its policy rate from mid-2021 through mid-2023 even as inflation soared to over 80% annually. Nonetheless, the predominant experience across emerging economies demonstrated central banks' ability to respond to the pandemic without triggering sustained high inflation rates.

Kristalina Georgieva, the managing director of the International Monetary Fund (IMF), argues that gains in central bank independence over the last decades explain how central banks successfully navigated the COVID-19 pandemic: "Just consider what independent central banks have achieved in recent years. Central bankers steered effectively through the pandemic, unleashing aggressive monetary easing that helped prevent a global financial meltdown and speed recovery" (Georgieva 2024, 1). Georgieva adds that with "clear mandates" prioritizing price stability and "clear laws protecting their autonomy," central banks were able to deflect short-term political pressures and focus on the long-term interests of the public.

## What Is Central Bank Independence and What Makes It Successful?

Georgieva (2024) stresses that three defining features of central bank independence and two auxiliary factors are crucial for effective monetary policy (e.g., Unsal and Papageorgiou 2023; Adrian, Khan, and Menand 2024).

The three defining features of central bank independence are strong governance, accountability, and transparency. Concerning governance, the IMF notes that central banks must have control over their own budgets and personnel so that short-term political motivations are less likely to influence policy choices. Regarding accountability, the IMF stresses that governments should clearly designate and delegate responsibilities to central bank officials and establish clear goals and numerical targets. Such clarity reduces debates and confusion about the central bank's mission and its role relative to other official entities. Clarity about its mission also facilitates assessments of its performance, as there will be less ambiguity about whether the central bank is achieving its objectives. Finally, the IMF highlights the importance of central bank transparency so that people understand central bank decisions and the impact of those decisions on the economy.

The IMF also emphasizes that two auxiliary factors are vital for the effective functioning of central banks: prudent fiscal policies and sound bank regulations. Prudent fiscal policies reduce government incentives to pressure central banks to finance fiscal debts, where such financing could, in turn, undermine effective monetary policy.

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Sound bank regulations, which include the laws, rules, supervisory practices, and policies shaping bank operations, also contribute to successful monetary policy. First, they reduce the risks of systemic bank failures. Such failures can have severe adverse ramifications for economic activity and fiscal debts, hindering and complicating the implementation of monetary policy. Second, sound bank regulations lower the risk that central banks will become reluctant to raise policy rates to combat inflation out of fear that higher rates will trigger bank failures. Thus, with unsound bank regulations, central banks might be more likely to implement monetary policies that limit bank instability risks but increase inflation risks.

Furthermore, although not highlighted by the IMF, sound bank regulations can contribute to monetary policy success by boosting economic growth. Extensive research demonstrates how bank regulations influence bank operations and how efficient, innovative banking systems foster economic growth (e.g., Levine 2025; Barth, Caprio, and Levine 2005). By fostering long-term economic prosperity, sound bank regulations can ease the burdens placed on central bankers beyond any effects on banking system stability.

## Are the IMF's Criteria for Effective Central Banking Internally Consistent?

I question whether the IMF's criteria for creating an effectively governed central bank to achieve long-term monetary policy success are fully internally consistent without further guidance.

Three observations motivate this concern. First, the IMF stresses that creating an effective policy institution that deflects short-term political pressures and focuses on the public's long-term interests requires strong governance, accountability, and transparency. While the IMF develops these criteria for the specific case of monetary policy, they are broadly applicable. That is, policy authorities with sufficient independence, well-defined and monitorable objectives, and mandated transparency are likely more effective at making policy choices focused on long-term prosperity instead of succumbing to short-term political interests than those without these traits.

Second, two of these essential features for creating an effective policy institution do not apply to existing bank regulatory institutions. This contrasts with the success seen in monetary policy institutions. Specifically, many governments have enhanced the accountability and transparency of monetary authorities. Governments give monetary authorities clear mandates and targets and demand that central bankers make their monetary policy actions and reasoning clear to the public. This level of accountability and transparency makes it relatively easy to assess whether central banks are fulfilling their government-mandated missions, and it allows the public to engage in informed, timely debates about central banks' decisions and performance.

However, bank regulatory institutions are different. Governments do not provide bank regulatory authorities with a detailed definition of sound bank regulation, well-specified targets, or numerical goals. For instance, the aim of bank regulation is not simply to create banks that do not go bankrupt. Such an aim would lead to 100% reserve requirements. Instead, bank regulation has complex, conflicting objectives that include the efficient allocation of credit, high-quality banking services, and stability. Governments rarely, if ever, provide bank regulatory authorities with details on navigating these tradeoffs or numerical goals defining successful bank regulation.

Besides a lack of clarity of purpose and hence accountability, bank regulatory actions and decision-making processes are anything but transparent, rendering bank regulators essentially unmonitorable. Without such accountability and transparency, it is nearly impossible to ascertain whether bank regulatory authorities are taking actions that contribute to the long-term soundness of the banking system or to the public having an informed, timely debate about bank regulators' decisions and performance. Third, the IMF argues that besides strong governance, accountability, and transparency, effective monetary policy requires a sound bank regulatory system.

These observations raise significant concerns. Effective monetary policy requires sound bank regulation, which in turn requires a transparent, accountable, and independent bank regulatory authority to deflect short-term political pressures and focus on the public's long-term interests. However, governments have yet to be entirely successful at creating such regulatory authorities. Without further guidance on how to define sound bank regulation, assign clear mandates to bank regulatory authorities, and provide transparent accounting of their decisions and actions to the public, it remains unclear how countries will achieve sound bank regulation and effective monetary policy in the long term.

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### GENERAL DISCUSSION

PETER HENRY: Thank you, Ross. And thank you to all of our presenters. I'm going to use my privilege as chair to make a comment and then ask a question. The comment is a generalization of the data that Juan Pablo Nicolini showed us on the secular convergence of inflation in Latin America. That secular convergence of inflation extends far beyond Latin America. If you look at all emerging-market and developing economies, in 1994 their average inflation rate was on the order of 100% per year. And by 2018, it's in the low to mid-single digits. And to just connect that fact to Juan [Pablo]'s point about the potential to disinflate without output losses, an additional fact is that we observe a secular increase in the average growth rate of GDP across emerging-market and developing economies post-1994. Pre-1994, emerging market and developing economies were growing at roughly 3.5% per year. Post-1994 up until COVID, they were growing at 5.5% per year.

Now there are lots of other reforms that are going on at the same time, and Anusha Chari and I talk about all of this in our August 2021 *Journal of Economic Perspectives* article, but it's important to note that this Latin American phenomenon that you document is part of a more general set of phenomena across the emerging and developing world.<sup>1</sup>

My question for Ross, before I open it to the floor—and we'll take a bunch of questions and then let the presenters respond relates to your criticism of the lack of transparent regulatory targets. I'm just wondering, what is your view about the capital ratios for global systemically important banks, and do those ratios not count in your view as clear and transparent targets? So let's take a range of questions and then give Ross and others a chance to respond to the questions. Yes, Michael Bordo.

- MICHAEL BORDO: I have a question for the Argentinians on the panel. Twenty years ago, I wrote papers with Finn Kydland and Hugh Rockoff and Carlos Végh about the gold standard as a commitment mechanism to maintain stable monetary and fiscal policies, and Argentina was a big player in those papers. In the nineteenth century, the gold standard was a commitment mechanism, which did work pretty well, and it acted as a "*Good Housekeeping* seal of approval" in basically determining whether emerging markets could obtain foreign capital, which they needed for the development. And in the Argentine case, in the latter part of the nineteenth century, this actually worked. It worked up until the 1890 Barings crisis and then afterwards until World War I. And since then, it has not worked. So my question, and Emilio [Ocampo] sort of got at this, is: why did it stop working? Why has Argentina been such a problem?
- HENRY: Okay, Paola Sapienza is next and then—I asked the presenters to keep track of all these questions—so we're going to go to Paola Sapienza, Michael Boskin, and Sebastian Edwards, and then come back to the left side of the room. So please be brief with your questions.
- PAOLA SAPIENZA: I'm Paola Sapienza and I have a question for Ross. On central bank independence, the emphasis has always been on independence from government rather than independence from the banking system. However, we know that lack of independence from the banking system is a big issue in many countries, not only in developing countries, but even here in the United States. There is even a possibility that more government independence means less independence from the private sector. If central banks typically deal with monetary policy and regulation at the same time, do you think potential conflicts of interests arise?
- HENRY: Okay, Michael Boskin, Sebastian Edwards, and then we'll give the presenters a chance to respond.

MICHAEL BOSKIN: Thanks. Three real quick questions based on my own personal experience. First to Ross. When I was CEA [Council of Economic Advisers] chair, and I think John [Taylor] was still there, we considered during the S&L crisis restructuring regulation and consolidating the four regulatory agencies in the US. The Fed was violently opposed, saying they absolutely needed to maintain that authority to conduct monetary policy. Didn't work so well in 2008, apparently. But aside from that, I wasn't quite sure whether you're saying that you wanted to separate out bank supervision and regulation to another agency, or what. I wasn't exactly clear what your point was. Maybe you can clarify.

And on China, Larry Lau and I helped Zhu Rongji restructure the People's Bank to decentralize it along Fed lines, when Zhou Xiaochuan was governor of the People's Bank, and they seemed to be happy with that for a while, but that seems to have receded as everything's been recentralized in Beijing. But this got rid of the problem of the party telling the People's Shoe Factory of Tianjin to hire ten thousand more workers they didn't need and then forcing the banks to lend them the money to pay for it. So there is the question about what was going on in that centralization versus decentralization within the structure of the People's Bank.

And then on Argentina, I had an experience trying to help them with their price statistics, and then Mrs. Kirchner decided that she wanted to get rid of the statisticians. So, if you want to talk about the most fundamental structural thing, it might be useful to think about how you actually have an independent statistical agency as well as an independent central bank. And so, if you have any comments about that and any progress that could be made on that score, I'd appreciate it.

SEBASTIAN EDWARDS: Thank you. Great panel. I have two questions related, actually, to Milton Friedman and Latin America. Of course, Milton would have favored dollarization for Argentina. But apparently, right now it's off the table and it has been replaced by the 2% crawling peg that Emilio mentioned. We've seen this movie of the preannounced sliding devaluation many times before. And in Latin America we called it the "little table," *tablita*, because it announces the rate of exchange going forward. And every one of those experiments failed, and they failed big-time.

Now, Milton, in his volume *Money Mischief*, has a paper where he compares Chile and Israel, and he gives good grades to Israel because it did have an exit strategy from the tablita. I think it was Michael Bruno who was running the central bank in Israel at the time. So, the question is whether Argentina will have the right strategy to exit from that 2% crawling peg, and whether doing so will still maintain some kind of anchor and a declining inflationary expectation.

And the second question I have is also related to Milton. I was fascinated by Juan Pablo's four different eras, the four periods. The second period is of course the most awful one, and starts in '74. And my question is whether you think that the love affair between Argentina and indexation was in a way behind that. And Milton was in favor of indexation. He went to Brazil in the early 1970s and came back and wrote a number of papers. And in his podcast, or tapes at the time, he talked about indexation in a positive way. And so, the question is: what is Argentina doing about indexation? Once you have a fully indexed economy, it's very easy for the anchor to go away and for inflation to get out of hand.

- HENRY: So, Emilio, why don't you go first, then Juan Pablo, and we'll just work our way back to Ross.
- EMILIO OCAMPO: So first, the question about the price statistics. I'm not so worried about official price statistics now. Because given what happened with the Kirchners and the tampering with statistics, there's a whole bunch of private outfits that provide price information. So when the government starts tampering with official statistics, nobody pays attention to official statistics. So I'm not so worried. There's the billion-dollar project out of

MIT with Alberto Cavallo. And so we have very accurate price information now. And fortunately, the official agency that tracks prices right now is run very professionally. So the tampering, and that was a strategy, you know? We can reduce inflation by simply lying, but that strategy was very short lived. The people who were in charge are facing judicial prosecution. So I'm not terribly concerned about this issue at the moment.

HENRY: Juan Pablo.

JUAN PABLO NICOLINI: Regarding price statistics, I fully agree with Emilio. So why is Argentina a failed student? I am going to relate the immediate causes to the indexation question in the past for Sebastian. I don't think indexation was a problem. The problem was addiction to the fiscal deficit and printing money to finance it. That's the simple and sad history of Argentina. To elaborate on the deep causes, I will refer to the period of low and stable inflation that Argentina experienced in the early nineties. I will offer an interpretation of why Argentina didn't learn the lesson—to be more precise, why it abandoned a lesson it had learned.

During the nineties, Argentina had the lowest inflation in the region, even lower than in the US. The stabilization of inflation in 1991, following decades of high inflation, was achieved cold turkey, with a strong fiscal adjustment and a currency board that fixed the peso to the dollar with a 100% backing. It was extremely successful, and it was extremely popular—to the point that in 1998, when there was an election, the two main candidates started saying, "We're not going to touch the convertibility," as the rule to peg the peso to the dollar was called.

I have a picture of myself with a T-shirt from my alma mater in the northwest of Argentina beside a huge stone that depicted the name of the candidate for mayor in the four-thousand-person town I was going through. Below the candidate's name, the following large sentence read: "One peso equals one dollar," as convertibility was commonly known at the time. Argentinian society embraced the new regime in full force. But the whole experiment failed after a series of very large and negative shocks to emerging markets, and amidst a sense within Argentinians that, in spite of substantial fiscal efforts, it had not been helped by the IMF [International Monetary Fund]. I kind of partly share that sense. And that completely changed the mind of the median voter, who went in a completely different direction than the rest of the region. My sense is that if we could have survived that crisis—that was not easy, but if we could have done it—probably the Convertibility would still be alive today. The reason is that, as with the dollarization in Ecuador, nobody would even dare to remove it unless it was in the middle of chaos as it happened.

I believe that the crisis of 2002 made the median voter in Argentina go back to primary school. We'll see whether we've learned the lesson now. Is dollarization off the table? I don't know. I think that what they're doing now is trying to control the storm. And I haven't seen any sign of a formal plan for the future. They're just going day by day. It's like an alcoholic: one day at a time. HENRY: Zhiguo.

OCAMPO: Yeah, sorry, my apologies, because Michael asked a question before and I didn't say anything. But I think, very briefly, when we look at Argentina's history, whenever we look at the monetary regime, as you pointed out, Argentina had a very successful experience from 1900 until about 1930. Actually, most people here are not going to believe this. But you know, if you go back to 1910, right before the First World War, the Argentine peso was considered one of the strongest currencies in the world. So we had periods of stability. I mean, if we look at two hundred years of monetary history that go back to 1822, we had roughly between fifty and sixty years of price stability.

The interesting thing is the years of price stability that lasted for more than a couple of years, because it's very easy to get price stability for a couple of years and then go back to your old ways. We had full convertibility, either with gold or with the dollar. But you have to superimpose on the monetary regime another type of regime, which is the populist regime. And the populist regime is about, you know, going too crazy on fiscal profligacy and expanding public spending, etc. I mean, you cannot understand the story of Argentina and the inflation story of Argentina if you don't understand the populist story.

So we like to think about what we know about, which is the monetary thing, the macro thing, but there's something else going on. And that's populism that emerged in Argentina in 1945. And that was critical. And since then, there's no other country in the world that has embraced populism with such passion as Argentina, despite the horrendous results that populism delivered. And so now that would take us into sociology and psychology and all sorts of things that have nothing to do with this conference. So that's my two cents on your question.

HENRY: Okay, Zhiguo.

ZHIGUO HE: Let me be brief. I want to emphasize that in China, the regulatory and monetary policy aspects are distinct. The regulatory aspect falls under the purview of the China Banking and Insurance Regulatory Commission [CBIRC], which you might have heard of. However, separating these functions doesn't automatically guarantee transparency. In fact, the regulatory side is often more complicated and less transparent than the People's Bank of China [PBC]. This ties into my earlier discussion on centralization. Centralization is indeed occurring, with much of the power shifting from the PBC to the CBIRC. This shift allows for easier transmission of central orders through the regulatory line.

HENRY: Ross.

ROSS LEVINE: Yes, capital and liquidity regulations can be made explicit. However, the goal of bank supervision and regulation

is not to achieve a specific capital ratio; the goal is to achieve financial stability while still permitting an efficient allocation of credit. That goal is very vague. Therefore, it is difficult to know whether capital regulation, liquidity regulations, or any set of banking policies achieved those goals.

Also, bank supervisors have broad discretionary powers that are often exercised with a low degree of transparency. Therefore, we often do not know what bank supervisors are doing. This makes it difficult to evaluate the impact of their actions. On the independence of the supervisory agency from banks, I could not agree with you more, Paola. There are reasons to worry about whether bank supervisors work for us, the public. On responding to Michael about how to structure financial regulatory and supervisory agencies, I wrote a book with Jim Barth and Jerry Caprio titled *Guardians of Finance*. There, we pose the question: How can it be in a democratic society that we've allocated so much discretionary influence over the allocation of resources to an entity outside of the democratic process? In the book, we propose a solution. Today, I want to keep the focus on the question.

- HENRY: So we are technically over time, but since the last session ran over and we are still within an hour and fifteen minutes, I'm going to use the moderator's privilege to take three quick questions. Bob Hall, John Cochrane, and the person who's traveled the farthest to get to the conference, Amir Yaron. So please be quick and then we'll wrap it up.
- ROBERT HALL: This is Bob Hall. In the wrap-up of Latin American countries, it seems to me Chile didn't get full credit for its monetary system. Chile has a secondary stabilized currency, the Unidad de Fomento, defined to be enough Chilean pesos to buy the cost-of-living bundle. It's completely inflation-proof, and large volumes of transactions occur with it.

JOHN COCHRANE: This is primarily for Juan Pablo. You left an impression that all Latin America needed was for its central banks to wake up and say, "We should target 2% inflation," and that cured inflation. Your lovely *Monetary and Fiscal History of Latin America* book left a different impression. My stylized version of all history is that successful disinflations combine monetary, fiscal, and microeconomic reforms. I'm sure that's what you meant.

Related, for the panel, you left the impression that inflation in the COVID era came from central banks lowering interest rates. Well, we had zero interest rates for ten years, and that didn't set off inflation. Japan had zero rates for thirty years, and that didn't set off inflation. I'm sure you didn't mean to leave that impression either.

HENRY: Thank you, "Senator" Cochrane. Over to Amir.

AMIR YARON: Thank you, Peter. The premise that monetary policy is easy to evaluate, while supervision is really hard, is not so obvious. Admittedly, a fragile banking system would significantly harm the ability of monetary policy to function effectively. However, it's important to note that approximately 50% of central banks, such as those in Australia, Canada, and the ECB [European Central Bank], do not have bank-supervision responsibilities. Therefore, it's not necessarily a critical issue.

The tension often lies between stability, also known as prudential concerns, and conduct or competition, which is always a point of contention. The real value of supervision frequently stems from being closely connected to the central bank. This was evident in the UK, where supervision was moved out of the central bank before 2008 and then moved back in after the financial crisis. The key benefit is the exchange of information, including soft information, between the regulator and the banks.

Banks are different entities compared to others due to their leverage and other unique characteristics. When it comes to the sensitive issue of being the lender of last resort, it is crucial for central banks to have direct contact with banks, and this is where the close relationship becomes particularly valuable.

- HENRY: Okay, presenters, if you would like to respond, please do so in no more than a minute.
- NICOLINI: The Unidad de Fomento in Chile, you probably know much more, Sebastian, was done when inflation was high, and it's still used today. So, I mean, it's just essentially a way of indexing contracts of different types, and it worked really well.

On a different note, thanks, John. I never meant to suggest that these countries just read a book on inflation targeting and they started doing it. So, no, absolutely. The painful history of inflation in Latin America is explained exclusively by a systematic attempt of governments to spend above their means. To solve the problem, you need to eliminate chronic fiscal deficits. That fiscal consolidation happened starting in the middle of the 1980s and most countries kept it, and that's the reason why inflation is low now in the nine out of eleven. And lack of fiscal consolidation is the symptom evidencing that Argentina and Venezuela did not "learn the lesson."

HENRY: Zhiguo, Ross, anything?

LEVINE: I sincerely question the effectiveness of information between supervisors of financial institutions and those conducting monetary policy. In 2021, Amit Seru and I got into an argument over dinner. I said, "Inflation is running high. The reputation of the Fed is based on inflation. Therefore, they will tighten monetary policy." Amit said, "Oh, no. I've been doing all of this work on banking. If they raise rates, a large proportion of the banking system is going to have negative, or close to negative, net worth. They won't raise rates." Unfortunately, we were both right. And so there was not the sharing of information of the type that we both agreed would be helpful. In the US, the Fed's bank supervisory and regulatory apparatus does not seem to work well.

HENRY: So with that, let me just recognize that we are under the hourand-fifteen-minute Taylor rule. And please, join me in thanking the presenters.

#### Note

 Anusha Chari, Peter Blair Henry, and Hector Reyes, "The Baker Hypothesis: Stabilization, Structural Reforms, and Economic Growth," *Journal of Economic Perspectives* 35, no. 3 (Summer 2021): 83–108.

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# FINANCIAL REGULATION AND MONETARY POLICY

#### INTRODUCTORY REMARKS

Stephen Haber

So during the last panel, we started to have a discussion about the connections among financial regulation, bank supervision, and monetary policy. And so it seems only appropriate that now we're going to dig a bit more deeply on the connection between financial regulation and monetary policy. I'm Stephen Haber, and I'm chairing this panel. I'm delighted to be moderating the panel composed of my colleagues Amit Seru from Stanford University, Darrell Duffie from Stanford University, Christina Parajon Skinner from the University of Pennsylvania, and Carolyn Wilkins from the Bank of England. We're going to start with Amit. Each presenter will make some brief remarks and then we will throw discussion open to the floor.

## **IO** Too Many Rules and Too Much Discretion? Simplifying Financial Regulation

Amit Seru

In this chapter, I present what I think is the issue that financial regulation is trying to resolve and why it is difficult to achieve with complex rules. I hope to end the talk with a plea for simplifying financial regulation. Monetary policy, which is in the title of the session, obviously affects financial stability through many channels—for example, by impacting the value of the long-duration assets held by financial institutions or by impacting the credit risk held by various intermediaries.

The fundamental threat to financial stability, of course, comes from the fact that our banking system is highly leveraged. It is useful to calibrate what we mean by highly leveraged.

Figure 10.1 shows the distribution of leverage, measured by debt/assets (on the *y*-axis) across banks of different size (on the *x*-axis) in the financial system in the United States. As can be seen, a bank of pretty much any size has 90% debt in its capital structure. This figure implies that a small decline in asset values due, say, to higher rates in 2023 or credit risk in 2007 can make many institutions insolvent and threaten their financial stability. In turn, this creates an important constraint on monetary policy, as seen during the recent tightening and, similarly, by the need to keep the interest rates low during the Great Recession. Not surprisingly, policymakers have therefore tried to regulate and create many complex rules aimed toward getting financial stability, most aggressively since the

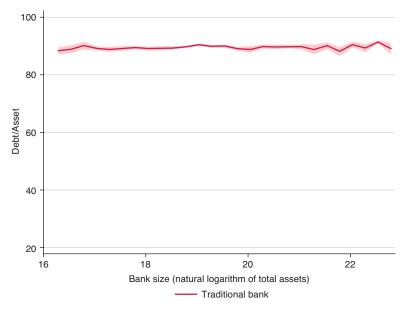


FIGURE 10.1. Debt-to-assets ratio (%) of US banks of different sizes. Source: Jiang et al. (2024a).

Great Recession. The question we can ask is whether we have been successful. To get some answers, let us revisit what happened over the last year in the banking sector.

The aggregate balance sheet of the banking system is shown in figure 10.2 as of 2022 Q1, just before the monetary tightening we saw. On the asset side, we have \$24 trillion in the banking system, spread across securities, loans, and so on. On the liability side, we have of course insured deposits of \$9 trillion, but then we have \$9 trillion of uninsured deposits and also \$2 trillion of equity capital.

As monetary tightening occurred over the remaining part of 2022 and early part of 2023, it is instructive to ask what might have happened to the banking system. As interest rates rose, the market value of long-duration assets fell. One can ask what the "mark-to-market" losses amounted to in the banking system. In work with my collaborators (Jiang et al. 2024b), we did this exercise



FIGURE 10.2. Aggregate balance sheet of US banks as of 2022 Q1 (in trillions of dollars).

Source: Jiang et al. (2024a).

using microdata across all the banks while considering the duration of different assets on the balance sheets of the banks. We called these mark-to-market losses "turbulence" in the banking system. It accounted for about \$2 trillion of unrealized losses in the banking system. Notably, \$2 trillion is an interesting number, because it effectively wipes out the equity in the system. In addition, what we found was that, unlike the stress in the banking system in 2007, which was about losses on illiquid assets (e.g., subprime mortgages), these losses were primarily about liquid securities. In fact, more than 60% of the turbulence was due to losses in liquid securities.

One might ask whether these losses are concentrated in only a few banks on the West Coast, such as Silicon Valley Bank (SVB) and First Republic. Figure 10.3 plots the distribution of markto-market losses in the system. As can be seen, the average of the distribution suggests that the losses experienced by an average bank in the system were large. The vertical line is where the unrealized losses of SVB were during the monetary tightening. SVB's losses were large, but there are several banks that had higher losses. The bottom line here is that the mark-to-market losses were large and spread across many banks.

If we focus on the liability side, uninsured leverage (defined as the ratio of uninsured debt to total assets for a financial institution)—an

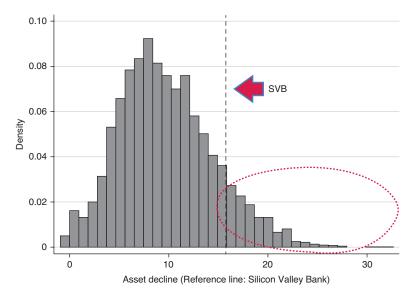


FIGURE 10.3. Distribution of unrealized losses in the banking system. Based on our analysis (as of the end of 2023 Q1), substantial unrealized mark-to-market losses may exist throughout the banking system. Source: Jiang et al. (2024b).

aspect that my collaborators and I were studying for some time (Jiang et al. 2024a)—is economically meaningful for understanding fragility in the banking system. Uninsured debt, as it is uninsured, gives the maximum incentive to run if there are losses or spookiness about a bank's health. We called the extent of uninsured leverage of a bank its flight risk. Recall from figure 10.2 that there were \$9 trillion of uninsured deposits in the system at the start of monetary tightening. It is unlikely that these deposits were sitting in one or two banks, as some commentators might have led one to believe.

Figure 10.4 illustrates the distribution of uninsured leverage across banks in the system. The vertical line here, again, is SVB. This figure shows that SVB was an outlier on this margin, but there were many other banks in the system in close proximity with pretty

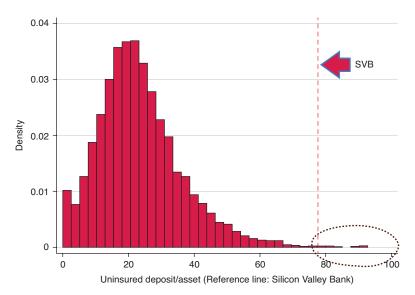


FIGURE 10.4. Distribution of uninsured leverage across US banks. Based on our analysis, SVB was an outlier in terms of its uninsured leverage, but quite a few other banks have uninsured leverage similar to SVB's. Source: Jiang et al. (2024b).

high uninsured leverage. In other words, there were many banks with high flight risk in the system.

In Jiang et al. (2024b), we combined turbulence with flight risk in the banking system and asked which banks might be susceptible to what we called a "solvency run." Unlike runs based on illiquid assets, such as in the Diamond-Dybvig model, these runs would be caused by loss of value of liquid assets. Which banks would be susceptible to such runs? We found that when (1) interest rates go up and, as a result, the market value of long-duration assets goes down (i.e., turbulence is high), (2) uninsured leverage is high (i.e., flight risk is high), and (3) there is not enough equity capital in the bank to absorb the losses, a bank would be susceptible to solvency runs. This equilibrium could emerge because enough uninsured depositors get spooked and run to the bank, forcing the bank to realize their unrealized losses by selling their assets to satisfy depositors.

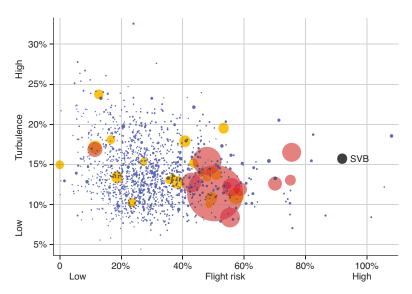


FIGURE 10.5. Turbulence (mark-to-market asset losses) versus flight risk (uninsured leverage): a plot of the full set of potentially insolvent banks. A bank is considered insolvent if the mark-to-market value of its assets—after paying all uninsured depositors—is insufficient to repay all insured deposits. The size of the dot represents the assets of the bank. Source: Jiang et al. (2024b).

The natural question is how many banks in the banking system were facing risk of solvency runs. Figure 10.5 presents the evidence. The figure puts turbulence (i.e., mark-to-market losses) on the *y*-axis (low to high) and flight risk (i.e., uninsured leverage) on the *x*-axis (low to high). It then plots the set of banks that might be potentially insolvent due to a solvency run. Each dot in the figure is a potentially insolvent bank, with the larger dots representing bigger banks. Insolvency is defined based on whether a bank can pay off insured deposits, given a certain proportion of uninsured run first. The largest insolvent dot plotted in the picture is a global systemically important bank (G-SIB) with more than a trillion dollars of assets. As can be seen, as with SVB, that bank is potentially insolvent when turbulence is high and flight risk is high. But it is not alone. There are many other potentially insolvent banks that face similar characteristics, that is, high turbulence and high flight risk.

Where was financial regulation in all this? Many rules and regulations were passed starting in 2007 in the hope of increasing financial stability. Have these rules worked in addressing the precarious situation we have found ourselves in? There have been two issues with the regulatory approach we have followed since 2007. First, many of the rules and regulations in the aftermath of the Great Recession were directed toward liquidity problems faced by intermediaries. And certainly, if one has a hammer in the toolkit, everything looks like a nail. Thus, even though the problem with the current situation in the banking system is about insolvent banks, policymakers diagnosed them as facing liquidity problems. Misdiagnosis of the problem has meant that policy responses have been misdirected. There have been several liquidity injections to banks, but banks have kept failing, and there is continued stress in the system. This is despite the government having effectively backstopped all uninsured depositors.

The second issue is that when responsibilities are fragmented across many regulators—as in the United States and everywhere in the world—regulatory discretion can interact with incentives of different regulators to create sluggishness in regulatory responses.

So the first question is whether there is a lot of discretion in the system when it comes to supervision and regulation.

Financial stability in the banking system is regulated through CAMELS ratings that are given to banks. The components, C (for capital adequacy), A (for asset quality), M (for management quality), E (for earnings quality), L (for liquidity quality), and S (for sensitivity toward risk), are each measured between 1 and 5, with a higher score indicating worse bank health on that margin. Clearly, some components (like M) have a lot more discretion in terms of measurement by regulators. The composite CAMELS ratings—also between 1 and 5—drive regulatory policy decisions from the deposit insurance a bank has to pay to whether banks are allowed to expand.

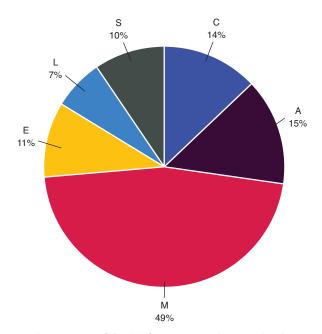


FIGURE 10.6. Discretion in CAMELS ratings: weight on each subcomponent in the composite CAMELS rating. Source: Agarwal et al. (2024).

And so how do we know there is a lot of discretion? Figure 10.6 shows results from a recent study (Agarwal et al. 2024) where we identify how much each component contributes to the overall CAMELS score. As can be seen, half of the variation in the overall score is driven by the management quality component. This implies that there is a lot of discretion in how supervisory ratings are measured—and therefore how regulatory responses are devised.

So, one could ask: but does this discretion, which is quite a bit, really matter? There are many ways to look at it, but I'll give two. One is that lots of banks in the US system are regulated in tandem by state and federal regulators. This dual regulatory system exists for various reasons we can get into, but for the purpose of the analysis I will show you, the advantage one has is that for a given bank, at virtually the

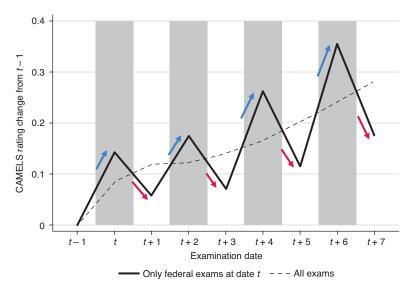


FIGURE 10.7. Does discretion matter? The figure plots CAMELS rating changes between consecutive exams that a state-chartered bank faces as it is supervised by a state regulator (white vertical bars) or a federal regulator (gray vertical bars). Notes: A lower CAMELS score reflects a more lax score. Based on our analysis, banks such as SVB (and First Republic), which are supervised under dual regulators in rotation, face potentially inconsistent enforcement of regulation.

Source: Agarwal et al. (2014).

same time you can get a rating from both the state and the Federal Reserve, which you can then compare. And what do we find?

Figure 10.7 shows the findings most simply. What I will show is CAMELS ratings for a vast majority of banks that are state chartered—that is, they are regulated by state and federal regulators supervising them in rotation. One can then evaluate CAMELS given to the same bank at virtually the same time by state versus federal regulators. This figure plots CAMELS on the *y*-axis and regulatory spells on the *x*-axis. The state spells are represented by white vertical bars and federal spells for the same bank by gray vertical bars. As can be seen, state spells see CAMELS being lowered, while federal spells see CAMELS being increased. In other words, state regulators are more lax than federal ones. Moreover, we find

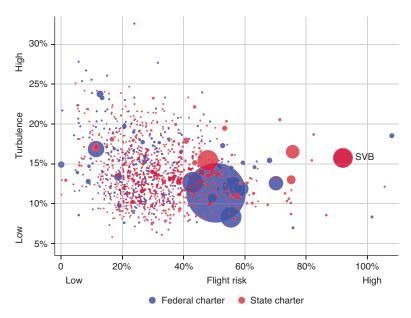


FIGURE 10.8. Turbulence (unrealized losses) versus flight risk (uninsured leverage) with fragmented regulators.

Notes: This figure reproduces figure 10.5, adding whether insolvent banks are state or federally chartered. State-chartered banks are supervised by state and federal regulators in rotation.

Source: Jiang et al. (2024b).

that state regulators are more lax and exercise more forbearance when a local economy is weak. And the seesaw pattern ends up creating sluggishness in the overall regulatory response.

There is another way to see that this regulatory discretion matters. Figure 10.8 reproduces figure 10.5 where we plotted insolvency in the system. What is being shown in this plot is whether the banks were supervised under the rotation system described in figure 10.7. The red dots here, including SVB, are all banks that are state chartered. You can see that most of the insolvent banks in the system faced a state and a federal regulator supervising them in rotation. As I noted before, this system is prone to sluggishness,

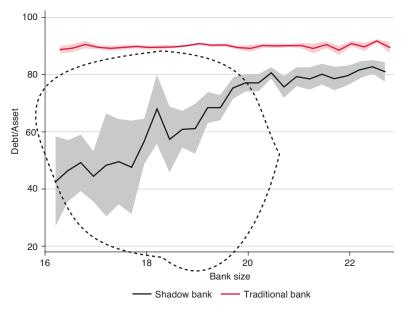


FIGURE 10.9. Debt-to-assets ratio of US banks and shadow banks (nondepository institutions) of different sizes (in natural logarithm of total assets). Note: Shadow banks uniformly, but especially for small and midsize banks, have a much lower debt-to-assets ratio while originating similar risk as traditional banks. Source: Jiang et al. (2024a).

and it is not surprising that we ended up with so many banks in the system being insolvent and yet regulators did not act.

So, can one simplify regulation instead of having too many rules and all this discretion? Recall that the issue of financial stability arises because banks are very highly leveraged. One way to address this simply is to ask how the market funds risk of the type that banks originate.

A natural laboratory in which to see this is to focus on shadow banks—non-deposit-taking institutions—and ask how they finance themselves. These institutions are now a large player in many markets where they perform activities similar to those of a bank. To illustrate this, figure 10.9 plots all the banks and shadow banks operating in the mortgage market. What kind of capital structure do they have when performing these activities? As one can see, these institutions have substantially lower leverage than banks. In other words, these institutions finance risk they originate (like banks) with more equity. The gap between the equity of banks and that of shadow banks is largest when one focuses on small-to-midsize banks. Interestingly, this size distribution of banks is also a major part of the regional banking crisis.

As noted before, more equity would prevent solvency runs in a bank. It would also prevent other types of runs. A natural question, then, is that if that's the case, why haven't we yet asked banks to raise more equity?

One common narrative against such a policy is the rhetoric that it would lead to a decline in bank lending. This same narrative that is making the rounds as the Basel III Endgame is being debated in the US. The question then is whether this narrative holds any water. To answer this, note that the intermediation sector has changed dramatically over the last decade and a half in two important ways. First, banks now not only do balance sheets, but they also originate and distribute (OTD), especially if their balance sheet is constrained (Buchak et al. 2024a). So that means banks' overall lending activities cannot be captured by just focusing on bank balance sheets. Second, shadow banks or private credit can increasingly serve as substitutes if banks cannot provide credit (Buchak et al. 2024a). As we already know, these entities perform the same lending activities as banks but operate with much higher equity in their capital structure.

We put banks and shadow banks together, modeled the competition between them, and asked what the equilibrium mortgage lending might look like if capital requirements went up. Figure 10.10 illustrates the results of the counterfactual experiment, with the *x*-axis plotting capital requirements and the *y*-axis plotting change in overall lending. Thus, if one starts with the baseline capital requirement in the banking sector and then raises capital requirements, a few things happen.

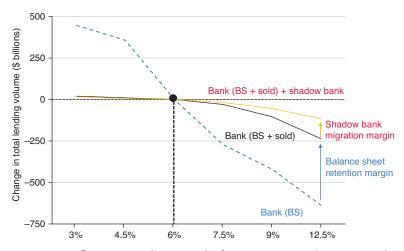


FIGURE 10.10. Impact on total mortgage lending in response to changing capital requirements: change in total lending volume in billions of dollars (*y*-axis) relative to a baseline scenario plotted against capital ratio requirements (*x*-axis). The baseline scenario starts at the capital ratio of 6%. Bank (BS) indicates balance sheet lending by traditional banks. Bank (BS + sold) indicates total lending done by traditional banks that includes both their balance sheet lending and the loans they sell. Bank (BS + sold) + shadow bank indicates total lending by traditional banks.

Source: Buchak et al. (2024a).

First, as you would expect, the balance sheet does get constrained. Since we make lending on a balance sheet expensive, the lending on a bank balance sheet falls. That's not all banks do when it comes to lending. When you add on top of that what banks do in terms of OTD, the total lending done by banks does not fall by as much. In other words, the ability of banks to do OTD dampens the drop in the lending they do. But that's not all. We also have shadow banks, and some of the lending activity migrates to shadow banks. Together, one can see that raising capital requirements by a lot barely changes overall lending activity.

What I have showed is in the mortgage sector, and one can ask: what about other sectors? It turns out that the trend that

bank balance sheet lending is becoming less important, and OTD by banks as well as shadow bank/private credit is becoming more important, exists beyond just the mortgage market. Buchak et al. (2024b) show that when one models these changes, the equilibrium changes in aggregate lending in response to an increase in capital requirements look similar to what we saw earlier in the mortgage market.

To conclude, we have a way to keep regulation geared toward financial stability simple. Banks need to have substantially higher equity. We know they can provide banking services with this change. A substantial private market/shadow banking sector already does so.

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# Liquidity Rules Have Increased the Minimum Size of the Fed's Balance Sheet

Darrell Duffie

I want to talk about some new research with Adam Copeland at the Federal Reserve Bank of New York and Yilin Yang, who was in our doctoral program and is now in Hong Kong. This is about how postcrisis financial regulations have increased the minimum size of the Federal Reserve balance sheet, which is clearly an issue related to monetary policy and financial regulation, our topic for today.

I'm sure that almost everyone in the room has noticed that this week the Federal Open Market Committee [FOMC] decided to slow down the reduction of its balance sheet. That might seem a little surprising, right? You thought the job of controlling inflation was not finished yet. Maybe we shouldn't be providing that kind of accommodation—having a large Fed balance sheet. But this is not about monetary policy accommodation, based on assets owned by the Fed. It's rather that the Federal Reserve learned back in 2019 that banks need a certain amount of cash held at the Fed to run their part of the financial system. And if they don't have that cash, bad things can happen in terms of funding markets. Let me explain more carefully what I just said.

You can think, as a metaphor for reducing its balance sheet, of the Fed landing a big airplane onto a runway. But it's foggy and the Fed is not exactly sure how far down it is to the runway. It wants to

This chapter is taken from the transcript of spoken remarks at the conference and retains the character of live speech.

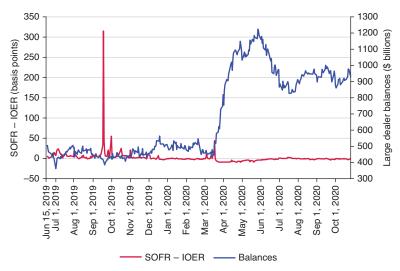


FIGURE 11.1. The risk of a liquidity crunch is higher when the reserve balances of the largest dealers are lower.

Source: Adam Copeland, Darrell Duffie, and Yilin Yang, "Reserves Were Not So Ample After All," Federal Reserve Bank of New York Staff Report Number 974, revised, June 2024, forthcoming, *Quarterly Journal of Economics*. © 2024 Federal Reserve Bank of New York. Content from the New York Fed subject to the Terms of Use at newyorkfed.org.

land very carefully. When it last landed, in September 2019, there was a big bump because the Fed landed very quickly. Funding markets were not able to cope with having such a low amount of cash held by banks at the Fed. So, this time around, as part of its FOMC announcement this week, they want to start earlier and go slower with their landing. They are going to land on a longer runway—and more slowly—so that they don't bounce on the runway. I'll take a minute to explain the chart (figure 11.1) showing the bounce that happened last time. On the left-hand vertical axis is the spread between the most important interest rate negotiated in funding markets, called SOFR—the Secured Overnight Financing Rate—and the interest rate paid by the Fed on bank balances. That spread is used as a gauge of the tightness of reserve balances of the ten most active dealer banks that are providing funding in wholesale markets.

#### Liquidity Rules

The FOMC also mentioned this week that it wants to reduce its balance sheet more slowly because it wants to make sure that reserve balances are being held in the right places in the financial system. Funding markets are basically intermediated by these ten largest dealer banks. Now let's take a look at what happened as the Fed's balance sheet declined beginning around 2018. Eventually, balances held at these ten largest banks reached a low point in September 2019, at which time we can see the big spike in funding market spreads. Basically, funding markets could not deal with that low a level of balances. In fact, intraday spreads jumped to one thousand basis points in the interdealer market. This was quite a disruption! Actually, there are a lot of other little bumps in the red line that don't seem very noticeable in this chart, but are considered very large disruptions in funding markets. Those bumps continued until the COVID-19 shock of March 2020. As a by-product of the COVID shock, the Fed had to buy an enormous number of Treasuries, which pumped up reserve balances at the dealer banks, at which point these bumps in funding spreads stopped. There have been no serious disruptions in funding markets ever since, because there have been abundant reserves.

Now, as the Fed is again bringing down its balance sheet and reducing the amount of reserves in the system, it wants to do that very carefully. Please now focus on figure 11.2, which illustrates the major part of the story. How those funds are distributed in the banking system matters, as the Fed has said. On the horizontal axis are the opening-of-day balances of the next ninety largest banks in the system. Remember, the top ten are the largest ten banks intermediating wholesale funding markets. The vertical axis shows how late in the day those ten critical dealer banks have received the first half of their daily incoming payments. You can see a clear relationship. When the other ninety banks have low balances, the critical ten dealer banks are getting paid later in the day. The  $R^2$  for this relationship is about 69%. And if you have good color

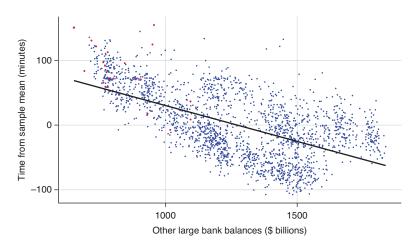


FIGURE 11.2. When reserves are lower, the largest dealer banks receive payments later in the day.

Source: Copeland, Duffie, and Yang, "Reserves." © 2024 Federal Reserve Bank of New York. Content from the New York Fed subject to the Terms of Use at newyorkfed.org.

sight, you'll see red dots up in the left corner of this scatterplot. Those are the days on which Treasury repo market disruptions were greatest. Treasury repos make up a \$4 trillion-a-day market. The spread between repos and the interest rate paid by the Fed on balances skyrocketed on the red-dotted days. Notice they're clustered up on the top left, and the top leftmost red dot is that day in September 2019 when funding rates skyrocketed. To further establish the relationships among funding spreads, opening-of-day reserve balances, and the lateness of payments to our ten big dealer banks, our paper uses quantile regressions and probit analysis to analyze when the system had insufficient balances—that is, when these ten dealer banks are getting paid too late in the day. In reaction, they provide funding to others at excessively high rates.

To illustrate this, let me run a little experiment. Suppose you all have ten plastic poker chips and I give you each a list of ten other people in the room to whom you must pay fifty poker chips today. So, you must pay out five times as much as your initial stash of poker chips. You might ask, "How would I do that?" Well, others

are paying you poker chips during the day, so if you wait long enough, you'll eventually have enough poker chips to pay the other folks all fifty chips. But if everybody waits, that's a problem, because nobody would then get their chips until everybody else pays their chips. I think you all have the correct mental image. Now in the middle of this, Steve Davis-over here-calls John Cochraneover there-in the morning, and says, "John, I want to borrow some money in the repo market. I'm really in need of funding." Today, however, John, you actually start the day with only five chips. So, John thinks, "Whoa, normally I have ten. Today my balances are only five. Steve's calling me for funding. I'm probably not going to get very many chips until later in the day because everybody else may also have fewer-than-normal chips and may be paying me late. So, I'm going to give Steve a very high quote for the interest rate on his funding. Steve's going to be very disappointed. He might not even like the idea of borrowing money at this high rate."

With this, I think you may all have a mental image of why having enough chips spread around the room—a metaphor for banks having enough cash held at the Fed—is critical for running the financial system. Not only do you all need to make payments to each other, but a critical ten of you, like John, are being asked to provide wholesale funding to markets.

Okay, so why don't we just find out what's the minimum level of chips in the system to make this work? That's basically where the Fed is now—finding its way down as it lands this plane. The Fed wants to feel its way down to the minimum level of reserve balances that does not lead to big bumps in funding markets, but this is an instrument-landing situation, where it would be nice to have an additional instrument. That's what I'm going to be showing you next. The elevation of the runway in this metaphor is uncertain because the structure of the financial system is changing all the time. Financial regulations are changing. For example, the Basel III Endgame is going to change the minimum capital requirements of big banks. Last year at this Hoover conference we discussed the fact that the Fed may need to increase the amount of liquidity that banks are required to have in order to meet the demands of uninsured depositors in a bank run. And I suggested how this can be mitigated by prepositioning collateral at the Fed's discount window so that banks won't have to rely so much on reserves.

There are other changes in the financial system over time. It's difficult to know the minimum level of reserves. Again, that's why the Fed is now slowing down the pace of reductions in its balance sheet. There are some costs associated with a large balance sheet. These have been pointed out to me many times, for example by Bill Nelson and Charlie Plosser, who are here today and have written effectively on the costs of a large Fed balance sheet, which raises the volatility of the Fed's income and causes the Fed to have a larger footprint in money markets. On the other hand, if there are not enough balances in the system, we can get the funding market disruptions that I have described. The Fed's reputation for being in control of the situation can be reduced. There are also financial stability concerns: maybe Steve Davis really needed that funding from John Cochrane to roll over his obligations today—he might go belly-up. These stresses can be serious. The Fed can't really afford to take big chances. I think that explains why the FOMC made the decision that it made this week.

So, what about an extra early-warning sign? If you don't know exactly how far down it is to the runway and you are in the fog, maybe you need another instrument. In our latest results, we show that you could look back over the last ten days and monitor how late in the day these dealer banks—like John Cochrane in my experiment today—are getting their funding. If they are getting paid later and later in the day, you can guess that they're going to be reluctant to lend money at normal, competitive rates and that there is going to be some market disruption.

On the horizontal axis of figure 11.3 is the calendar date. On the vertical axis is the time of day by which those ten big active dealer



FIGURE 11.3. Later payments to the dealer banks signaled a likelihood of a liquidity crunch in September 2019.

banks have received half of their incoming payments, relative to normal. So, one hundred on this scale means one hundred minutes later than normal. Getting paid one hundred minutes late is a warning sign that the Fed should stop reducing its balance sheet. The first vertical line on the chart is that day in September 2019 on which funding rates skyrocketed by hundreds of basis points. You can see from the trend in the lateness of payments to the dealer banks that this situation was building. Maybe if we had done our research earlier the Fed might have seen this as an early warning sign. Our paper provides quantile regressions showing that the lagged ten-day payment delay, that time of day by which John and the other nine dealer banks are getting paid half of their incoming balances, is useful information. When that time of day is late, say, more than fifty minutes later than normal, one would want to stop reducing the amount of cash balances that are available to the banks-or suffer some of the costs I have mentioned.

Source: Copeland, Duffie, and Yang, "Reserves." © 2024 Federal Reserve Bank of New York. Content from the New York Fed subject to the Terms of Use at newyorkfed.org.

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### **12** Can Fed Supervision Be "Independent" under US Law?

Christina Parajon Skinner

It is no exaggeration to say that all central banking policymakers and academic experts are well versed in the tenets of central bank independence.<sup>1</sup> Economists long ago discerned that politicians, acting in their near-term interests for popularity and reelection, have strong incentives to pressure central bank decision makers to assert accommodative monetary policy (formerly, low interest rates; in the future, this could include quantitative easing programs). Equally, it could be observed that running accommodative monetary policy for political reasons, and in the absence of economic data indicating for it, generally leads to inflation. Accordingly, the short-term interests of politicians (usually in the executive branch) are not aligned with the medium- and longer-term interests of society more broadly.<sup>2</sup>

Widespread acknowledgment of this incentive mismatch led to the global embrace of "central bank independence." Throughout the 1990s and early 2000s, the canon of central bank independence (CBI) developed into a norm against executive branch meddling in central bank policymaking, either formally (as in the UK, where the law changed to establish the Bank of England's operational independence for monetary policy) or informally, by reducing incidence of Treasury or presidential pressure on the central bank (as had previously been the case in the United States).<sup>3</sup>

Although central bank independence thus became a norm that was globally shared, technically speaking, whether a given central bank is, in fact, "independent" from its government still has a distinct legal meaning.<sup>4</sup> In some jurisdictions, central bank independence in law simply refers to the fact that the central bank has been given a statutory mandate for price stability, implying that the central bank should have operational freedom to make the requisite policy choices. But CBI does not necessarily preclude the government from having a say in the overall trajectory or goals of monetary policy. This is the setup in the UK.<sup>5</sup>

In other jurisdictions, such as the European Union (EU), central bank independence has constitutional status; the Treaty on the Functioning of the European Union is explicit that neither the EU institutions (i.e., the European Commission, the European Parliament) nor member states' governments should "seek to influence" or give directions to the European Central Bank (ECB).<sup>6</sup>

In the United States, the Federal Reserve's independence has never been expressly established in the Federal Reserve Act, but Congress did offer the members of the Fed Board protections that are typically conferred on other non-executive branch agencies performing "quasi-legislative tasks."<sup>7</sup> In particular, members of the Board of Governors are given long fourteen-year terms, and they are also protected from removal from office. The Federal Reserve Act provides that the governors shall be entitled to serve out their term in office "unless sooner removed for cause by the President."<sup>8</sup> Although Congress never defined what constitutes a valid "cause" for removal, over the years legal experts have tended to assume a meaning roughly equivalent to the one afforded many other independent agencies—that is, "inefficiency," "neglect," or "malfeasance" in office. In turn, a consensus developed that none of these terms encompasses policy disagreements with the president.<sup>9</sup>

Reflecting on the rationale for central bank independence, and on the national differences in legal structures that have conferred on central banks their formal independence, raises important but unanswered questions about the universality of the version of CBI that has heretofore been assumed. First, as a matter of policy optimality, should central bank independence extend to all of the functions a central bank performs—and specifically, does central bank independence extend to central bank *supervision of the banking sector*? Second, does US law support independent Fed supervision?

## The Rationale for CBI in Monetary Policy versus Fed Supervision

Since the Global Financial Crisis, major central banks around the world have acquired new—or at least supercharged—supervisory powers. In some cases, central banks acquired new supervisory units or mandates altogether. In the UK, banking supervision was transferred back to the Bank of England, with the creation of the Prudential Regulation Authority (PRA) in 2012 (which commenced operation in 2013).<sup>10</sup> In Europe, the ECB was given new pan-European supervisory tasks as the Single Supervisory Mechanism (SSM) was created in 2013.<sup>11</sup>

The Fed, for its part, had always been a microprudential supervisor (with the task primarily carried out by the regional reserve banks) and, since the 1990s, the Board had been acting as the "consolidated" supervisor (the banking agency with a bird's-eye view) for bank and financial holding companies.<sup>12</sup> But after the Financial Crisis, the Fed assumed newly expanded "macroprudential" responsibilities. These included, among others, designing heightened prudential and supervisory requirements for the largest, systemically important banks; conducting supervisory stress testing on the banking system as a whole; and assuming supervision over a new category of nonbank financial institutions that are designated as systemically important by the Financial Stability Oversight Council (FSOC).<sup>13</sup> And in general, the Fed widened its supervisory field of vision considerably by assuming a new mandate not only for bank "safety and soundness" but also for "financial stability" more generally.<sup>14</sup>

Inasmuch as central bankers have expanded their roles, so, too, have they extended their thinking about central bank independence. In particular, as central bankers began to use their new supervisory tools, they also asserted the need to operate them independently from political pressure. Global central banking authorities, such as the International Monetary Fund (IMF) and Bank for International Settlements (BIS), seem to suggest that independent central bank supervision should be the new norm in every jurisdiction. IMF research, for example, has suggested that "good" and "effective" supervision requires "operational independence to carry out their tasks free of outside pressures."<sup>15</sup> In a similar spirit, the general manager of the BIS, Agustín Carstens, claims that "banking supervision needs to up its game ... [and to] do this supervisors will need to have operational independence."<sup>16</sup>

Recently, those views have been echoed by members of the Federal Reserve Board. The current chair of the Board, Jerome Powell, stated publicly in 2023 that "in the area of bank regulation, too, the Fed has a degree of independence, as do the other federal bank regulators. Independence in this area helps ensure that the public can be confident that our supervisory decisions are not influenced by political considerations."<sup>17</sup> Other members of the current Fed Board have expressed a similar view at various points in time.<sup>18</sup> But this notion that central bank independence has automatically extended to the Fed's banking supervisory role has not always been assumed. Fed Chair Ben Bernanke, for example, was explicit in his view that "independence afforded central banks for the making of monetary policy...should not be presumed to extend without qualification to its nonmonetary functions," such as "oversight of the banking system."<sup>19</sup> Most certainly, Milton Friedman's concerns about the democratic deficit inherent in CBI would have been exacerbated by the notion of independent central banking supervision.<sup>20</sup>

Indeed, these more recent assumptions about "CBI-S," as I have referred to it in another setting, may prove too much—at least in the

US case. As a matter of policy optimality and democratic legitimacy, should Fed supervision be "free from governmental tinkering," as Friedman once said?<sup>21</sup> There are at least three critical differences between monetary policy and supervision that bear on that key question.

For one, as will be elaborated on below, supervision is a coercive power of the state; monetary policy is not. Supervision entails mandatory information gathering and examination and comes with the threat of punishment. Importantly, the pace and rigor of supervision—and the regulations for which the supervisor examines banks' compliance tend to reflect back on the flow and price of credit in a community and can affect market structure broadly. There are, as such, important implications for economic policy that follow from supervisory policy and practice, which arguably require political accountability.

And in point of fact, since the Fed acquired expanded supervisory authority in 2010, its supervisory policies have generally tracked the administration's goals—first, to ramp up heightened regulation for large financial institutions and risks outside of the banking sector; then, for tailoring that postcrisis regime; and most recently, during the Biden administration, for issues such as climate risks on bank balance sheets. This trend probably reflects the inherently political nature of supervision, but if that is to be the case, accountability to the political branches—including the president should not be lacking. Monetary policy, in contrast, tends to be worse off with greater presidential involvement, as discussed above, and so the case that those decisions should be subject to the indirect input of the voters—or that greater presidential involvement is required as a matter of democratic legitimacy—is much weaker.<sup>22</sup>

Second, the Fed's mandates for "safety and soundness" and, even more so, its assumed responsibility to pursue "financial stability" confer a tremendous amount of discretion to engage in policy entrepreneurship. One recent example involves the creation of supervisory committees to scope climate risk in banks and the banking system

and the pilot of a new scenario analysis to probe climate risk in banks. The Fed, unlike the Bank of England or the ECB, does not have an explicit mandate to pursue climate- or sustainability-related goals. However, it has utilized the ambiguity within its supervisory mandates to creatively interpret certain provisions, thereby incorporating the mitigation of climate-related financial risk as an implicit supervisory objective.<sup>23</sup> It is much harder for the Fed to expand the ambit of its monetary policy mandate, because the pursuit of price stability has a concrete target, and the failure or success of a given sequence of decisions in pursuit of that target is clearly observable to the public. Perhaps for those reasons, the Fed Board seems far less willing to push the boundaries of its monetary policy mandate than those of its supervisory one.<sup>24</sup> Again, this difference suggests that whereas an independent monetary policy function does not-arguably could not-lead to ultra vires experimentation for "independent" supervision, this seems not to be nearly as taboo.

Third, supervisory and regulatory standards have been made to align with global standards set at Basel, but that global standardsetting process has no democratic accountability. The Basel Committee on Banking Supervision is a soft-law, informal international organization—meaning it is not a treaty-based institution and technically produces nonbinding supervisory and regulatory standards. Notwithstanding the fact that Basel is merely a group of central bankers and bank supervisors who have no formal authority to agree on law that binds their domestic jurisdictions, in practice the standards set at Basel almost always find their way into US supervisory law and lore.<sup>25</sup> And the US Congress has no input or involvement in the Basel process. The influence of Basel over US supervisory policy and practice thus arguably demands political accountability, not independence. There is nothing remotely equivalent to Basel in the realm of monetary policy.

This is not to say that independent central bank supervision is unsuitable for every jurisdiction. However, in the United States, a policy case based on the fundamental rationale for central bank independence—the time-inconsistency problem—is not entirely clear. Even if it were, the requirements of democratic legitimacy make a fully independent Fed supervisory function difficult to achieve.

#### What US Law Says about Independent Fed Supervision

Setting the rationale for independent Fed supervision to one side, a separate—perhaps antecedent—question is whether US law would allow it. Certainly, in some jurisdictions, such as the ECB, the law is relatively clear that supervision should be independent from political direction.<sup>26</sup> Right now, however, in the United States there is a tension between statutory law on Fed supervision and the constitutional law surrounding agency independence.

As alluded to above, one of the ways that Congress has historically tried to insulate agencies from presidential interference—that is, make them "independent"—has been to give the leaders of the agency protection from removal. Congress has done just that for the members of the Board of Governors. But the Dodd-Frank Act introduced a conundrum when it comes to independence, removal, and the Fed's new supervisory role. That statute created a new position among the Board of Governors—that of the vice chair for supervision (VCS).<sup>27</sup> The job of the VCS is to set the overall supervisory agenda and ultimately recommend what policy course of action should be taken with regard to supervision and regulation.

If Fed supervision were to be treated as truly independent in the way that monetary policy is, then one would necessarily assume that removal from the role of VCS would be protected by the Federal Reserve Act's "for cause" language, just like removal from the Board is. But that conclusion seems constitutionally unsupported.

The president has the constitutional authority to "take care" that the law made by Congress is executed (i.e., implemented and enforced).<sup>28</sup>

He also has the constitutional responsibility to appoint those officers who will lead the administrative agencies that support him in this work.<sup>29</sup> In order to effectively supervise his agents, the president is likewise constitutionally permitted to remove those officers at will.

Indeed, as the Supreme Court clarified only recently, in the case of *Seila Law v. CFPB*, "the President's removal power is the rule, not the exception."<sup>30</sup> Renowned scholars of constitutional and administrative law recognize that "on both originalist and non-originalist grounds, there are reasonable arguments in favor of the view that, as a matter of constitutional right, the President must have substantial ability to remove and supervise all those who execute federal law."<sup>31</sup> In *Seila Law*, the court recognized only two exceptions to this rule: one, for groups of "principal officers," much like a commission; and two, for officers who have only "limited duties and no policymaking or administrative authority."<sup>32</sup> Neither of those exceptions applies in the case of Fed supervision as spearheaded by a VCS.

With regard to the first exception, so long as the VCS has agendasetting power and the chair defers to the VCS's decisions (at least in the first instance), then this exception would seem not to apply at the Fed. A separate question, beyond the scope of this chapter, is whether the performance of significant supervisory duties across the Fed Board would be any better, as it might dilute the rationale for the Fed's independence overall.<sup>33</sup> With respect to the second exception, the VCS obviously does more than administrative work. As Peter Conti-Brown and Simon Johnson note, the VCS enjoys "the broadest grant of authority to an individual in the Federal Reserve Act—greater than even the explicit authority given to the Fed Chair" and can "set the tone for the Fed's entire regulatory apparatus."<sup>34</sup>

Two further constitutional precepts call into question the constitutional legitimacy of Dodd-Frank's seeming intention to establish the VCS as the head of an independent supervisory agency within the Fed. For one, the court in *Seila Law* also reminded us that no officer exercising executive power can be shielded from presidential

removal. The Supreme Court cited as hallmarks of executive power an agency's ability to create rules, otherwise restrict business activity, and impose monetary penalties. The VCS, when wielding the Fed's supervisory toolkit, has that same authority. On the front end, supervision involves the state's imposition of requirements for otherwise confidential and proprietary information on banks and asserts the state's entry, for examination, in the institution. On the back end, the output of supervision ranges from the moral suasion of the "Dear CEO" letter to informal agreements by which the bank consents to implementing the supervisors' required changes, to more formal consequences such as fines or consent decrees. Monetary policy, of course, is a completely different kind of policy action. The effects of interest rate policy are dispersed upon the economy as a whole; they are not targeted at any person or institution. They do not compel action, impose punishment, or prohibit activity. Accordingly, it is nearly impossible to argue that the Fed's supervisory function, as de facto led by the VCS, can be entitled to independence in the form of protection from removal.

The second point to bear in mind is that, for the Fed, the rationale for independence is equal parts law and economics. The discussion above set out the economic rationale, grounded in the time-inconsistency problem. But also, in the US case, independent monetary policymaking is constitutionally compelled. The power to "coin money" and "regulate" its value is assigned exclusively to Congress in Article I, Section 8 of the Constitution. Beyond peradventure, the framers and ratifiers of the Constitution were careful and intentional about vesting these monetary powers with Congress and keeping them isolated from the president's reach.<sup>35</sup> Accordingly, when Congress delegated this power to the Fed, the Fed become the paradigm of a "quasi-legislative" agency that merits its independence from the president.<sup>36</sup> Supervision, on the other hand, does not follow from a legislative power; again, it is precisely the opposite—a direct effort to implement and enforce the law.

## Conclusion

In summary, the US Constitution is uncomfortable with an independent Fed supervision function. Are there possible structural solutions to the disconnect between Congress's vision in the Dodd-Frank Act for strong and independent supervision and the constitutional limits on Congress's ability to confer on an agency a wide berth from the president? One solution would be to eliminate the role of the vice chair for supervision. However, in order to preserve the Fed Board's independence for monetary policymaking, which could still be polluted by a muscular supervisory arm, some structural separation between Board members engaged in supervisory work and those involved in monetary policy work might be advisable—along the Bank of England model.

If, on the other hand, the VCS role has important policymaking and governance value and should therefore be preserved, future governments could simply observe that the "for cause" protection in the Federal Reserve Act does not apply to the VCS role—and the public should understand that adopting a convention of "at will" removal for the VCS would not affront the Fed's bona fide independence.

#### Notes

- This chapter is adapted from a longer law journal article entitled "The Independence of Central Bank Supervision." That draft of the article, which was presented at the 2024 Hoover Monetary Policy Conference, is available at https://www.hoover.org/sites/default/files/2024-04 /Parajon%20Skinner\_Independence%20of%20Central%20Bank%20 Supervision\_Hoover.pdf.
- This theory is generally known as the time-inconsistency problem and was first articulated by economists Finn Kydland and Edward Prescott. See Finn E. Kydland and Edward C. Prescott, "Rules Rather Than Discretion: The Inconsistency of Optimal Plans," *Journal of Political Economy* 85 (1977): 473–91. For an early discussion of time inconsistency, see "Time-

Inconsistency: A Potential Problem for Policymakers," *Federal Reserve Bank of Philadelphia Business Review*, March 1985. See also Thomas Drechsel, "Estimating the Effects of Political Pressure on the Fed: A Narrative Approach with New Data," National Bureau of Economic Research Working Paper No. 32461 (May 2024).

- Michael Salib and Christina Parajon Skinner, "Executive Override of Central Banks: A Comparison of the Legal Frameworks in the United States and the United Kingdom," *Georgetown Law Journal* 108 (2020): 905–63.
- 4. Most democratic nations embraced central bank independence. There remain, of course, exceptions, and some countries continue to house their central banks within their governments. The People's Bank of China is one example.
- 5. Bank of England, "How Is the Bank of England Independent of the Government?," last updated May 18, 2020.
- "Protocol (No. 4) on the Statute of the European System of Central Banks and of the European Central Bank," in *Consolidated Version of the Treaty on the Functioning of the European Union*, 2012 O.J. (C 326) 230, art. 130.
- 7. Humphrey's Executor v. United States, 295 U.S. 602 (1935).
- 8. Federal Reserve Act, § 10. This was added in the Banking Act of 1935, which amended the Federal Reserve Act in important ways.
- 9. See Cass R. Sunstein and Adrian Vermeule, "Presidential Review: The President's Statutory Authority over Independent Agencies," *Georgetown Law Journal* 109, no. 3 (February 2021): 637–64. Although not referencing the Federal Reserve Act specifically, these two legal scholars have concluded that "strictly as a matter of statutory interpretation, if the INM standard means anything, it means that the President cannot discharge a member of an independent agency simply because he disagrees with the agency's conclusions about policy or fact."
- 10. Financial Services Act 2012, c. 21, United Kingdom.
- Council Regulation (EU) No. 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions, *Official Journal of the European Union* L 287 (2013): 63–89.
- 12. Gramm-Leach-Bliley Act, Public Law 106-102, 113 Stat. 1338 (1999).
- "Dodd-Frank Wall Street Reform and Consumer Protection Act," Pub. L. No. 111-203, 124 Stat. 1376 (2010); Board of Governors of the Federal

Reserve System, "Supervising and Regulating Financial Institutions and Activities," in *The Federal Reserve System: Purposes & Functions*, 10th edition (2016), 98. For an overview of the FSOC and the designation process and its problems, see Christina Parajon Skinner, "Regulating Nonbanks," *Georgetown Law Journal* 105 (2017): 1529.

- 14. On the banking agencies' financial-stability mandates, see Christina Parajon Skinner, "Financial Stability and Bank Agency Discretion," University of Chicago Law Review, forthcoming (2024).
- 15. The IMF, for example, has published research indicating that "good" and "effective" supervision "require[s] operational independence to carry out their tasks free of outside pressures." "Financial Stability Needs Supervisors with the Ability and Will to Act," International Monetary Fund, September 18, 2023.
- Agustín Carstens, "Investing in Banking Supervision," speech at the European Banking Federation's International Banking Summit, Brussels, June 1, 2023.
- Jerome H. Powell, "Central Bank Independence and the Mandate— Evolving Views," speech, Chair of the Board of Governors of the Federal Reserve System, January 10, 2023.
- 18. See, for example, Michelle W. Bowman, "Independence, Predictability, and Tailoring in Banking Regulation and Supervision," remarks at the American Bankers Association Conference for Community Bankers, Orlando, FL, February 13, 2023; and Michael S. Barr, "Comment: Accountability and Independence in Financial Regulation: Checks and Balances, Public Engagement, and Other Innovations," *Law and Contemporary Problems* 83 (2020): 119.
- Ben S. Bernanke, "Central Bank Independence, Transparency, and Accountability," Board of Governors of the Federal Reserve System, May 25, 2010.
- Milton Friedman, "Should There Be an Independent Monetary Authority?," in *In Search of a Monetary Constitution*, ed. Leland B. Yeager (Cambridge, MA: Harvard University Press, 1962).
- 21. Friedman, "Should There Be an Independent Monetary Authority?"
- 22. In contrast, as I have written with Andrew Levin, monetary policy should be highly accountable to Congress. See Andrew Levin and Christina Parajon Skinner, "Central Bank Oversight," *Vanderbilt Law Review*, forthcoming (2024).

- See Christina Parajon Skinner, "Central Banks and Climate Change," Vanderbilt Law Review 74 (2021): 1301.
- See Federal Reserve Board of Governors, "Press Conference, Jerome H. Powell, Chair," January 27, 2021, https://www.federalreserve.gov /mediacenter/files/FOMCpresconf20210127.pdf.
- 25. For an account of the legitimacy of the Basel regime, see David Murphy and Christina Parajon Skinner, *The Legitimacy of the Basel Regime for Bank Prudential Regulation* (draft on file with author).
- 26. See Jésus Fernández-Villaverde and Christina Parajon Skinner, *Central Banks within Democracy*, chapter 7 (manuscript on file with author).
- 27. 12 U.S.C. § 242 (2024).
- 28. US Constitution, Article II, Section 3.
- 29. US Constitution, Article II, Section 2, Clause 2.
- Seila Law LLC v. Consumer Financial Protection Bureau, 140 S. Ct. 2183, 2206 (2020).
- Cass R. Sunstein and Adrian Vermeule, "Presidential Review: The President's Statutory Authority over Independent Agencies," *Georgetown Law Journal* 109, no. 3 (2021): 637–64.
- 32. Seila Law, 140 S. Ct. 2183.
- 33. The Supreme Court has stated that the tenets of agency independence articulated in *Humphrey's Executor v. United States* apply to "a multimember body of experts, balanced along partisan lines, that performed legislative and judicial functions and was said not to exercise any executive power." Free Enterprise Fund v. Public Company Accounting Oversight Board, 561 U.S. 477, 505 (2010). For one thing, the Fed is not required to be balanced along party lines. Moreover, as has been discussed, engaging in supervisory policy of this magnitude constitutes executive power.
- Peter Conti-Brown and Simon Johnson, "Governing the Federal Reserve System after the Dodd-Frank Act," Peterson Institute for International Economics, October 2013.
- See Christina Parajon Skinner, "The Monetary Executive," George Washington Law Review 91 (2023): 164.
- 36. The canonical case articulating the rationale for agency independence, and distinguishing those agencies that are properly afforded it, is *Humphrey's Executor v. United States*. There, the court said, "The result of what we now have said is this: Whether the power of the President to remove an officer shall prevail over the authority of Congress to condition the power by fixing

a definite term and precluding a removal except for cause, will depend upon the character of the office." Humphrey's Executor v. United States, 295 U.S. 602, 631 (1935). And in particular, "The authority of Congress, in creating quasi-legislative or quasi-judicial agencies, to require them to act in discharge of their duties independently of executive control cannot well be doubted; and that authority includes, as an appropriate incident, power to fix the period during which they shall continue in office, and to forbid their removal except for cause in the meantime." *Humphrey's Executor v. United States*, 629.

# I 3 Financial Stability and Monetary Policy: Lessons from the UK's LDI Crisis

Carolyn A. Wilkins

The study of links between monetary policy and financial sector policies is not new, with financial stability having long been part of many central bank mandates.<sup>1</sup> For instance, leading up to the Global Financial Crisis (GFC) there was a particular focus on whether low interest rates were fueling risk taking, and the merits of using monetary policy to "lean against" asset-price booms.<sup>2</sup> The GFC showed that monetary and microprudential policies were not sufficient for ensuring financial stability, paving the way for the development of macroprudential policies.<sup>3</sup>

By the late 2010s, compressed term and risk premia led to a very different concern: how rapid and sizable increases in interest rates could create financial stress. It was the subject of numerous risk assessments by many international bodies, including the Financial Stability Board (FSB), the International Monetary Fund (IMF), and the Bank for International Settlements (BIS) in the late 2010s.<sup>4</sup> This concern was also shared by the Bank of England (the Bank), and led the Bank's Financial Policy Committee (FPC) at that time to include an increase in interest rates as part of its stress-testing exercises on banks from 2017 onward.<sup>5</sup> In November 2018, the FPC also published an assessment of the risks from leverage in the nonbank financial system, which included the liability-driven investment

This chapter reflects my own views and not necessarily those of my Financial Policy Committee colleagues or Monetary Policy Committee members.

(LDI) sector.<sup>6</sup> Through 2021 and 2022, the FPC also warned that vulnerabilities in market-based financing could amplify shocks to market liquidity conditions.<sup>7</sup>

A version of this interest rate risk has indeed materialized in many jurisdictions over the last couple of years, although it was largely the result of a sharp and rapid rise in policy interest rates among many central banks to quell inflation, rather than a rise in risk premia. For its part, the Bank's Monetary Policy Committee (MPC) raised the policy rate by a cumulative 515 basis points between November 2021 and August 2023. While in the United Kingdom monetary policy actions have supported financial stability by returning inflation to target sustainably, the sharp transition to higher interest rates and greater market volatility could create stress in the financial system.<sup>8</sup> The FPC holds the view that UK households, businesses, and banks are resilient, but uncertainties remain given the risks and the fact that it takes time for the full impact of higher interest rates to come through.

These remarks will first address the dog that did not bark in the UK (but has in the United States)—interest rate risk on the banking book. I will then delve into the one that did—when fiscal policy announcements were followed by a significant rise in long-term gilt yields and then amplified by liquidity issues in highly leveraged LDI funds used by UK pension schemes. My remarks aim to draw out the following five lessons:

- 1. Market forces can be unpredictable and merciless, especially in the face of poorly managed risk.
- Stress tests must be developed using better data and models to capture interconnections—including in nonbank financial intermediation (NBFI)—and to test operational resilience and scenarios that may have no historical precedent.
- 3. Financial stability interventions, if temporary and targeted, support monetary policy objectives without necessarily affecting the stance of monetary policy.

- 4. Central bank liquidity facilities need further development, particularly with regard to NBFI.
- 5. The Bank of England financial stability framework showed its worth, supported by a clear financial stability mandate, governance, and separation of responsibilities between the MPC and the FPC.

### The Dog That Did Not Bark in the UK

The move toward tightening monetary policy to control inflation, which started in December 2021 in the UK and in March 2022 in the US, meant that banks operating in those jurisdictions were faced with sizable and rapid increases in interest rates. The speed of the monetary policy tightening made adjustments to higher rates particularly challenging.

This situation, combined with inadequate capital and liquidity, deficiencies in risk management, and highly mobile deposits, prompted the failure of Silicon Valley Bank (SVB), among others in the US, in March 2023 for reasons that are well known.<sup>9</sup> Aside from the spillover of SVB's trouble to its UK subsidiary, UK banks have been resilient in the face of monetary policy tightening.<sup>10</sup> There are a number of reasons for this positive outcome relative to SVB, the most important relating to these factors:

- 1. *Capital adequacy:* All UK banks hold capital against interest rate risk on the banking book, under Pillar 2A.<sup>11</sup>
- Liquidity management: All UK banks are subject to liquidity requirements under Basel III (i.e., the liquidity coverage ratio [LCR] and the net stable funding ratio [NSFR]). In contrast, SVB was not subject to these requirements.<sup>12</sup>
- 3. *UK bank balance sheets:* These are less vulnerable than SVB's in that UK banks typically have much smaller "hold to maturity" portfolios, and do not have the extremely high reliance on uninsured deposits (e.g., 94% for SVB) coupled with heavy concentration in a particular sector.<sup>13</sup> This higher reliance on uninsured deposits means a greater

deposit flight potential when a risk crystallizes, including in a situation where rapidly rising interest rates expose risks to banks that have not been properly managed.

Together these factors have contributed to relative stability of deposits in UK banks, both in the face of the spike in gilt yields in 2022 and then in the wake of the US bank failures in 2023.

#### The Dog That Did Bark

Rising interest rates may not have triggered financial stress in the UK banking system, but stress in LDI funds used by pension schemes was triggered on September 23, 2022, when longdated gilts spiked in response to the government's mini-budget announcement. This prompted the Bank of England to intervene with temporary and targeted gilt purchases to restore market functioning and, ultimately, protect financial stability in the UK.<sup>14</sup>

#### LDI Approach Aims to Lower Risk (But Can Do the Opposite)

LDI is an investment approach used by pension schemes to achieve a smoother, more certain path to fully funded status.<sup>15</sup> In particular, this approach seeks to match the sensitivities of scheme assets to liabilities, which are generally driven by (1) interest rates, and (2) inflation. For instance, an LDI strategy can be used to mitigate the risk of falling interest rates increasing pension-scheme liabilities, while still allowing some margin to invest in higher-yielding assets than gilts.

With the secular decline in government bond yields over several decades in the UK and other developed economies, LDI strategies became popular. At the end of 2021, there was an estimated  $\pounds$ 1.4 trillion of assets held in LDI strategies in the UK; around

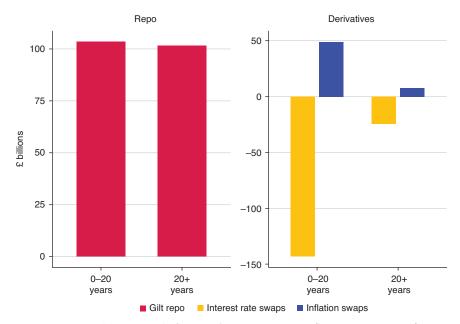


FIGURE 13.1. Net notional of outstanding swap positions (by contract maturity) and net repo borrowing (by collateral maturity) as of September 22, 2022. Source: Lydia Henning, Simon Jurkatis, Manesh Powar, and Gian Valentini, "Lifting the Lid on a Liquidity Crisis," Bank of England, July 18, 2023.

85% of these assets were managed within segregated funds and the remainder were in multi-investor-pooled funds.<sup>16</sup> Typically, LDI funds in the UK used leverage through repo borrowing or interest rate derivatives (figure 13.1).<sup>17</sup> This allowed their pension-scheme clients to increase their hedges against falling interest rates with a lower up-front investment than if they had pursued an unleveraged LDI hedging strategy.

Any leveraged strategy comes with downside risks, for the individual firm and for the broader market, in the face of sharp declines in asset prices, as my colleague Jon Hall outlined very clearly.<sup>18</sup> If leveraged investors cannot raise capital or accept higher leverage, they are forced to sell assets in a declining market, amplifying the initial shock. The risk to the LDI strategy materialized in September 2022 when interest rates rose sharply in response to the fiscal announcement. Although higher rates in general were positive for pension schemes overall, the LDI funds faced rapidly accelerating losses and large collateral calls such that they had an urgent need for capital. If the pension schemes were unable to provide capital in time, the LDI fund managers were forced to rebalance by selling gilts into an illiquid market. As discussed below, the prospect of forced selling at scale set in motion an amplificatory "doom loop" that put the long-term gilt market under extreme stress.

To some extent there was a similar set of challenges facing LDI funds in the Netherlands, but the key differences were that Dutch investors had more diversified bond and less-leveraged portfolios, which meant that the sell-off did not spark broader market stress, and they did not face the same magnitude of repricing.<sup>19</sup> LDI strategies are deployed in other countries but are much more significant in the UK, where they account for 80% of the overall definedbenefit market, compared to around 40% in the US and 35% in the European Union (EU).<sup>20</sup>

#### The Mini-Budget Announcement Awakened Market Forces

Yields on long-term government securities had been on an upward trend in peer jurisdictions in the months leading up to the September 2022 episode, commensurate with a monetary policy tightening cycle. For the Bank of England's part, the MPC began raising interest rates in December 2021, and quantitative tightening (QT) commenced two months later, initially through maturities. Following the MPC announcement on September 22, 2022, the Bank rate was raised 50 basis points to 2.25%, and a plan was announced to start the selling of gilts in QT in October. Markets adjusted to the news smoothly (i.e., a rise of 20 basis points on the

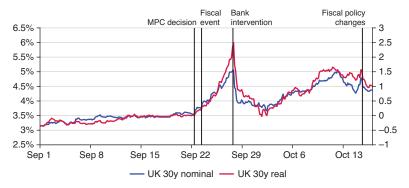


FIGURE 13.2. Blowout in yields on thirty-year UK gilts (basis point change since August 1, 2022), nominal (LHS) and real (RHS). Source: Bank of England calculations.

day of the announcement commensurate with rises on other sovereign bond markets such as the US), as these moves were widely expected by markets and market liquidity remained good. There is therefore no indication that the rise in yields on subsequent days was induced by monetary policy.

There was, however, a clear break in gilt yields on the announcement of the new "Growth Plan" from the government on September 23 (figure 13.2).<sup>21</sup> Market reports indicated growing concerns among investors as to the government's commitment to fiscal responsibility, and doubts about whether the plan would indeed spur growth.<sup>22</sup> These concerns appear to have been the driving forces behind the spike in thirty-year nominal gilt yields, which started on the day the mini-budget was announced and totaled 130 basis points by September 28 (and thirty-year inflation-linked bonds were up by around 170 basis points). This represented a 24% and a 38% drop in the price of thirty-year nominal and real gilts, respectively. Longmaturity nominal gilt yields rose by 130 basis points in a matter of days—three times the size of any comparable historical move, and therefore exceeding the buffer held by LDI funds that would typically cover around 100 basis points. Lesson 1: Market forces can be unpredictable and merciless, especially in the face of poorly managed risk. Government bonds may be "free" from credit risk but are not free from interest rate risk. Clearly the LDI funds and strategies did not have adequate resilience to self-insure against this type of scenario.

## The Ensuing Stress in LDI Funds Rapidly Generated a Risk to Financial Stability

In the absence of leverage, a rise in yields is generally positive for pension schemes because it reduces the present value of their liabilities more than the value of their assets. Given the leverage, however, a rise in yields created liquidity demands, particularly given that the adjustment happened quickly and over a short period. This created severe stress in gilt markets through several channels.

#### Forced Deleveraging and Liquidity Channel Propagated the Shock

The sharp rise in yields caused a sudden and significant rise in collateral calls on repo (biggest issue) and variation margin calls on derivative positions, amounting to an estimated £66 billion between the announcement on September 23 of the new Growth Plan and on September 28 when the Bank's financial stability operations commenced (figure 13.3). It is telling how little selling actually went through in the first few days of the stress, in which the rapid increase in gilt yields up to September 28 was driven by less than £5 billion of sales being successfully completed (a sign that liquidity was indeed very low; see figure 13.4).

The sharp rise in yields (drop in gilt prices) also caused a steep decline in the net asset value and an increase in leverage of these funds. It is not surprising that the firms in the LDI sector that

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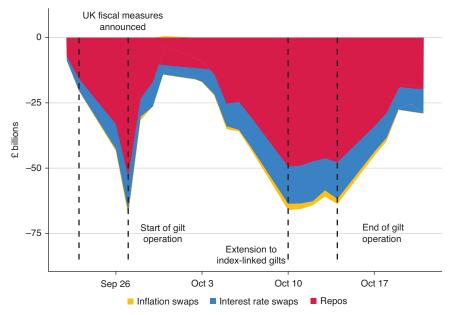


FIGURE 13.3. Cumulative variation margin on net repo borrowing and derivatives positions held by liability-driven investors (2022). Source: Henning et al., "Lifting the Lid."

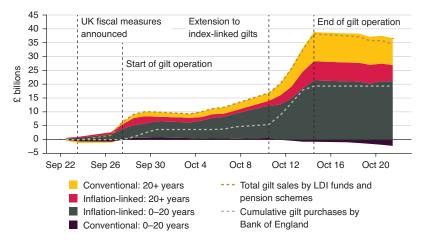


FIGURE 13.4. Cumulative net gilt sales by LDI funds and pension schemes with an open gilt repo or interest rate derivative position, between September 22 and October 21, 2022, and cumulative gilt purchases by the Bank of England.

Source: Paul Alexander, Rand Fakhoury, Tom Horn, Waris Panjwani, and Matt Roberts-Sklar, "Financial Stability Buy/Sell Tools: A Gilt Market Case Study," *Bank of England Quarterly Bulletin*, November 20, 2023. had larger repo and swap exposure before the crisis sold more gilts during the crisis.<sup>23</sup>

While some pension funds were able to raise funds quickly (e.g., by selling nongilt assets such as corporate bonds, equities, and even collateralized loan obligations), many pooled funds experienced significant operational difficulties.<sup>24</sup>

#### Concentration Channel Amplified the Shock

Exposures in the pension and pooled LDI funds were highly concentrated and correlated, particularly in repo that was backed by indexlinked and longer-term nominal bonds. Pension and LDI funds are the largest holders of the long-term index-linked gilt market. This concentration meant LDI funds were the natural buyers of linkers, so there were no other buyers to step in when selling pressures emerged.

Given the emergence of large and one-way selling pressures, market functioning broke down rapidly.<sup>25</sup> Market intelligence early in the week of September 26 suggested that additional long-term gilt sales of at least £50 billion were needed in short order. This was over four times greater than the recent average trading volumes of just £12 billion per day in these markets.<sup>26</sup>

#### Interconnections Channel Meant the Shock Spread to Other Markets

The gilt market is a core market, which means that it not only is critical to the transmission of monetary policy, but also is deeply interconnected with other parts of the financial system and the real economy. Because of this centrality, gilt market turmoil also spilled over to the real economy via other markets. For instance, interest rate swaps spiked dramatically, the two-year interest rate swap typically used to price mortgage products reaching 6% in the aftermath of the mini-budget. This prompted several mortgage providers to discontinue their mortgage offerings temporarily as it became too difficult to price markets; it is estimated that around 40% of mortgage deals were pulled following the announcement.<sup>27</sup> While rates have stabilized since then, they remain at higher levels than prior to the crisis.

Lesson 2: Stress tests must be developed using better data and models to capture interconnections—including in nonbank financial intermediation—and to test operational resilience and scenarios that may have no historical precedent.

Work had been undertaken in 2018 to better understand liquidity risk from margin calls on interest rate swaps, using a rapid 100-basis-point shift up in the yield curve.<sup>28</sup> Although consistent with a "severe but plausible" framework based on historic data, this turned out to be smaller than the actual shock in September 2022. The exercise also assumed that those affected would have the operational capacity to make the necessary adjustments in a timely manner, given that pooled funds were not included. As discussed in the next section, expectations of resilience on both financial and operational fronts have been strengthened. Moreover, the Bank is undertaking a system-wide exploratory scenario (SWES) to better understand interconnections in the financial system.<sup>29</sup>

#### A Financial Stability Response Compatible with Monetary Policy

What was striking in this episode was the speed at which a "doom loop" emerged, leading to a breakdown in functioning of the gilt market within a matter of days.<sup>30</sup> The Bank took swift action to reduce the risk of a self-reinforcing cycle of collateral calls and forced gilt sales by giving pension funds time to meet their liquidity obligations. This forestalled an unwarranted tightening of financing conditions and an associated reduction in the flow of credit to households and businesses. Our concern was that, without swift intervention, a large number of pooled LDI funds would have been left with negative net asset value and would have faced shortfalls in the collateral posted to banking counterparties. If the LDI funds had defaulted, the large quantity of gilts held as collateral by the banks that had lent to these funds could have been sold on the market, further impairing the gilt market. This would have accelerated self-reinforcing falls in asset prices, risking a sudden and excessive tightening of financing conditions for the real economy.<sup>31</sup>

On September 28, 2022, the FPC recommended that action be taken to address the risk to UK financial stability from dysfunction in the gilt market. It also welcomed the Bank's plans for temporary and targeted purchases in the long-dated gilt market on financial stability grounds at an urgent pace.<sup>32</sup> The MPC was informed of these temporary and targeted financial stability operations.<sup>33</sup>

The intervention followed five principles that were designed to maximize effectiveness while minimizing moral hazard and risks to monetary policy and to taxpayers:<sup>34</sup>

- 1. *Temporary:* The plan announced on September 28 stated that the program would run for thirteen trading days to allow pension and LDI funds the time to adjust their portfolios and build resilience. On October 3, the bank reconfirmed that it would carry out temporary purchases of long-dated UK government bonds until October 14, despite some pressure from market participants to extend the program.<sup>35</sup>
- 2. *Targeted:* The purchases were concentrated initially on longer-dated nominal bonds and, on October 11, the Bank added inflation-indexed bonds (greater than three years) to purchases given their importance in pension and LDI repo positions.<sup>36</sup>
- 3. *Backstop pricing:* The Bank set a reserve spread that was, broadly speaking, wider than "normal" market conditions and narrower than in stress. This meant that it only purchased at relatively distressed prices, which limited the take-up in the facility to those that

needed it. In the end, the Bank only bought £19.3 billion in gilts, of which around two-thirds were conventional bonds. This demandled approach was in contrast to purchases for monetary purposes (QE), in which the Bank sets out to purchase a given quantity of gilts per auction. Moreover, when combined with the temporary and targeted approach to the intervention, backstop pricing limited moral hazard.

- 4. *Timely and orderly unwind:* The Bank began unwinding the portfolio on November 29, using a demand-led approach. This had the advantage of limiting impact on market pricing, allowing the portfolio to be fully dispensed of by January 12, 2023, without reigniting market dysfunction.
- 5. *Regulatory response to reduce underlying vulnerability:* During and after the intervention there was close interaction between the Bank and The Pensions Regulator (TPR), the Financial Conduct Authority (FCA), and overseas regulators of the LDI funds.<sup>37</sup> In March 2023, the FPC recommended that TPR act as soon as possible to mitigate the financial stability risks by specifying the minimum levels of resilience for the LDI funds and LDI mandates in which pension-scheme trustees may invest. The FPC also recommended that TPR should have the remit to consider financial stability issues on a continuing basis.

Ultimately, pension and LDI funds had time to rebuild their resilience to future market volatility (which is typically not an objective of monetary policy operations), and came out in a stronger position. This involved, among other actions, lowering leverage by selling £37 billion in gilts and raising an estimated £33 billion in funds from pension schemes (by selling other types of assets and using cash buffers).<sup>38</sup> Moreover, from the initial position where there were very few buyers before the Bank's financial stability intervention, the market ended up absorbing almost 50% of the total sales while yields stayed broadly in check (see table 13.1). With stable functioning of the gilt market restored, the first asset

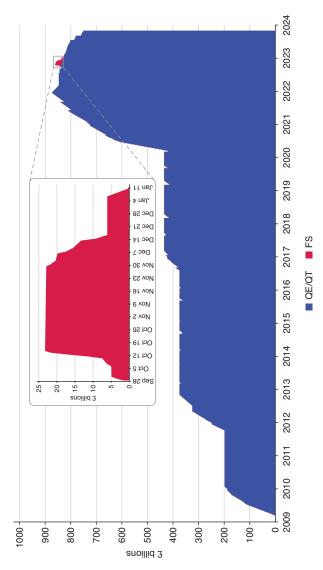
|   | Financial stability purchases<br>(October 22 to January 23)  | Monetary stability<br>purchases (QE)  |
|---|--|---|
| Purpose and governance                    | Aimed at reducing the risk of a self-<br>reinforcing price spiral triggered by<br>LDI vulnerabilities. FPC recommended<br>action to tackle financial stability risk;<br>MPC informed, in line with the Concordat<br>regarding balance sheet operations;<br>Bank executive implemented. | QE aimed at easing monetary<br>conditions in pursuit of the<br>inflation target. MPC voted on<br>quantity targets; Bank executive<br>implemented. |
| Duration of<br>purchases and<br>exit plan | Temporary: purchases undertaken for<br>only as long as required by financial<br>stability issue; and unwound through<br>sales back to market in timely and<br>orderly way once dysfunction resolved.   | High-level targets for pur-<br>chase, unwind and sales<br>programs voted on by MPC<br>as part of its monetary policy<br>process.                  |
| Asset selection                           | Targeted: at assets most affected by financial stability issue.  | Appropriately broad based to achieve monetary policy goals.   |
| Pricing                                   | Backstop pricing: to ensure the facility<br>did not unduly interfere with price<br>discovery or substitute for the need for<br>market participants to manage their<br>own risks over the medium term.  | Priced to deliver MPC-<br>determined quantity targets.  |

TABLE 13.1. Comparing gilt purchases for financial and monetary stability purposes.

Source: Andrew Hauser, "Looking through a Glass Onion: Lessons from the 2022 LDI Intervention," speech given at the Initiative on Global Markets' Workshop on Market Dysfunction, the University of Chicago Booth School of Business, Bank of England, March 3, 2023.

sales as part of QT commenced on November 1, starting with shorter-dated bonds.<sup>39</sup>

Strict adherence to the design principles was critical to distinguishing asset purchases to support financial stability from purchases to support monetary policy objectives (table 13.1). Given the small size of the intervention relative to overall QE, it was not expected to have meaningful spillovers to monetary policy (figure 13.5). Early research indicates that, indeed, the intervention stabilized markets while having limited impact on monetary policy.<sup>40</sup>





Buy/Sell Tools: A Gilt Market Case Study," Bank of England, November 20, 2023.

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This highlights the third lesson: Financial stability interventions, if temporary and targeted, support monetary policy objectives without necessarily affecting the stance of monetary policy.

The intervention benefited from advance work by the Bank of England and others on how to develop central bank tools to deal with funding and market liquidity issues that threaten financial stability, some of which was motivated by the "dash-for-cash" episode at the onset of the COVID-19 pandemic.<sup>41</sup> This advance work, combined with staff with the right experience and access to market intelligence to execute, contributed to the success of the operation.

At the same time, activity in the nonbank financial sector continues to evolve, introducing new sources of systemic risk that need to be identified and mitigated.<sup>42</sup> As part of this effort, the Bank of England is continuing to develop its toolkit, with the gilt market as the initial areas of focus. The first phase will develop a tool that will act as a backstop in stress by providing liquidity to eligible pension funds, insurance companies, and LDI funds by lending cash against gilts in situations of system-wide stress that threaten financial stability.<sup>43</sup> Over time, the Bank intends to consider how this tool might be broadened to include a wider range of NBFIs as counterparties.

# This highlights the fourth lesson: Central bank liquidity facilities need further development, particularly with regard to NBFI.

Given this, the Bank is working to develop its financial stability toolkit.<sup>44</sup> The FPC has stated a preference for backstopping market functioning by lending directly to NBFIs against high-quality collateral, when possible, rather than with asset purchases because it presents less risk to public funds and less moral hazard.<sup>45</sup> There may be circumstances in which lending may not be enough to alleviate the stress, as was the case with the LDI funds. In general, episodes

|                    | To contribute to the Devisit financial stability also the sector to and  |  |
|--------------------|--|--|
| Objectives         | To contribute to the Bank's financial stability objective to protect and |  |
|                    | enhance UK financial stability primarily by identifying, monitoring,     |  |
|                    | and taking action to remove/reduce systemic risk with a view toward      |  |
|                    | protecting and enhancing the resilience of the UK financial system.      |  |
|                    | Subject to that, the FPC also has a secondary objective to support       |  |
|                    | the economic policy of the government.                                   |  |
| Main powers        | May give directions to the Prudential Regulatory Authority (PRA) and     |  |
|                    | FCA in relation to specified macroprudential measures. Powers to         |  |
|                    | make recommendations to the Bank, FCA, PRA, and to His Majesty's         |  |
|                    | Treasury (HMT) and other persons.  |  |
| Membership         | Thirteen members: six Bank of England staff, five external, FCA CEO,     |  |
|                    | and one HMT member   |  |
| Decisions taken by | Consensus wherever possible (otherwise by vote of those present,         |  |
|                    | and the person chairing has a casting vote in the event of a tie)        |  |
| Meeting frequency  | Quarterly cycle of meetings  |  |
| Treasury Ministry  | HMT member (nonvoting). HMT specifies what His Majesty's                 |  |
| involvement        | Government (HMG) economic policy is taken to be for purposes of          |  |
|                    | secondary objective. HMG may make recommendations about FPC's            |  |
|                    | responsibilities and functions in the annual remit letter.               |  |
| Key publications   | Summary and Record of all decisions published (four times a year).       |  |
| .,                 | Twice-yearly Financial Stability Report                                  |  |
|                    | Financial Stability in Focus (FSIF)—for more detail on certain topics.   |  |

TABLE 13.2. Summary of the Financial Policy Committee's roles and responsibilities.

of system-wide stress may differ in ways that require different remedies, so flexibility and nimbleness will be required.

#### Governance of Financial Stability Was a Strength

The clear and separate delegation of authorities for monetary and financial system policies in the UK is unique, and allowed the Bank's FPC to recommend that the Bank intervene to stabilize gilt markets and that the MPC be informed that action would be taken. This recommendation was consistent with the FPC's mandate to identify and monitor risks to the financial system, and to take appropriate action when necessary (see table 13.2 for FPC structure and mandate).<sup>46</sup>

While much of the time financial stability and monetary policy goals and actions are self-reinforcing, as experienced over the last couple of years, there can be real or perceived trade-offs. In the LDI episode, the monetary policy transmission mechanism was clearly at risk of impairment, which suggests compatible goals if executed following the principles outlined above. However, the concern over a potential trade-off arose because the MPC had announced just the day before (September 22) that it would reduce the stock of purchased UK government bonds held in the Asset Purchase Facility.

These trade-offs were very well managed through the governance arrangements in the UK:

- 1. The MPC has clear, measurable goals, authorities, and accountability to parliament. The inflation-targeting regime mitigates the concern that financial stability or prudential concerns will creep into decision making unless they directly influence inflation.
- 2. The FPC also has a clear mandate, authorities, and accountability to parliament.<sup>47</sup> This means that any actions taken must be targeted to the specific financial stability problem at hand, with design focused on stabilizing the situation while limiting moral hazard and other costs to the UK economy.
- 3. External members of each committee bring different outside sources of expertise that contribute to the policy discussions and decisions. These external members will have a particular focus on the objectives of the committee to which they belong, compared to the internal members, when faced with trade-offs between financial stability and monetary policy.<sup>48</sup>
- 4. Regularly scheduled communications between the committees means that each benefits from being better informed on areas of common interest, such as the economic outlook; how higher interest rates are affecting household and business finances; and what might be an appropriate bank stress-test scenario.

This highlights the fifth lesson: The Bank of England's financial stability framework showed its worth, supported by a clear financial stability mandate, governance, and separation of responsibilities between the MPC and the FPC.

A dedicated and empowered financial stability committee puts the focus on prevention through monitoring, stress testing, and followup actions to reduce vulnerabilities. It supports timely reaction to stress events that will minimize risks to public funds and market incentives, as well as the stance of monetary policy.

# Conclusions

The Bank of England, along with many other central banks, tightened monetary policy as a necessary action to bring down inflation. While inflation control is foundational to economic and financial stability, market forces can be particularly merciless in the face of poorly managed risk. Both the SVB failure and LDI crisis are painful reminders that government bonds may be "free" from credit risk, but they are not free from interest rate risk. At a minimum, financial firms should build adequate resilience to self-insure against all but the most severe scenarios. Clearly, the capital liquidity requirements placed on all UK banks have contributed to their resilience to higher interest rates over the last couple of years.

Nonetheless, the LDI crisis underscores the need for better data and models to capture interconnections within the financial system, including NBFIs, and to test operational resilience and scenarios that have no historical precedent. The Bank's SWES exercise is an excellent step in this direction because it will help us understand the interconnections between different parts of the financial system. Given that risk cannot be driven to zero, the Bank continues to work on its liquidity toolkit with regard to NBFIs. The Bank's intervention to purchase gilts over a thirteen-day period in 2022 successfully stabilized gilt markets and afforded pension schemes the time to meet their liquidity obligations. It supported monetary policy objectives by forestalling an unwarranted tightening of financing conditions and an associated reduction in the flow of credit to households and businesses. Because the intervention was temporary and targeted, it did not affect the stance of monetary policy in any meaningful way.

Finally, this episode highlighted the worth of the Bank's financial stability framework, which is based on a clear financial stability mandate, governance, and separation of responsibilities between MPC and FPC (see table 13.2). It allowed for preplanning for this type of intervention, rapid identification of the problem and decision to act, and clarity of communication to markets to distinguish between financial stability and monetary policy operations.

#### Notes

Thank you to Paul Alexander, David Baumslag, Rand Fakhoury, Simon Jurkatis, Clare Macallan, Ryan Murphy, Raakhi Odedra, Pierre Ortlieb, Waris Panjwani, Manish Powar, Alistair Ratcliffe, Matt Roberts-Sklar, and Giselle Samuel for helpful contributions to these remarks.

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- 2. Michael D. Bordo and David C. Wheelock, "Monetary Policy and Asset Prices: A Look Back at Past US Stock Market Booms," National Bureau of Economic Research Working Paper No. 10704 (August 2004); Charles Bean, "Asset Prices, Financial Imbalances and Monetary Policy: Are Inflation Targets Enough?" Bank for International Settlements Working Paper No. 140, September 2003; and David Gruen, Michael Plumb, and

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- 3. Isabel Schnabel, "Monetary Policy and Financial Stability," speech by Isabel Schnabel, Member of the Executive Board of the European Central Bank, at the Fifth Annual Conference of the European Systemic Risk Board, December 8, 2021.
- 4. Hyun Song Shin, "Is There a Risk of Snapback in Long-Dated Yields?" Panel remarks by Hyun Song Shin, Economic Adviser and Head of Research of the BIS, at the Second ECB Annual Research Conference, September 25, 2017; Financial Stability Board, "FSB Assesses Financial Vulnerabilities and Takes Stock of Actions under Its 2018 Workplan," June 25, 2018; and International Monetary Fund, "Global Financial Stability Report, April 2018: A Bumpy Road Ahead," April 2018.
- 5. An increase in Bank rate forms part of the Annual Cyclical Scenarios undertaken in 2017, 2018, 2019, and 2022–23.
- 6. Bank of England, "Financial Stability Report, November 2018." Liquidity risks from margin calls was also discussed in Matt Roberts-Sklar and Sheila Torrance, "Liquidity Risk: A Wake-Up Call," *The Actuary*, February 3, 2021.
- 7. For instance, see Bank of England, "Financial Policy Summary and Record of the Financial Policy Committee Meeting on 16 June 2022."
- 8. Bank of England, "Financial Stability in Focus: Interest Rate Risk in the Economy and Financial System," July 12, 2023.
- Board of Governors of the Federal Reserve System, "Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank," April 28, 2023.
- SVB had a subsidiary in the UK. The Bank of England took the decision to sell the UK bank on March 13. For an overview of events in 2023, see Sam Woods, "Bank Failures," speech given at Mansion House, Bank of England, October 16, 2023.
- 11. Prudential Regulation Authority, Bank of England, "The PRA's Methodologies for Setting Pillar 2 Capital," July 29, 2015.
- 12. Estimates show that SVB had an LCR of only 75% at the end of 2002, well below the 100% requirement. It would, however, have passed the NSFR test. See Greg Feldberg, "Lessons from Applying the Liquidity Coverage Ratio to Silicon Valley Bank," Yale School of Management, March 27, 2023; and Greg Feldberg, "Silicon Valley Bank's Liquidity,

Part Two: What About the Net Stable Funding Ratio?" Yale School of Management, April 4, 2023.

- 13. The depositors were concentrated in the tech sector. See Board of Governors of the Federal Reserve System, "Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank," April 28, 2023; and Basel Committee on Banking Supervision, "Report on the 2023 Banking Turmoil," Bank for International Settlements, October 5, 2023.
- 14. The full set of actions taken is set out in more detail in letters to Parliament. See Bank of England, "Letter from Jon Cunliffe to Mel Stride," October 5, 2022; and Bank of England, "Letter from Jon Cunliffe—LDI," October 18, 2022. The design of the operations is set out in Paul Alexander, Rand Fakhoury, Tom Horn, Waris Panjwani, and Matt Roberts-Sklar, "Financial Stability Buy/Sell Tools: A Gilt Market Case Study," *Bank of England Quarterly Bulletin*, November 20, 2023.
- 15. More than 20% of UK defined benefit (DB) pension funds were in deficit in August 2022, and more than 40% were in deficit a year earlier. See Bank of England, "Letter from Jon Cunliffe to Mel Stride."
- 16. Investor-pooled funds are structured so that a pot of assets is managed for a large number of pension fund clients who have limited liability in the face of losses. These funds are estimated to make up around 10–15% of the LDI market. See Sarah Breeden, "Risks from Leverage: How Did a Small Corner of the Pensions Industry Threaten Financial Stability?" Speech given at ISDA & AIMA, Bank of England, November 7, 2022.
- 17. Lydia Henning, Simon Jurkatis, Manesh Powar, and Gian Valentini, "Lifting the Lid on a Liquidity Crisis," Bank Underground, July 18, 2023.
- Jonathan Hall, "With Leverage Comes Responsibility," speech given at National Institute of Economic and Social Research, published online by Bank of England, June 20, 2023.
- 19. Their holdings of the eurozone government bond market were also much smaller as a percentage of the market. For further detail, see Mona Dohle, "Dutch Derivatives: Insights from the LDI Crunch in the Netherlands," *Portfolio Institutional*, January 19, 2023; Sirio Aramonte and Phurichai Rungcharoenkitkul, "Leverage and Liquidity Backstops: Cues from Pension Funds and Gilt Market Disruptions," *BIS Quarterly Review*, December 2022; and House of Commons, "Oral Evidence to the Work and Pensions Committee (HC 826)," testimonies of Charles Counsell and Nikhil Rathi, December 14, 2022.

- 20. Financial Stability Board, "The Financial Stability Implications of Leverage in Non-Bank Financial Intermediation," September 6, 2023.
- The plan focused on spurring growth through a number of measures, including reductions in taxes. For more information, see HM Treasury, "The Growth Plan 2022," presented by the Chancellor of the Exchequer to Parliament, September 23, 2022.
- 22. For example, see Paul Dales, "Kwarteng Causes Carnage," Capital Economics, September 23, 2022; and Jagjit S. Chadha, Max Mosley, Kemar Whyte, Hailey Low, Stephen Millard, and Adrian Pabst, "An Independent Assessment of the Mini-Budget," National Institute of Economic and Social Research, September 23, 2022.
- 23. See Peter Dunne, Angelica Ghiselli, Frederik Ledoux, and Barra McCarthy, "Irish-Resident LDI Funds and the 2022 Gilt Market Crisis," Central Bank of Ireland, Financial Stability Notes, vol. 2023, no. 7 (September 2023); and Gabor Pinter, "An Anatomy of the 2022 Gilt Market Crisis," Bank of England, Staff Working Paper No. 1,019, March 31, 2023.
- 24. Net sales of corporate bonds by pension and LDI funds totaled around £10 billion between the day of the mini-budget announcement (September 23) and the end of the Bank of England intervention (October 14). See Chart 5 from Henning et al., "Lifting the Lid."
- 25. Bank research shows that, during this period, forced sales by liabilitydriven investment funds (LDIs) led to discounts of roughly 10%, accounting for nearly half the overall decline in gilt prices. For more on the specific drivers of the selling dynamics in the gilt market, see Gabor Pinter, Emil Siriwardane, and Danny Walker, "Fire Sales of Safe Assets," Bank of England, Staff Working Paper No. 1,089, July 26, 2024.
- 26. See Bank of England, "Letter from Jon Cunliffe to Mel Stride."
- 27. Michael Brown, "Which Lenders Have Removed Their Mortgages Thus Far?" Moneyfacts, September 29, 2022.
- 28. While the report did flag broader issues with pension scheme and LDI fund liquidity management, it did not focus on interconnections between these and other participants (see Bank of England, "Financial Stability Report, November 2018").
- 29. The SWES aims to improve our understanding of the behaviors of banks and nonbank financial institutions during stressed financial market conditions and how those behaviors might interact to amplify shocks in UK

financial markets that are core to UK financial stability. See Bank of England, "System-Wide Exploratory Scenario" web page, last updated July 12, 2024.

- 30. There have been other jumps to illiquidity in recent years, including during the "dash for cash" experienced by many countries when the actions of some NBFIs amplified the initial market reaction to the COVID-19 pandemic.
- 31. Bank of England, "Risks from Leverage."
- Bank of England, "Bank of England Announces Gilt Market Operation," news release, September 28, 2022.
- 33. This was in line with the Concordat governing the MPC's engagement with the Bank's executive regarding balance sheet operations.
- 34. This borrows heavily from Paul Alexander et al., "Financial Stability Buy/ Sell Tools." See also Andrew Hauser, "Looking through a Glass Onion: Lessons from the 2022 LDI Intervention," speech given at the Initiative on Global Markets' Workshop on Market Dysfunction, the University of Chicago Booth School of Business, Bank of England, March 3, 2023.
- 35. Bank of England, "Gilt Market Operations—Market Notice 3 October 2022."
- 36. Bank of England, "Temporary Purchases of Index-Linked Gilts—Market Notice 11 October 2022."
- 37. The LDI funds were domiciled and regulated outside the UK.
- 38. These gilt sales are smaller than the total margin and collateral calls faced by LDI funds and pension schemes over this period, which Bank staff estimate to be in excess of £70 billion. This reflects the fact that LDI funds and pension schemes were also able to sell assets other than gilts and use existing cash buffers in order to meet these obligations. For more information, see Bank of England, "Financial Stability Report, December 2022."
- 39. On October 18, 2022, the Bank announced that the first gilt sale operation would take place on November 1, 2022. Moreover, it announced that, for 2022 Q4, sales would be distributed evenly across short (three to seven years) and medium (seven to twenty years) maturity buckets, rather than also across long (twenty years-plus) maturity.
- 40. Nicolò Bandera and Jacob Stevens, "Monetary Policy Consequences of Financial Stability Interventions: Assessing the UK LDI Crisis and the Central Bank Policy Response," Bank of England, Staff Working Paper No. 1,070, April 2024.

- 41. See, for example, Darrell Duffie and Frank M. Keane, "Market-Function Asset Purchases," Federal Reserve Bank of New York, February 2023; Bank of International Settlements, "Market Dysfunction and Central Bank Tools," Markets Committee Papers, May 11, 2022; and Andrew Hauser, "Why Central Banks Need New Tools for Dealing with Market Dysfunction," speech given at Thomson Reuters Newsmaker, Bank of England, January 7, 2021.
- 42. Bank of England, "Financial Policy Summary and Record of the Financial Policy Committee Meeting on 13 March," March 27, 2024.
- 43. Nick Butt, "Market Resilience, Non-bank Financial Institutions and the Central Bank Toolkit—Practical Next Steps," speech given at ISDA virtual conference on Procyclicality and Margin Practices, March 12, 2024.
- 44. UK Parliament, "Quantitative Tightening: Government, Bank of England and Debt Management Office Responses to the Committee's Fifth Report," April 18, 2024.
- 45. Bank of England, "Financial Policy Summary and Record of the Financial Policy Committee Meeting on 13 March," March 27, 2024.
- 46. An interim Financial Policy Committee was created by the Court of the Bank in February 2011. It was then statutorily established by the Financial Services Act of 2012, which came into effect in 2013 pursuant to the Financial Services Act of 2012 (Commencement No. 1) Order 2013.
- 47. The same can be said of the Prudential Regulatory Authority.
- 48. For instance, governance issues can arise when a central bank is responsible for bank regulation because they may consider the profitability and stability of the banking sector in the setting of monetary policy, and not just inflation. See Mark Copelovitch, Jeffry Frieden, and Stefanie Walter, "The Political Economy of the Euro Crisis," *Comparative Political Studies* 49, no. 7 (March 14, 2016).

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## GENERAL DISCUSSION

- STEPHEN HABER: Thank you. What I propose we do is we'll take three or four questions, give the opportunity for some responses, then take a few more questions. I'm mindful that our questions and answers are between us and lunch. So we'll ask that if you're making a comment, that this is like *Jeopardy*! It comes in the form of a question.
- JOHN COCHRANE: John Cochrane, Hoover. For the first time in my life, I have a short question. It's for Darrell. You told the lovely story about poker chips, but we're talking about a trillion poker chips now. Back before 2008, we got along with about 10 billion poker chips. I'm curious, what happened? Why are a trillion not enough now, but 10 billion were plenty back then? I understood part of the problem from earlier work of yours: the Fed requires us to hold nine of the poker chips in our pockets. To what extent are those new liquidity requirements part of the problem? Also, we used to have intraday overdrafts. You can borrow chips during the day. I don't know if we still do, but they remove this whole business about what time of day you get or receive cash. Is that gone? Is that a good thing to bring back? What happened here? HABER: Okay, I see another hand here in the back.
- AXEL MERK: Thank you, I would love to. This is Axel Merk. I would love to have maybe Amit and Carolyn have a little argument here, because I somehow heard opposing views when I heard "targeted and temporary." In the US, we call it a "Fed put" to have a disincentive actually to get your house in order.

And I wonder, you pointed out, we need to do more financial modeling. Well, it will never be possible to model everything.

And I think one of the reasons, at least in the US, why the small banks have these issues is because there are so many regulations and they have limited resources, so they forget to look at the forest for all the trees because they try to cross all the t's. And there is the more simplified approach of having maybe less regulation to empower and hold management responsible, including allowing the potential failure of the businesses, whether that might not be a better approach than doubling down on the financial-stability operations, as you very nicely call it. I'm afraid such operations might just turn out to be a micromanagement of the economy. HABER: Okay, Mickey Levy.

- MICKEY LEVY: Amit, I have a question about your empirical work that finds that higher capital requirements for banks generate a lending response from nonbanks. What data source are you using for nonbank lending? I hear tons of anecdotal evidence about significant amounts of lending by nonbanks, but we really don't have a good grip on how much it is. So I'm interested in your database. I wouldn't be surprised if increased capital requirements for banks result in a rise in total lending after a short period.
- BRIAN SACK: Hi, Brian Sack from Balyasny Asset Management. Question for Carolyn also. I do think the Bank of England did a remarkably good job separating out market-functioning purchases from QE [quantitative easing] purchases. And, you know, there had been work done at the BIS [Bank for International Settlements] by Andrew Hauser on that, and it was neat to see that done in practice. I wanted to ask something, though. This was a situation where the problem was pretty visible to you and pretty contained. It was a particular set of institutions. And it's great to say that we did it well in that instance, but I'm wondering, will that always be the case? I could imagine market-functioning problems where it's really not clear what the problem is and where it involves a bigger set of market participants. I think 2020 is a good example in the US Treasury

market. So I'm asking, in these more complicated situations, how confident are you that you can separate that out? Thank you.

- HABER: I'm going to take two more questions and then we're going to allow panelists to respond. This gentleman here whose name I can't see, so if you could tell us who you are, and then Michael Boskin.
- BILL NELSON: Hi, I'm Bill Nelson from the Bank Policy Institute, and these were all very interesting presentations and I'd be happy to ask all of you questions, but I know Darrell will be disappointed if I don't ask him a balance sheet question. So it was clear to financial market participants starting at the end of 2018 that conditions were beginning to get tight. It was well known in advance that this was a tax day when there were going to be big payments out of money-market funds into the TGA [Treasury General Account]. It was well known that there were coupons, security settling that were going to require more repo funding. And the Fed used to know how to handle that situation. When those situations were coming, they added a lot of reserves. So, I mean, isn't the solution not to stop with two or three hundred billion above where you think you might need to go, but rather as you get closer, just to control those swings? I mean, Lou Crandall wrote a month before it happened that there was going to be a train wreck, and I wrote two weeks before it was going to happen that there was going to be a train wreck. So wouldn't that, you know, given that there are costs to size, isn't it better to explore that lower limit by controlling volatility and reserve balances?

HABER: Michael Boskin.

MICHAEL BOSKIN: I just want to ask a general question that reflects almost everything that's been said all day today. We've been talking about central bank independence, separation or integration of supervision and regulation, and financial stability for monetary policy. We've had some discussion, especially in the Latin context, of the fiscal pressures, and with John Cochrane here, we of course have to emphasize that. But we haven't heard a lot about the integration of the central bank balance sheet and the Treasury's balance sheet. And while we're forcing all these people to take mark-to-market or giving them a pass from it, the Fed used to be a very large supplier of tax revenue to the Treasury. And we haven't talked much about the risk to independence, if it ever becomes widely perceived, from the capital losses on the longterm bonds and mortgage-backed securities where we've sort of shifted the duration risk from private sector balance sheets to the Federal Reserve, which is dealing with it right now. Okay.

- HABER: So let me give the panelists an opportunity to respond and do it in the order in which they presented and start with Amit Seru, and then Darrell Duffie, and then Christina Parajon Skinner, and then Carolyn Wilkins. Amit?
- AMIT SERU: All right, thanks for great presentations and also questions from the floor. So there are many questions and everybody has a lot to say, so I'll just say a couple of things. Let me start with what was said about trying to model all kinds of scenarios being a futile exercise in the end. I'm an engineer myself, so my natural tendency is to believe in models. However, I also remember what the late Bob Lucas taught us in his famous "Lucas critique." Models with incorrectly specified interactions between various agents are bound to fail. And I think that applies very heavily in this setting. So we need to be humble and realize that models can only go that far and are bound to have errors. We have enough historical evidence. Thus, all one is saying is, let us create a buffer to account for such errors. If one looks at private credit, say, at private equity, there is skin in the game around risks they take. So all one wants is something similar for banks, some more skin in the game for all the risks they take. That's it. It's not very complicated.

How much skin in the game is one asking for? You saw that picture—all the 4,800 banks in the banking system have pretty much 90% debt. It is going to be very hard to write a model that will say that across the size distribution this is "the" optimal leverage ratio. One can explain the behavior very simply without any model—they are all at the regulatory constraint since many of them take subsidized debt (deposits) in order to maximize subsidies they get. So how much skin in the game should one have for banks? That is where the nonbank analysis I showed you is useful. These institutions offer the same banking services as banks but are financed by nonsubsidized debt. And one finds that they are funded by a lot of equity that allows them to take the kind of risk they are taking. That is what the market outcome is.

There was a question on where one gets the data on nonbanks. There is some good nonbank data related to consumer credit and, in particular, to mortgages. That was the reason that we collected detailed data on banks and nonbanks in this sector. And the first set of counterfactuals I showed you were indeed in this sector. It is hard to do this for all sectors. One can try to infer it with flowof-funds data, but getting very granular is hard. One can still run some counterfactuals at the aggregate level. Finally, let me briefly address the question of "mark-to-market" unrealized losses for the Fed. Absolutely, it is a pretty big number, given their high exposure to long-duration securities that they accumulated as a part of a series of QE they did. This may have bearing on future actions they take, but I am not sure I know exactly what, and I will let others chime in on this issue.

HABER: Darrell?

DARRELL DUFFIE: Okay, I'm going to start with John's question, because it goes to the heart of this panel's mandate, the connections between financial regulation and monetary policy. After the financial crisis, Congress really got religion about having banks relying only on themselves to meet their liquidity needs. And a raft of new regulations implementing Congress's wishes required banks to have enough liquidity for essentially any circumstances, even including the need for them to be wound down in a failure, without reliance on a lender of last resort. So, forget discount window and overdrafts, they had to have enough liquidity on their own.

And so, as is implicit in your question, they stashed up a lot of liquidity for any circumstance and they never wanted to reduce below that required amount of liquidity because their supervisors would have otherwise written them a note that would've gone to their CEO and the Fed. The CEO would have been very disappointed at the people managing those balances. So we had what is sometimes called the last-taxi problem. Lots of liquidity was there, but the banks weren't willing to use that liquidity when the opportunity came about and they weren't willing to fund other banks that were in need of liquidity. That was the major change in regulation. We can cite all the specific regulations on resolution planning and liquidity stress testing, the whole nine yards. This is not the LCR [Liquidity Coverage Ratio], which is a thirty-day liquidity rule. Other regulations require that in any circumstance within a single day, a bank must meet all of its liquidity needs.

On Mickey's question, aren't higher regulatory capital buffers going to cause banks to provide more liquidity rather than less? Yes, higher-risk-based capital buffers generally imply greater liquidity. However, there's this wrinkle in capital regulations called the leverage rule. In the US, this is called the enhanced supplementary leverage ratio, which doesn't pay any attention to risk. Even something as safe as a deposit in the central bank requires the same amount of capital under this rule as a risky real estate loan. When those leverage rules are binding, banks can be averse to providing liquidity in funding markets, even in the form of essentially perfectly safe Treasury-backed overnight loans. That's an unfortunate part of regulation.

Where did we get the data? Thanks to John Williams's invitation, I visited the New York Fed last year, where we had access to intraday Fedwire transactions and the repo transactions conducted by commercial banks.

On Bill Nelson's question, yes, and I was one of the people that was suggesting that the airplane was getting a bit low, and that we don't know where the runway is. Maybe we shouldn't try to get any lower. The Fed did put out a survey to all of the large banks saying, in the worst circumstances, how much reserves would you actually need to meet your needs? And they responded to the Fed, around 800 billion. There was about 1.5 trillion in the system at that time, and so the Fed assumed that it was fine. This was the first major reduction in its balance sheet post–financial crisis. So, you know, maybe the Fed might have been more riskaverse, as it is today, I believe, but at the time, it was relying on what it thought was reliable data and got it wrong despite some signals that were available.

HABER: Christina Parajon Skinner?

CHRISTINA SKINNER: I'll just briefly touch on the last question that was posed. I'll also take the opportunity to plug another paper that I wrote with Andy Levin, who is here today. In that paper, we argue that the fiscal consequences of the Fed's use of its balance sheet today, specifically in connection with QE and its limitless ability to issue short-term liabilities that are backed by the full faith and credit of the government-bank reserves and repos-has been, by default, systematically excluded from most forms of congressional oversight, which Congress ordinarily uses to monitor the performance and impact on the public fisc of the operations of all other major independent agencies. And so, we try to call attention to the need for greater public debate and more congressional scrutiny of the Fed's contemporary balance sheet use. I think the same point applies to the question of whether we've entered a world in which we have two parties in the US government acting as debt managers. And if we have,

how is that work being coordinated, if at all? Should the central bank have a role in debt management?

HABER: Carolyn Wilkins.

CAROLYN WILKINS: I think the comment was, why do we spend time thinking about tools instead of thinking about what's getting in the way of reducing the vulnerabilities in the first place, and how complexity in the regulatory system might be getting in the way? I would say that, yes, we need to look at those other issues too. And that's why we've done a few things at the Bank of England. The prudential side has got an exercise called "strong and simple," which is basically looking at the regulatory regime for smaller banks, thinking about what actually makes sense for them and what we can simplify in a way that supports safety but reduces the burden and may take us away from thinking about risk in a more fulsome way. The Financial Policy Committee has a dual mandate that says, well, financial stability first, but you need to take into account the net benefits, which means looking at the costs, especially related to broader objectives of innovation and growth in the UK economy.

And those aren't just words. Last year or the year before, we eliminated one of our requirements in the mortgage market. We have the LTI [loan-to-income] limit and the affordability test, which is basically a test of whether a borrower could sustain interest rate rises. We found in our research that in fact the latter one was superfluous, so we dropped it. So I think there are ways to support financial stability without overly hindering innovation and growth. Still, shocks are going to happen, and they're not in the control of the central bank or anyone, for that matter. And so we need to be prepared to respond to those. That takes planning, if you want to do it well, and it's best if you've thought of the principles to follow in advance.

Just quickly, on the balance sheet and the interaction with fiscal policy. I couldn't agree more that there are really important questions to resolve there. In some countries like Canada and the UK, in any QE exercise or any purchase exercise that involves risk to the balance sheet, indemnities are sought. And it's not necessarily because one has to, it's just that it's recognized that QE has potential fiscal consequences. I think the bigger and more gnarly issue is related to thinking about the real net benefits of QE relative to some other kind of response. And that includes fiscal policy. The optimal fiscal-monetary policy mix is an interesting academic exercise, but it's a really, really tricky public policy exercise when what you'd like to have is independence of both fiscal policy and monetary policy.

HABER: Let me thank the organizers of this conference, John [Taylor], John [Cochrane], and Michael [Bordo], for putting together this fascinating panel. And to also let you all know that lunch is served.

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LANE DRIFTING

### INTRODUCTORY REMARKS

John B. Taylor

I am very pleased to introduce our lunchtime speaker, Hester Peirce. She is a lawyer who serves as a commissioner on the Securities and Exchange Commission (SEC). She was confirmed by the United States Senate in December 2017, and was sworn in on January 11, 2018, for a term ending in 2020, and her second term expires in 2025. She previously served as the director of the Financial Markets Working Group at George Mason University's Mercatus Center. Hester Peirce is also a former staff member of the United States Senate Committee on Banking, Housing, and Urban Affairs. Well, we are going to really find out what's going on at the SEC. This is really a terrific opportunity. Thank you very much for being here. This is a continuation of a great conference, and we appreciate your coming all the way from DC to talk about "Lane Drifting."Thank you.

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# Lane Drifting: Remarks at the Hoover Monetary Policy Conference

Hester M. Peirce

I am honored—but frankly surprised—to be here. After all, monetary policy sits in my brain's closet in a dusty box labeled "Save for Later ... a Lot Later." In college, when economics rocked my world, it was not macroeconomics, but microeconomics. I was fascinated to see the push and pull of incentives on individuals' decisions about how to spend their time and money. To remind me of the life-changing lessons I learned in my college micro courses, I often sport a T-shirt I got back then: "I saw the invisible hand at CWRU [Case Western Reserve University]." In contrast to microeconomics, macroeconomics, with its focus on the aggregate and abstract theories, did not help me understand the world in which I lived. That macroeconomic models, rickety assumptions and all, were forming the gospel basis for government policy did not hit me until later. My periodic attempts to peer into the world of monetary policy are almost always unsettling, unless guided by scholars-many of them in this room-who view monetary policy with humility and an appreciation for the frightening consequences of getting it wrong. But I was not invited here to speak about monetary policy. I am here to speak about staying in one's lane. So-apart from remarking on the profound importance of sound monetary policy to the markets I regulate-staying in my lane is what I will attempt to do. To that end, I remind you that my views are my own as a commissioner at the Securities and Exchange Commission (the Commission or SEC) and not necessarily those of the SEC or my fellow commissioners.

Government agencies often wander out of their lanes. My own agency, for example, has been on a mission over recent years to slap the securities label on just about everything. For example, last year we charged the creators of the Stoner Cats web series with securities violations for selling digital cats as part of an effort to create a buzz for the series.<sup>1</sup> My colleague Commissioner Mark Uyeda and I observed at the time that a similarly jurisdiction-hungry SEC would have laid claim to Star Wars collectibles in the 1970s.<sup>2</sup> Also, last year the Commission charged a company \$35 million for, among other things, failing to collect and review employee complaints about workplace misconduct.<sup>3</sup> As one observer noted, "Historically, companies have expected scrutiny from the U.S. Equal Employment Opportunity Commission (EEOC) and other civil rights regulators and have understood the risk of private litigation related to workplace misconduct but have not expected the SEC to involve itself."4 The SEC also is involving itself in cybersecurity and climate. Recent rules, although styled as disclosure rules for public companies, will change how companies approach these risks. The Commission, however, is not the only jurisdictional glutton in DC and often finds itself on the receiving end of other agencies' territory grabs. Any defense of SEC jurisdiction coming from an SEC commissioner is going to be suspect, but the vibrancy, flexibility, and resilience of the American economy are at issue, so please hear me out.

The United States is remarkable for many reasons, including its large, efficient, and liquid capital markets. In contrast to many countries in which banks are the most important funding source, the securities markets are critically important in financing the American economy.<sup>5</sup> Unlike banks, which, by their nature, tend to be risk averse and conservative, the capital markets are a good match for an innovative, flexible, dynamic, and competitive economy.<sup>6</sup> Well-functioning capital markets reflect the broader society. As Ludwig von Mises explained:

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A stock market is crucial to the existence of capitalism and private property. For it means that there is a functioning market in the exchange of private titles to the means of production. There can be no genuine private ownership of capital without a stock market: there can be no true socialism if such a market is allowed to exist.<sup>7</sup>

Capital markets give individual investors a place to express with their cold, hard cash their views about which companies, technologies, and products will succeed. Based on their own knowledge, experience, and expectations, they take risks on other people's ideas. For an investor, "nothing ventured, nothing gained" encapsulates the understanding that we place our money at risk when we hand it over to an asset manager or instruct a broker-dealer to buy shares in a public company. We hold very different expectations when we deposit our biweekly paycheck in a bank.

Bank financing is important to the economy, but it allocates capital differently than the securities markets do. Among other differences is the greater effect of government regulations on banks' lending decisions. The government's interest in managing bank risk taking derives in part from its provision of federally backstopped deposit insurance and the government's propensity to bail out even uninsured depositors. Since the government ultimately is on the hook if banks mismanage themselves into insolvency, the government wants a say in how they manage themselves. Banks are accustomed to the assertive presence of their regulators, some of whom literally take up residence in bank headquarters.<sup>8</sup> Regulation—sometimes in pursuit of nonfinancial objectives-circumscribes some activities by banks and encourages other activities.9 Economist Henry Simons understood the importance of "minimiz[ing] ... political influence in the allocation of investment funds," which is why he argued for limiting the role of banks in "mobilizing funds for investment."<sup>10</sup> In taking on credit risk, banks respond to market signals, but the

regulatory signals—both stated and hinted—to which they necessarily are very attuned shape their decisions. Equity and debt financing, by contrast, responds more directly to the market because its availability and cost are reliant on the decisions of a wide range of people whose money is on the line.

Core to the success of the securities markets is the idea that failure is a possibility. Without a government insurance program or constantly hovering supervisors, unforgiving market discipline hems in participants in the capital markets. Investors face the consequences of their own decision making—wise or foolish. If the government will not make good on your losses, you think hard about the decision to hand over your money. Investors can lose their entire investment when a company fails, which makes preinvestment due diligence a must. Likewise, fund investors have a strong incentive to vet and monitor fund activities because funds can and do fail, often without much regulatory interest.<sup>11</sup>

The differences between capital markets and bank financing are reflected in regulation. The former is subject primarily to disclosure and attendant anti-fraud regulation, and the latter to prudential regulation.<sup>12</sup> Bank regulation is prescriptive to achieve stability and continuity, but capital markets regulation relies heavily on disruptive competition and innovation to keep the markets healthy.<sup>13</sup> The SEC is at its best as a disclosure regulator: through our rules, we seek to ensure that investors obtain the material, accurate information they need to make an informed decision, and then we get out of the way so the competitive game can play out. Yes, one-third of the SEC's mission is to protect investors, but we accomplish that objective by ensuring that truthful and accurate material information is easily available so they can be well informed about investment opportunities, not by limiting investment opportunities. Bank regulators, by contrast, sometimes view less transparency as helpful in fostering stability.<sup>14</sup> One could argue that a full-transparency approach would

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be more effective for bank regulation too, but rumble strips are warning me to stay in my lane.  $^{15}\,$ 

As yet another symptom of an increasingly risk-averse society, the mind-set and sensibilities of federal banking agencies are leaching into the SEC. The attitudinal shift is partly of our own making. We have forgotten that capital markets are not about the safety, soundness, and survival of individual firms, but about resilience and growth through rough-and-tumble competition. Though Congress did not make the SEC a systemic risk regulator, we now routinely invoke systemic risk to justify everything from regulating private funds to reining in artificial intelligence, to outsourcing certain functions by investment advisors.<sup>16</sup> Congress empowered the SEC to regulate the activities of mutual funds, broker-dealers, and market intermediaries, but the Commission is wielding this authority in new and more interventionist ways. Prescriptions about the handling of equity market orders, increasingly granular cybersecurity mandates, and strategyaltering liquidity rules for mutual funds are some examples of a trend toward a greater willingness to replace private decision making with our own. And increasingly, our regulations reach into the operations of firms over which we do not have authority, such as service providers to securities firms. Each of these measures will stand or fall on its own merits, but the general trend is toward greater control of all the participants we regulate and even some we do not regulate.

One notable example of the move toward a more prudential and prescriptive approach to regulation is the recently adopted rules for private fund advisors. Traditionally, advisors to private funds, which are not retail oriented, operated with great regulatory leeway. Closer oversight began when Congress, in the Dodd-Frank Act, mandated SEC registration of private fund advisors and directed the SEC to collect private fund data to support the Financial Stability Oversight Council (FSOC). Recent expansions of this data collection are fodder for future prudential regulatory interventions. The real change, however, came with the adoption last year of a semiprudential regulatory framework—albeit in a disclosure wrapper and not as interventionist as the proposal—for private fund advisors.<sup>17</sup> Before this rulemaking, fund investors and advisors shaped their relationships through contracts that were the product of each party weighing must-have features against less-important ones. Competition, not regulatory prescriptions, kept fund managers in check.<sup>18</sup> Now the Commission has assumed the tribune's mantle to protect downtrodden private fund investors—such as pension funds and endowments represented by well-compensated investment professionals. Investors looking to increase their negotiating leverage with large managers invited the new rules, but pressure from the prudential regulators also factors into the SEC's increased focus on private funds.<sup>19</sup>

Prudential regulators view private funds as a threat to financial stability. Among other concerns, some funds are highly leveraged, rely on short-term funding, and sell during times of stress, which may "transmit material stress" to banks.<sup>20</sup> As large players in the markets, hedge funds' actions do affect the financial system and other participants in it. Bank regulators know about these interconnections, which is why they work with banks to limit their counterparty exposures to hedge funds.<sup>21</sup> On balance, however, they contribute to the resilience of the financial system by being nimble sources of liquidity, even during times of stress, albeit perhaps at prices that sellers would prefer to be higher. The diversity of hedge fund managers and strategies means that when some are selling, others likely are buying. Sometimes, of course, an overly generous Uncle Sam distorts the dynamic by suggesting he might buy at a better price. The best way to ensure that hedge funds continue to contribute to the resilience of the financial markets is to keep barriers to entry and exit low and to avoid regulation that homogenizes fund strategies. Even during times of market stress, the focus should be on the well-being of the markets, not of particular funds.

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As the experience with private funds illustrates, prudential regulators have nudged the Commission in the prescriptive and prudential direction. Much of this pressure comes through the FSOC. Most notably, the FSOC has been instrumental in the changes to moneymarket fund regulation over the past decade. In 2012, two years after the SEC adopted post-financial crisis money-market fund reforms to enhance liquidity, the FSOC proposed to use its authority under Dodd-Frank to recommend that the SEC adopt additional moneymarket fund reforms.<sup>22</sup> The FSOC called for additional "structural reforms" to "reduce the risk of runs and significant problems spreading through the financial system."<sup>23</sup> In 2014, the Commission complied by, among other things, mandating a floating net asset value (NAV) for institutional prime funds.<sup>24</sup> The Commission also adopted threshold-triggered discretionary redemption gates and fees. Fear of those thresholds being hit affected investor and fund behavior during the COVID-19 crisis of March 2020.25 The Federal Reserve, with Treasury's sign-off, responded with the liquidity facilities to support money-market funds and short-term funding markets generally.<sup>26</sup> These facilities inevitably led to calls for further money-market fund reforms.<sup>27</sup> The Commission responded in 2023 by sensibly getting rid of the fees and gates threshold and unwisely adding a new mandatory liquidity fee, which seems to be killing off the handful of prime institutional money-market funds that survived the last set of reforms.<sup>28</sup> These funds' absence will be felt by investors and the issuers of short-term commercial paper, but private issuers' loss is Treasury's gain. A better result would have been to quash any expectations of government support for money-market funds in a future crisis and encourage money-market fund sponsors to devise appropriate, tailored solutions that would work for their funds, even during times of stress.<sup>29</sup> A heterogeneous approach might be better at fostering stability than a uniform approach designed by regulators.

Not content to encourage the SEC's prudential efforts, prudential regulators are eyeing more direct control over capital markets participants. Just as the Commission sees in everything a security, prudential regulators see in every financial institution a bank—or at least something lurking in the shadows that should be regulated as one. So-called shadow banking—now less ominously known as "nonbank financial intermediation"—features prominently in the work streams, task forces, and reports of the FSOC and its international sister, the Financial Stability Board (FSB). Money-market funds, open-end mutual funds, private funds, and their advisors fall within the broad category of nonbank financial institutions that prudential regulators are eyeing.

The FSOC's induction into the financial regulatory pantheon laid the groundwork for a new regulatory approach to nonbanks. Congress created the FSOC, among other reasons, "to identify risks to the financial stability of the United States that could arise from the material financial distress or failure, or ongoing activities, of ... nonbank financial companies."30 The FSOC can make recommendations to the primary regulator "to apply new or heightened standards and safeguards for financial activities or practices," as it proposed to do with money-market funds. Alternatively, the FSOC can "require supervision by the Board of Governors for nonbank financial companies that may pose risks to the financial stability of the United States."31 The FSOC has experimented with different approaches to exercising its designation authority and has run headlong into the courts in the process.<sup>32</sup> Last year, the FSOC rejected with palpable vehemence the approach the prior FSOC had embraced after its court loss; no longer would designating individual entities be a last resort, no longer would a cost-benefit analysis be performed, and no longer would an assessment of the "company's likelihood of material financial distress" happen.<sup>33</sup> Whereas an activities-based approach leaves responsibility for addressing any potential risk with the primary financial regulators, an entity-based approach supplements the nonbank financial institution's primary regulator with the Federal Reserve. Commenters highlighted that application of a prudential regulatory framework "focused on safety and soundness for banking institutions is fundamentally incompatible with the capital markets where investors knowingly put their capital at risk."<sup>34</sup> Though it acknowledged the costs, the FSOC shifted its designation hammer back to the top of the toolbox.<sup>35</sup> Federal Reserve supervision and the attendant prudential regulatory framework that includes measures such as risk-based capital requirements, liquidity minimums, and leverage limits may be coming for funds and their managers.

The pivot back toward designating entities as systemic is reflective of a misplaced focus by prudential regulators on funds—not just money-market funds and private funds, but open-end funds—as a risk to financial stability. Prudential regulators point with alarm to the sector's large size, open-end fund characteristics such as daily redemption and lack of a government insurance scheme, funds' interconnections, and fund performance during times of stress.<sup>36</sup> In addition to the FSOC's new designation approach, prudential regulators have pushed measures such as the liquidity requirements we proposed in 2022 for open-end funds, which included a swingpricing requirement.<sup>37</sup>

Prudential regulation for open-end funds is unnecessary and would undermine their contribution to the resilience of the financial system. Funds that offer daily redemption and a portfolio composed of assets of different liquidity levels have long existed. Their track record is good, even in times of stress.<sup>38</sup> The FSB and FSOC blame these funds for aggravating market stress during periods like March 2020, but laying the blame for the COVID-related stress at the feet of open-end funds is a stretch, given the widespread economic uncertainty around the virus and government's response to it.<sup>39</sup> Heavy selling during that time was not limited to funds.<sup>40</sup> The transparency of fund holdings, the heterogeneity of funds, the widespread ownership of funds by investors with a wide range of preferences, and fund sponsors' deep experience in managing redemptions mitigate systemic risk concerns.<sup>41</sup> Prudential regulation would undermine these strengths and, by extension, the resilience and efficacy of the financial system.

Regulating funds in a bank-like way will sap these entities of the characteristics that enable them to nimbly and flexibly serve the economy. Bank-like regulations that focus on mitigating risk, even if imposed by the historically nonprudential SEC, would be a poor match for an industry that is designed to finance entrepreneurial risk taking. Designating funds and asset managers as systemically important and adding them to the growing ambit of the Federal Reserve would lessen their own incentives to manage risk. A designation likely carries with it a market expectation of future bailouts, which would dull the now-keen risk sensitivity of asset managers.<sup>42</sup> To protect its own reputation as a supervisor, the Federal Reserve might be tempted to rescue a failing designated entity. The prudential regulation that would follow designation could subject funds to the same types of constraints and nonmarket pressures that banks face when making decisions about where to allocate capital.

Finally, the hoped-for benefits of a prudential fund regulator are not achievable because prudential regulators are people too. I am reminded of F. A. Hayek's takedown of the "economic man" who is "supposed to know automatically all that is relevant for [his] decisions."<sup>43</sup> So too must we reject the model regulator who is supposed to know automatically all that is relevant for her decisions. To again riff on Hayek, that "quasi-omniscient" government regulator is "the skeleton in our cupboard" that keeps popping out to promise that next time will be different if we just give her a little more control.<sup>44</sup> Regulators have neither the knowledge nor the will to make better decisions than the participants in our capital markets.

To the fastidious and well-ordered mind of a bank regulator, the capital markets are messy things. That messiness is beautiful to me, so I dread the day when my old college T-shirt's invisible hand slogan is replaced with "The invisible hand is dead; long live the Fed." Centralizing decision making at the Federal Reserve is not the way to bring stability. To quote Simons again, "Centralization

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[of power] is a product of disorder. In advanced societies, it is retrogression induced by disasters.<sup>745</sup> Prudential regulatory encroachment on the capital markets erodes the decentralized decision making that is so critical to their proper functioning.

Capital markets are not perfect. We see bubbles, bad behavior, begging for bailouts, big bailouts, and bankruptcies. Some of these problems are the result of poor decision making by market participants, regulators, or monetary policymakers. We will never eliminate bad decisions, but keeping people in their lanes will enable them to make better decisions. The SEC should focus on getting investors the information they need. Bank regulators should focus on regulating banks. Central bankers should focus on monetary policy. All of these are big and important jobs on their own without adding moonlighting in someone else's lane. Finally, to focus investors' minds on their task at hand and keep them out of the bailout-begging business, we need to remind them with our actions as much as with our words that, in the capital markets, failure is a possibility, but government bailouts are not.

You have been a gracious audience. Having to listen over lunch to me—a noneconomist whose field would not have been monetary policy even if I had had the guts to try for an econ PhD and who comes bringing a "stay in your lanes" message—just goes to show that there is no such thing as a free lunch.

#### Notes

This chapter is based on remarks by Hester M. Peirce at the Hoover Institution conference Getting Global Monetary Policy on Track (2024) and is in the public domain.

 "SEC Charges Creator of Stoner Cats Web Series for Unregistered Offerings of NFTs," press release, US Securities and Exchange Commission, September 13, 2023; and Securities Exchange Act Release No. 11233, September 13, 2023.

- Hester M. Peirce and Mark T. Uyeda, "Collecting Enforcement Actions: Statement on Stoner Cats 2, LLC," US Securities and Exchange Commission, September 13, 2023.
- "Activision Blizzard to Pay \$35 Million for Failing to Maintain Disclosure Controls Related to Complaints of Workplace Misconduct and Violating Whistleblower Protection Rule," press release, US Securities and Exchange Commission, February 3, 2023.
- 4. Michael A. Asaro, Katherine R. Goldstein, Parvin Daphine Moyne, Aleea C. Stanton, Kerry E. Berchem, and Jason Koenig, "The SEC Reminds Companies Not to Forget the 'S' in ESG: Activision Blizzard Reaches \$35 Million Settlement over Disclosure Controls Related to Workplace Complaints and Violation of Whistleblower Protection Rule," Akin, February 15, 2023.
- 5. Securities Industry and Financial Markets Association (SIFMA), "Our Markets," https://www.sifma.org/about/our-markets/ (explaining that, in contrast to "[0]ther countries [in which] bank lending dominates corporate borrowing," in the United States "the inverse is true: bank lending accounts for just 26% of corporate borrowing, while corporate bonds are 74%."); William C. Dudley and R. Glenn Hubbard, "How Capital Markets Enhance Economic Performance and Facilitate Job Creation," Goldman Sachs Global Markets Institute White Paper, November 2004 (comparing the United States and United Kingdom, which have well-developed capital markets, with other countries that rely more heavily on bank financing); and "IMF Background Note on CMU for Eurogroup," June 15, 2023, 2 ("Banks account for a much larger part of the financial system in Europe than in the US.... European firms rely much less on market sources of financing, with less than 30 percent of their funding coming from tradable equity and debt, compared to nearly 70 percent for US firms.... And firms with fewer tangible assets to pledge as collateral are particularly constrained in a bank dominated system, which can impair their growth performance.").
- Mark T. Uyeda, "Remarks at the ICI Global Asset Management Asia Forum," US Securities and Exchange Commission, November 30, 2023 (explaining that the capital markets offer investors the prospect of greater returns in exchange for taking risk).
- 7. Murray N. Rothbard, *Making Economic Sense* (Auburn, AL: Ludwig von Mises Institute, 1995), 426 (quoting Ludwig von Mises).
- "Careers at the OCC: Large Bank Locations," Office of the Comptroller of the Currency, accessed July 1, 2024, https://careers.occ.gov/locations /locations-list-view.html?category=lbs.

9. In the name of guarding against reputational risk, bank regulators sometimes dissuade banks from working with certain types of customers. Julie Andersen Hill, "Regulating Bank Reputation Risk," Georgia Law Review 54 (2020): 523-603; Letter from American Fintech Council to FDIC Chairman Martin J. Gruenberg, American Fintech Council, April 19, 2024 (suggesting that the FDIC discourages banks from entering into fintech partnerships), https://www.fintechcouncil.org/advocacy/federal -advocacy-letter-to-fdic-on-regulating-innovation; Remarks by FDIC Vice Chairman Travis Hill at the Cato Institute on "Insights on the FDIC's Agenda," September 21, 2023 ("In 2022, the FDIC proposed principles for managing climate-related risks and discussed plans to issue further guidance in the future.... To the extent the principles are meaningful and more than a check-the-box compliance burden, the inevitable result will be that banks offer less credit, or charge more for credit, to consumers and businesses in communities that are most vulnerable to climate events, including those in low- and moderate-income areas. As a general matter, when bank regulators declare something a safety and soundness concern, the expected result should be that banks will do less of it or charge more for it.") (internal citation removed); John Cochrane, "Don't Let Financial Regulators Dream Up Climate Solutions," City Journal, March 24, 2021 (pointing out regulatory pressure "to defund the fossil fuel industry before alternatives are in place and to steer funds to fashionable but unprofitable investments," and giving as an example "the [Network for Greening the Financial System] club of financial regulators [which] states plainly that it seeks to 'mobilize mainstream finance to support the transition toward a sustainable economy") (citing Network for Greening the Financial System, "NGFS Publishes Conceptual Framework for Nature-Related Financial Risks at Launch Event in Paris," September 7, 2023); "Community Investment Act," Office of the Comptroller of the Currency website ("The Community Reinvestment Act of 1977 [CRA] encourages certain insured depository institutions to help meet the credit needs of the communities in which they are chartered, including low- and moderate-income [LMI] neighborhoods, consistent with the safe and sound operation of such institutions.") (emphasis added), accessed July 31, 2024, https://www.occ.gov/topics/consumers -and-communities/cra/index-cra.html; and Stephen Matteo Miller, "The Recourse Rule, Regulatory Arbitrage, and the Financial Crisis," Journal of Regulatory Economics 54, no. 2 (October 2018) ("[B]y lowering capital requirements on the very assets that lay at the heart of the crisis, the

Recourse Rule could have created incentives for the largest securitizing BHCs [bank holding companies] to gradually hold more of those assets. Even though regulators may have finalized the Recourse Rule to encourage securitization but not risk taking, an unintended consequence was that it created incentives for the largest securitizing BHCs to expose themselves to what turned out to be riskier assets.").

- 10. Henry C. Simons, "The Requisites of Free Competition," in *Economic Policy for a Free Society* (1948), 80, reprinted from the *American Economic Review* 26, no. 1 (Supplement) (March 1936): 68–76 ("If we could separate sharply between the function of issuing money, the function of warehousing and transferring funds, and the function of mobilizing funds for investment, then government control over enterprises performing the latter function (or the latter two functions) might easily be confined to the provision of ordinary safeguards against fraud, and the threat of political influence in the allocation of investment funds minimized.").
- 11. Michael Malquarti, "Commentary: The Hedge Fund Bermuda Triangle," *Hedge Fund Journal* 37 (May 2008) (advising hedge fund investors to "[avoid] managers who combine leverage, illiquidity and concentration," because managers "who attempt to sail through the 'Hedge Fund Bermuda Triangle'... run the risk of following their predecessors into failure.").
- 12. Mark T. Uyeda, "Remarks at the ICI Global Asset Management Asia Forum," US Securities and Exchange Commission, November 30, 2022 (contrasting securities regulation, which provides the disclosure necessary to enable investors to choose their risk level, with bank regulation, which aims to limit risk).
- 13. Michelle W. Bowman, "Accountability for Banks, Accountability for Regulators," Essay for *Starling Insights*, Board of Governors of the Federal Reserve System, February 13, 2024 (Bank regulation need not "replace a bank's management and board of directors in adopting a banking strategy and risk appetite," but can instead be limited "to apply[ing] appropriate, targeted regulation and supervision, to assess whether a bank is operating in compliance with applicable laws and in a safe and sound manner."). As Governor Bowman notes, "This can be a difficult balance to strike."
- 14. For example, bank regulators' ratings of banks are strictly confidential. Julie L. Stackhouse, "The ABCs of CAMELS," Federal Reserve Bank of St. Louis, July 23, 2018 ("Each bank's CAMELS ratings and examination report are confidential and may not be shared with the public, even on a lagged basis. In fact, it is a violation of federal law to disclose CAMELS ratings to unauthorized individuals. Outsiders may monitor bank health

through private-sector firms that use publicly available financial data to produce their own analysis of bank health, sometimes even using their own rating system.") (internal citation removed).

- 15. Comment letter of Aaron Klein, Brookings Institution, February 28, 2020 (arguing for greater transparency of CAMELS ratings), https://www.brookings.edu/wp-content/uploads/2020/02/CAMEL-Comment -letter-Final-Klein.pdf.
- 16. US Securities and Exchange Commission, "Outsourcing by Investment Advisers," *Federal Register* 87, no. 220 (November 16, 2022): 68816, 68818 ("The use of service providers could create broader market-wide effects or systemic risks as well, particularly where the failure of a single service provider would cause operational failures at multiple advisers.").
- US Securities and Exchange Commission, "Private Fund Advisers; Documentation of Registered Investment Adviser Compliance Reviews," *Federal Register* 88, no. 177 (September 14, 2023): 63206 (to be codified at 17 C.F.R. 275).
- 18. Commenters on the private fund advisor rule noted the competition. Comment letter from Brian Cartwright, Jay Clayton, Joseph A. Grundfest, Paul G. Mahoney, Harvey L. Pitt, Adam Pritchard, James S. Spindler, Robert B. Stebbins, J. W. Verret, and Charles Whitehead, April 25, 2022, 6 ("The Proposing Release identifies more than 5,000 registered investment advisers with private fund clients. This figure does not include private funds managed by exempt reporting advisers or advisers that are not eligible for SEC registration. Investors are free to choose the terms they are willing to accept, including cost and liability allocation provisions, when investing in a private fund."); and Committee on Capital Markets Regulation, "A Competitive Analysis of the US Private Equity Fund Market," April 2023, 6–7 (applying well-tested competition metrics to find that not only were private equity funds and advisors well below the threshold for an unconcentrated market, but the concentration for registered investment companies was *four times higher*).
- 19. Financial Stability Oversight Council, 2023 Annual Report, 12 ("The Council supports the initiatives by the SEC and other agencies to address risks in hedge funds, including data collection improvements for Form PF. The Council will continue to review the findings of the Hedge Fund Working Group (HFWG) as they are developed and recommends that the SEC and other relevant regulators consider whether additional steps should be taken to address vulnerabilities related to these funds."); Financial Stability Oversight Council, 2022 Annual Report, 44 (FSOC's

Hedge Fund Working Group "also identified gaps in the availability of data related to hedge funds, and Council member agencies are taking steps to address these gaps. For example, the SEC and the CFTC proposed amendments to Form PF, the primary regulatory data source on the private fund industry. The SEC also proposed a new requirement that certain advisers to hedge funds report timely information about events that indicate significant distress at a fund.").

- 20. "Remarks by FDIC Chairman Martin J. Gruenberg at the Exchequer Club on the Financial Stability Risks of Nonbank Financial Institutions," Federal Deposit Insurance Corporation, September 20, 2023 ("Hedge funds are a type of nonbank that often employ a strategy of high leverage and reliance on short-term funding, which can create risks to financial stability and contribute to a reduction in financial intermediation during periods of market stress. The Financial Stability Oversight Council (FSOC) Hedge Fund Working Group found that hedge funds were among the three largest sellers of Treasury securities by category in March 2020 along with foreign institutions and open-end mutual funds, and that they materially contributed to the Treasury market disruption during this period.").
- 21. Board of Governors of the Federal Reserve System, "Supervision and Regulation Report," November 2023 ("[Federal Reserve supervisors] are also conducting work to assess the level and quality of loans to nonbank financial institutions, given a substantial increase in lending to this segment in recent years.").
- Financial Stability Oversight Council, "Proposed Recommendations Regarding Money Market Mutual Fund Reform," *Federal Register* 77, no. 223 (November 19, 2012): 69455.
- 23. Financial Stability Oversight Council, "Proposed Recommendations," 69456 and 69455–6 ("But the 2010 reforms did not address the structural vulnerabilities of MMFs [money-market funds] that leave them susceptible to destabilizing runs. These vulnerabilities arise from MMFs' maintenance of a stable value per share and other factors as discussed below. MMFs' activities and practices give rise to a structural vulnerability to runs by creating a 'first-mover advantage' that provides an incentive for investors to redeem their shares at the first indication of any perceived threat to an MMF's value or liquidity."); and Daniel Schwarcz and David Zaring, "Regulation by Threat: Dodd-Frank and the Nonbank Problem," University of Chicago Law Review 84 (2017): 243 ("In all likelihood, the SEC would have refused to accept FSOC's recommendations on money

market funds were it not for the council's designation power. There is, in fact, strong evidence that the council had explicitly threatened the SEC with the prospect of designating large money market funds and their advisors.").

- 24. We rejected most of the FSOC's other suggested changes, such as the introduction of a NAV buffer. US Securities and Exchange Commission, "Money Market Fund Reform; Amendments to Form PF," *Federal Register* 79, no. 157 (August 14, 2014): 47736 and 47924.
- 25. Funds sold long-term holdings at a rate greater than average presumably to avoid the gates and fees threshold. US Securities and Exchange Commission, "Money Market Fund Reforms; Form PF Reporting Requirements for Large Liquidity Fund Advisers; Technical Amendments to Form N–CSR and Form N–1A," *Federal Register* 88, no. 148 (August 3, 2023): 51404 and 51414 ("[I]n March 2020 institutional prime and institutional tax-exempt money market funds experienced significant outflows, spreads for instruments in which these funds invest widened sharply, and these funds sold significantly more long-term portfolio securities [i.e., securities that mature in more than a month] than average.").
- 26. US Department of the Treasury, "Report of the President's Working Group on Financial Markets, Overview of Recent Events and Potential Reform Options for Money Market Funds," December 2020, 3-4 ("While government MMFs saw significant inflows during this time, the prime and tax-exempt MMF sectors faced significant outflows and increasingly illiquid markets for the funds' assets. As a result, prime and tax-exempt MMFs experienced, and began to contribute to, general stress in short-term funding markets in March 2020. For example, as pressures on prime and tax-exempt MMFs worsened, two MMF sponsors intervened to provide support to their funds. It did not appear that these funds had idiosyncratic holdings or were otherwise distinct from similar funds and, accordingly, it was reasonable to conclude that other MMFs could need similar support in the near term. These events occurred despite multiple reform efforts over the past decade to make MMFs more resilient to credit and liquidity stresses and, as a result, less susceptible to redemption-driven runs. When the Federal Reserve quickly took action in mid-March by establishing, with Treasury approval, the Money Market Mutual Fund Liquidity Facility ... and other facilities to support short-term funding markets generally and MMFs specifically, prime and tax-exempt MMF outflows subsided and short-term funding market conditions improved.").

- 27. US Department of the Treasury, "Financial Stability Oversight Council Statement on Money Market Fund Reform," June 11, 2021 ("The pandemic-induced market volatility demonstrated that disruptions in short-term funding markets, including at MMFs, have the potential to create or amplify financial instability.... [F]uture reforms should address structural vulnerabilities in MMFs, improve the resilience and functioning of short-term funding markets, and reduce the likelihood that official-sector interventions and taxpayer support will be needed to halt future MMF runs and address stresses in short-term funding markets more generally.").
- Harriet Clarfelt and Brooke Masters, "Managers to Shut or Convert \$220bn of US Money Market Funds before Rule Change," *Financial Times*, April 11, 2024.
- 29. Michael Piwowar anticipated almost ten years ago, in his dissent from the 2014 money fund rulemaking, that institutional assets "would no longer be available for the short-term funding of state and local governments or businesses." Michael Piwowar, "Dissenting Statement at Open Meeting Regarding Money Market Fund Reform," US Securities and Exchange Commission, July 23, 2014 (Piwowar Statement); Timothy W. Cameron and Lindsey Weber Keljo, comment letter from SIFMA-AMG PWG, April 12, 2021, 1 ("Money market funds play an important role in the orderly functioning of the short-term funding markets and serve valuable financial and economic functions for a variety of investors (including both retail and institutional investors) and the capital markets more broadly. Policy measures that have the effect of eliminating or significantly decreasing the size of the prime, retail, and tax-exempt money market fund sectors will significantly impair the resilience and orderly functioning of the short-term funding markets."); and Hester Peirce, "Air Dancers and Flies: Statement on the Adoption of the Latest Round of Money Market Fund Reforms," US Securities and Exchange Commission, July 12, 2023, and Piwowar Statement (advocating an "investor choice" approach, which "would allow investors to choose whether to invest in a fund that floats its NAV or one that can impose a liquidity fee and gate. The key feature of this approach is that investors, after receiving complete information as to the benefits and risks of each alternative, could choose which alternative best fits their own unique investment objectives, rather than the Commission choosing which to impose on all investors"). Because the government repeatedly has rushed in with rescue programs, eliminating expectations of a future rescue is admittedly difficult. Huberto M. Ennis, Jeffrey M. Lacker,

and John A. Weinberg, "Money Market Fund Reform: Dealing with the Fundamental Problem," Federal Reserve Bank of Richmond, Working Paper Series, August 31, 2022, 14 ("While we might be better off in a world in which the relevant authorities can credibly commit ex ante to not providing support ex post, that world may not be available to us. If so, then, MMFs should be required to have contractual commitments in place, in advance, for liquidity support from private third parties in the event of their financial distress. Such requirements would enhance the ability of the official sector to resist intervening and provide market-based incentives for MMFs to mitigate funding risks.").

- Dodd-Frank Wall Street Reform and Consumer Protection Act § 112(a) (1)(A).
- 31. Dodd-Frank § 112(a)(2)(K); Dodd-Frank §§ 112(a)(2)(H) and 113.
- MetLife Inc. v. Financial Stability Oversight Council, 177 F. Supp. 3d 219 (D.D.C. 2016).
- 33. Financial Stability Oversight Council, "Guidance on Nonbank Financial Company Determinations," *Federal Register* 88, no. 221 (November 17, 2023): 80110 and 80111 ("[T]he 2019 Interpretive Guidance stated that before considering a nonbank financial company for potential designation . . . the Council would exhaust all available alternatives by prioritizing an 'activities-based approach,' perform a cost-benefit analysis, and assess a company's likelihood of material financial distress. [T]he Council has determined that these steps are not legally required, are not useful or appropriate, and would unduly hamper the Council's ability to use the statutory designation authority in relevant circumstances.").
- Jonathan Chiel, comment letter from Fidelity Investments, July 27, 2023, 3, https://www.fidelity.com/bin-public/060\_www\_fidelity\_com/documents /about-fidelity/Fidelity-FSOC-Comment-Letter.pdf ("FSOC 2023").
- 35. FSOC 2023, 80122 ("Moreover, the purpose of the prudential standards and Federal Reserve supervision applicable to a designated nonbank financial company is to mitigate the threat to financial stability that the company's material financial distress or activities could pose. For example, even if they were costly to implement, risk-based capital requirements, leverage limits, or liquidity requirements reduce risks posed by companies to the financial system. Notwithstanding the potential costs of a Council designation, Congress set out a process by which companies should be evaluated and, if they meet the statutory standard, subject to prudential standards and Federal Reserve supervision.").

- 36. FSOC 2023 Annual Report, 64-65 ("Open-end funds allow daily redemptions; however, some types of open-end funds may invest in assets that may not be easily liquidated, resulting in a potential structural liquidity mismatch. In times of market this mismatch can contribute to and amplify stress in the U.S. financial system."); Financial Stability Board, "Enhancing the Resilience of Non-Bank Financial Intermediation, Progress Report," September 6, 2023, 9 ("Unmitigated structural liquidity mismatch may amplify shocks by driving 'excess' redemptions that require managers to engage in asset sales larger than in the absence of liquidity mismatch, especially in times of stress. One particular example is when redeeming OEF [open-end fund] investors do not bear the full cost of their redemptions and there is a 'first mover advantage' for those investors. Recent episodes of stress ... have shown that OEF outflows can be very large, which contributed to selling pressures and led to interventions by public authorities to restore market confidence."); Financial Stability Board, "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities," January 12, 2017, 4 ("In light of the need to understand and address potential financial stability risks from structural vulnerabilities associated with asset management activities, the Financial Stability Board (FSB) launched in March 2015 work to address such vulnerabilities."); and "Financial Stability Oversight Council Statement on Nonbank Financial Intermediation," press release, US Department of the Treasury, February 4, 2022.
- 37. Janet Yellen, "Remarks by Secretary of the Treasury Janet L. Yellen at the National Association for Business Economics 39th Annual Economic Policy Conference," US Department of the Treasury, March 30, 2023 ("The structural vulnerabilities at the heart of money market and openend funds aren't new. In the banking sector, capital and liquidity requirements and federal deposit insurance reduce the likelihood of runs taking place. In case runs occur, access to the discount window helps provide buffers for banks. Yet the financial stability risks posed by money market and open-end funds have not been sufficiently addressed. Over the past two years, the SEC has proposed rules to mitigate the vulnerabilities plaguing these funds. The SEC's proposals would reduce the first-mover advantage, reducing run incentives during times of stress. They would also require new liquidity management tools, while mandating more comprehensive and timely information on these funds for the SEC and investors." [internal citations removed]); "Remarks by FDIC Chairman Martin J. Gruenberg at the Exchequer Club on the Financial Stability Risks of Nonbank Financial

Institutions," Federal Deposit Insurance Corporation, September 20, 2023 (warning about "potential liquidity mismatch, particularly in times of stress, in some types of open-end funds can give rise to a desire by investors to redeem shares more expeditiously, including taking a 'first mover advantage'"); and FSOC 2022 Annual Report, 45 (noting that "[o]pen-end funds continue to pose risks to U.S. financial stability," and noting SEC's rulemaking efforts).

- 38. Shelly Antoniewicz, Hammad Qureshi, and Matt Thornton, "The SEC's Liquidity Proposal Is Arbitrary and Harmful to Investors," ICI Viewpoints, January 12, 2024 ("Open-end long-term mutual funds ('funds') have a long history of successfully managing liquidity, enabling them to meet shareholder redemptions in a timely manner while pursuing their investment objectives. Over the past four decades, 99.94% of these funds have met redemptions, including every single fund during the 2008 global financial crisis and the 2020 dash for cash.").
- 39. For a discussion of the complexities of the COVID crisis and the nature of the Federal Reserve's response, see Michael D. Bordo and John V. Duca, "An Overview of the Fed's New Credit Policy Tools and Their Cushioning Effect on the COVID-19 Recession," Hoover Institution, Economics Working Paper 21118, September 2021; and Robert L. Hetzel, "COVID-19 and the Fed's Credit Policy," Mercatus Center at George Mason University, Mercatus Working Paper, July 2020.
- 40. Financial Stability Oversight Council Meeting Minutes, Fraser, Federal Reserve, February 4,2022 (reporting that "open-end funds were among the largest recorded sellers of U.S. Treasuries, U.S. municipal bonds, and possibly U.S. corporate debt during March 2020," but that they "were not the sole or primary cause of market stress." [comments of Kelsey Pristach]); and Financial Stability Board, "Holistic Review of the March Market Turmoil," November 17, 2020, 1 ("On the demand side, non-financial corporates attempted to tap capital markets; demand for US dollar liquidity increased from foreign borrowers; non-government money market funds (MMFs) experienced significant outflows; and some open-ended funds also experienced redemptions. On the supply side, reductions in risk appetite, regulatory constraints and operational challenges may have reduced dealers' capacity to intermediate larger flows in some core funding markets.").
- 41. Lindsey Weber Keljo and William C. Thum, Comment Letter of the Asset Management Group of the Securities Industry and Financial Markets Associations, July 27, 2023, 12 ("An asset manager with a large

amount of assets under management is effectively a collection of many smaller and diverse accounts, each with its own characteristics, objectives and risk profiles. Investment advisers and funds regularly shut down or have assets migrate from manager to manager with little market impact. It is *investors—not the fund or the asset manager*—who ultimately own the assets and bear the investment risk in pooled vehicles. Moreover, it is the clients who set the investment strategy, which the manager simply executes. Taken together, this limits the potential threat to financial stability.").

- 42. Letter from Commissioners Mersinger, Pham, Uyeda, and Peirce, Financial Stability Oversight Council, July 27, 2023, 2 ("A systemic risk designation could increase moral hazard in the markets by identifying a particular firm as being too important to fail. With that designation comes an implicit promise of a bailout by U.S. taxpayers to avert failure."), https://www.regulations.gov/comment/FSOC-2023-0001-0045.
- 43. F. A. von Hayek, "Economics and Knowledge," A Presidential Address to the London Economic Club, November 10, 1936, first published in *Economica*, February 1937, posted at Online Library of Liberty, from *The L.S.E. Essays on Cost*, ed. J. M. Buchanan and G. F. Thirlby (New York University Press, 1981) ("The assumption of a perfect market then means nothing less than that all the members of the community, even if they are not supposed to be strictly omniscient, are at least supposed to know automatically all that is relevant for their decisions. It seems that that skeleton in our cupboard, the 'economic man,' whom we have exorcised with prayer and fasting, has returned through the back door in the form of a quasi-omniscient individual."), https://oll.libertyfund.org/pages/hayek -economics-and-knowledge-1936.
- 44. Perhaps in league with Jeremy Bentham's skeleton? See University College of London website, "Auto-Icon" ("On the ground floor of UCL's Student Centre stands a glass case, containing a figure which has been a source of curiosity and perplexity to visitors. The cabinet contains Bentham's preserved skeleton, dressed in his own clothes, and surmounted by a wax head. Bentham requested that his body be preserved in this way in his will made shortly before his death on 6 June 1832."), accessed July 31, 2024, https:// www.ucl.ac.uk/bentham-project/about-jeremy-bentham/auto-icon.
- 45. Henry C. Simons, *Economic Policy for a Free Society* (Chicago: University of Chicago Press, 1948), 22.

# EMPLOYMENT DYNAMICS, LABOR MARKETS, THE PHILLIPS CURVE, AND INFLATION

## INTRODUCTORY REMARKS

Valerie Ramey

Welcome to the session. My name is Valerie Ramey, and I'm a senior fellow here at the Hoover Institution. This session is on employment dynamics, labor markets, Phillips curves, and inflation. Of course, in any monetary conference, understanding the condition of the labor market takes center stage, not only because of the dual mandate but also because of the Phillips curve relationship between the state of the labor market and inflation, even though the stability of such a relationship has become a will-o'-the-wisp of our profession. Our three speakers today are Steve Davis, who's also a senior fellow at the Hoover Institution; Marianna Kudlyak, who is a research economist at the Federal Reserve Bank of San Francisco; and Emi Nakamura, who is a chancellor's professor at the University of California–Berkeley (whose paper has not been included in this volume).

# 15

# Extraordinary Labor Market Developments and the 2022–23 Disinflation

Steven J. Davis

Two extraordinary US labor market developments facilitated the sharp disinflation in 2022-23 without raising the unemployment rate. First, pandemic-driven infection worries and social-distancing intentions caused a sizable drag on labor force participation that began to reverse in the first quarter of 2022, and perhaps earlier. As the reversal unfolded, it raised labor supply and reduced wage growth. Second, the pandemic-instigated shift to work from home (WFH) raised the amenity value of employment in many jobs and for many workers. This development lowered wage-growth pressures along the transition path to a new equilibrium with pay packages that recognized higher remote work levels and their benefits to workers. Surveys of business executives imply that the shift to WFH lowered average wage growth by two percentage points from spring 2021 to spring 2023. A direct inspection finds that average real wage growth from 2021 Q1 to 2024 Q1 in the US economy was at least 3.5 to 4.4 percentage points (ppts) below the path suggested by prepandemic experience. This large shortfall in real wage growth aligns well with the interpretation of the 2022-23 disinflation offered here.

\* \* \*

Earlier in this conference, Yuriy Gorodnichenko (see chapter 4) made some important observations about the recent disinflation

in Europe and the United States. Three of his observations set the stage for my remarks:

- 1. Disinflation was surprisingly rapid. As measured by the one-year change in the US Consumer Price Index (CPI), for example, the inflation rate fell nearly six percentage points from June 2022 to June 2023 and by 5.3 ppts from July 2022 to December 2023.<sup>1</sup>
- 2. This disinflation episode looks nothing like a movement along a Phillips curve. Instead, the inflation rate fell sharply with essentially no change in the unemployment rate.
- 3. It's implausible to credit the recent disinflation mainly to monetary policy, because inflation fell too early relative to the timing of policy tightening.

The recent tightening cycle began with a modest 25-basis-point hike in the target fed funds rate in March 2022. Six more hikes from May to December brought a cumulative policy rate hike of 425 basis points, mostly in the second half of 2022.<sup>2</sup> Since monetary policy typically operates with "long and variable lags," it's hard to see how the recent tightening explains the abrupt fall in inflation.<sup>3</sup>

These observations call for explanation. In this regard, Gorodnichenko highlights the role of energy and commodity market developments, which played an important role in Europe but a more modest one in the United States. The unwinding of pandemic-related disruptions in global supply chains also contributed to the recent disinflation. See Comin, Johnson, and Jones (2023), for example.

I will advance a different and complementary explanation for the recent disinflation that centers on two extraordinary labor market developments associated with the pandemic and its aftermath. The first is the sizable labor force withdrawal in 2020 and 2021, driven by infection worries and social distancing, followed by recovery in participation rates as infection worries and social distancing receded. The second development is the big and lasting shift to work from home.<sup>4</sup> I focus on the United States, for which I can offer better

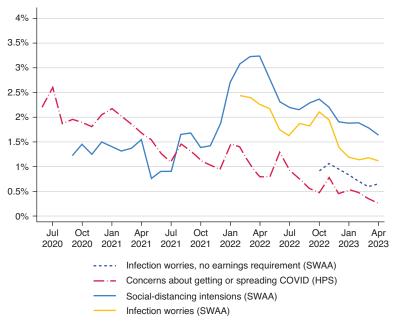


FIGURE 15.1. Estimated labor force drag from social distancing and infection worries, June 2020 to April 2023, in percentage points.

Source: Reproduced from figure 5 in Barrero, Bloom, and Davis (2023b), based on their analysis of microdata from the monthly Survey of Working Arrangements and Attitudes (SWAA) and the Census Bureau's monthly Household Pulse Survey (HPS).

evidence. The second extraordinary development—and perhaps the first as well—is more pronounced in the United States than in Europe, with the possible exception of the United Kingdom.

# Labor Force Withdrawal and Return

Figure 15.1 presents several estimates for the effects of infection worries and social-distancing behaviors on the US labor force participation rate from June 2020 to April 2023. There are four distinct time series, each of which reflects a different estimation method or data source, as sketched below. The interested reader can consult Barrero, Bloom, and Davis (2023b) for details. The solid blue line reflects a regression model that relates individual-level labor force status as of the survey reference week to the individual's stated social-distancing intentions in the US Survey of Working Arrangements and Attitudes (SWAA) (Barrero, Bloom, and Davis 2021). Specifically, we combine the fitted regression model with a scenario that "turns off" voluntary social distancing to obtain the solid blue line. The peak implied negative effect of social distancing on labor force participation was about three percentage points. The identifying assumption here is that stated social-distancing intentions are exogenous, conditional on the other covariates in the regression model.

The other three curves in figure 15.1 rely on an entirely different approach. Specifically, when the respondent is outside the labor force during the survey reference week, we ask why. We then count respondents who attribute their nonparticipation status to infection worries and express the count as a percentage of the relevant population. Thus, this second approach relies on self-assessed causal explanations of a respondent's own labor force status. Here, the identification assumption is that the survey questions elicit accurate explanations for the respondent's own behavior. We implemented this second approach using three question designs fielded across two independent surveys—one that we run and one that the US Census Bureau runs.

The four series in figure 15.1 differ in the estimated drag on labor force participation. However, all four series suggest a material drag on participation rates. In addition, the various estimates point to a reversal of the labor force drag since the first quarter of 2022 or earlier. That reversal raised labor supply and put downward pressure on wages.

Figure 15.2 presents estimates of the labor force drag associated with social distancing and infection worries by demographic group as of 2022. The estimates plotted on the vertical scale reflect

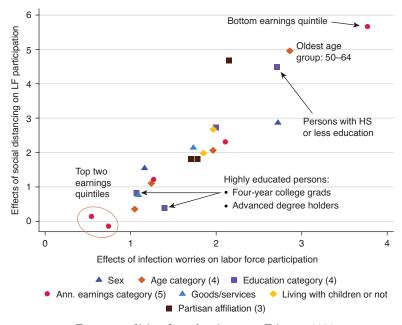


FIGURE 15.2. Estimates of labor force drag by group, February 2022 to January 2023.

Source: Reproduced from figure A.5 in Barrero, Bloom, and Davis (2023b).

the regression approach, while the ones on the horizontal scale reflect self-assessed causal effects. While the two approaches yield different-level estimates for the labor force drag, as in figure 15.1, the between-group patterns are—reassuringly—quite similar.

According to figure 15.2, the labor force withdrawal associated with social distancing and infection worries is very much concentrated in the lower parts of the earnings distribution, among the least educated, and among persons 50–64 years of age. For people in the top two earnings quintiles, the estimated drag on labor force participation is essentially zero according to the regression approach and modest (half to three-quarters of a percentage point) according to self-assessed causal effects.

# The Effects on Wages and Inflationary Pressures

Thus far I have shown evidence that pandemic-driven infection worries and social-distancing intentions caused a sizable drag on labor force participation that began to reverse in the first quarter of 2022, and perhaps earlier. Barrero, Bloom, and Davis (2023b) do not assess the effects of this labor force withdrawal and return on overall wage growth. Instead, they feed their estimates for the labor supply effects of social-distancing intentions into a competitive equilibrium model with a stable production technology. In this way, they use the model to quantify the effects of social distancing on the education and experience structure of relative wages. They draw on previous research to set parameter values for the elasticity of substitution between college and noncollege workers and across age-experience groups within the education categories.

Figure 15.3 displays the resulting model-implied estimates of how social-distancing effects on labor supply affected the wage structure in 2022 relative to a counterfactual with no social distancing. The wage effects are sizable, especially for noncollege workers, and they rise with age. As Barrero, Bloom, and Davis (2023b) discuss, these patterns align well with the observation that older and less-educated workers had stronger health-related reasons to engage in social-distancing behaviors. Less-educated workers also had fewer options to continue working while engaging in social-distancing behaviors.

For the argument in this essay, figures 15.1 to 15.3 yield the following messages. First, social distancing added to wage-growth pressures in the wake of the pandemic, especially in the lower rungs of the earnings distribution and for jobs filled by less-educated workers. Second, the reversal of this process restrained wage growth in 2022 and 2023. Again, these effects were concentrated among those with less education and lower pay. Third, the timing of the reversal was fortuitous for the Federal Reserve, as it roughly coincided with its efforts to cut the inflation rate.

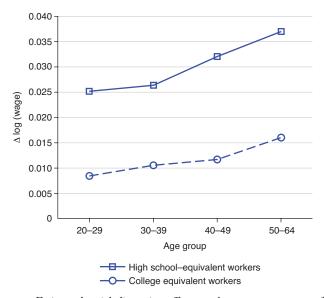


FIGURE 15.3. Estimated social-distancing effects on the wage structure as of 2022. Source: Reproduced from figure 6 in Barrero, Bloom, and Davis (2023b). They combine the estimated labor supply effects of social-distancing intentions by age–education group with the competitive equilibrium model of Card and Lemieux (2001) to obtain the estimated social-distancing effects on the wage structure.

#### The Big Shift to Work from Home

The COVID-19 pandemic instigated a big, lasting shift in working arrangements. Figure 15.4 quantifies this shift in terms of full paid workdays performed at home. As the figure indicates, the work-from-home rate as of early 2024 is about four times the rate that prevailed in 2019. This big shift in how we work has had surprisingly benign (or even positive) effects on productivity. That's a major reason the shift has endured. See Barrero, Bloom, and Davis (2023a) for a review of evidence on the productivity effects of the shift to WFH. My remarks here will focus on the amenity-value gains associated with the shift to WFH and the implications for wages and inflation.

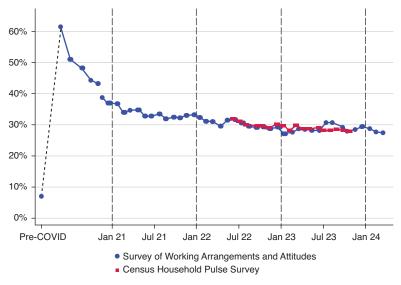


FIGURE 15.4. Work from home, in percentage of full paid workdays, over time in the United States, 2019 (pre-COVID) to March 2024.

Source: Samples restricted to working persons, 20–64, with annualized earnings greater than \$10K. The pre-COVID percentage relies on data from the Bureau of Labor Statistics, 2019 American Time Use Survey. Monthly updates of this chart are available at WFH Research, https://www.wfhresearch.com.

Most workers like to work from home for at least part of the workweek, because doing so saves on the money and time costs of commuting (about sixty-five minutes per day, on average, for American workers), improves flexibility in time use over the workday and workweek, increases personal autonomy, and relaxes residential location choices. For some people, WFH also complements caregiving activities at, or near, home such as caring for an ailing parent or partner.

When asked directly via surveys, as in Barrero, Bloom, and Davis (2021), most American workers prefer to WFH part of the week. The mean stated value of the option to WFH two or three days a week is about 8% of pay in the SWAA. That's large, and it's consistent with evidence from field experiments for particular groups of workers. However, it's also important to recognize that preferences over working arrangements differ widely in the cross section. Some people dislike WFH and require extra compensation to do so willingly. Others are nearly indifferent between WFH and working at the employer's site. The rest, a majority, differ widely in their willingness to pay for the opportunity to WFH part of the week. For present purposes, the key point is that some WFH is a valued job amenity for most American workers. It follows that the big shift to WFH raised the amenity value of employment in many jobs for many workers.

# Reduced Wage-Growth Pressures on the Transition Path

Economic reasoning implies that employers and workers ultimately share the amenity-value gains associated with the big shift to WFH.<sup>5</sup> Since workers initially reaped the direct benefits of the shift at predetermined wages—i.e., wages set before the pandemic struck—employer benefits take the form of slower wage growth along the transition path to a new equilibrium with pay packages that recognize higher remote work levels.

Barrero et al. (2022) developed survey evidence to assess this mechanism and quantify its force. To do so, they put questions to hundreds of US business executives in the Survey of Business Uncertainty, fielded by the Federal Reserve Bank of Atlanta. About four in ten executives said their firms relied on expanded WFH to moderate wage-growth pressures when looking back twelve months from April/May 2022. A similar share of executives (as of April/May 2022) said that their firms expected to rely on WFH to moderate wage growth over the next twelve months. When executives said that expanded WFH opportunities moderated wage growth (or would do so) at their firm, the survey asked how much. Integrating overall firm-level responses, and weighting each firm in proportion to its employment level, Barrero et al. (2022) found that the big shift to WFH reduced overall wage growth by about two percentage points over two years centered on April/May 2022.

The shift to remote work affects labor costs in other ways as well. Barrero et al. (2022) presented evidence that increased reliance on remote work at the firm level is associated with more use of independent contractors, leased employees, domestic outsourcing, and foreign offshoring. These developments are also likely to reduce labor costs. In addition, fully remote employees do not require office space and the overhead costs that come with a physical footprint. To a lesser extent, hybrid working arrangements also let firms economize on space.

These employer cost savings need not come at the expense of their employees. WFH yields benefits that most workers appreciate and that some value greatly. Moreover, the relaxation of locational constraints afforded by WFH can simultaneously raise real worker wages and lower real product wages. To see this point, consider an employee who accepts a 10% nominal wage cut in exchange for performing his job remotely and relocating to another city with living costs that are 20% lower. In this example, the employee's real wage rises by about 10% and the employer's real cost of securing his labor services falls by 10%. Both employer and employee benefit.

## Sluggish Real Wage Growth since Early 2021

To summarize, two extraordinary labor market developments exerted unusual restraints on wage growth (and other labor-related costs) in recent years. First, a rebound in the labor force participation rate raised labor supply and restrained wage growth starting in the first quarter of 2022, and perhaps earlier. Second, the big shift to WFH lowered average wage growth by two percentage points from spring 2021 to spring 2023. The shift to WFH likely exerted downward pressure on wage growth outside of this time interval as well, given that wage adjustments take time. Even with flexible

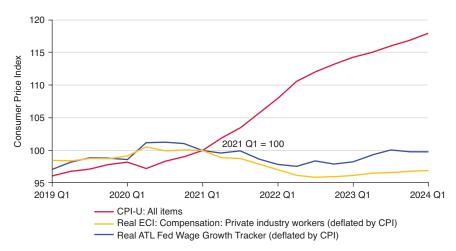


FIGURE 15.5. US real wage behavior and the Consumer Price Index, 2019 Q1 to 2024 Q1. All series are normalized to a value of 100 in 2021 Q1. Source: Author's calculations based on data from the Bureau of Labor Statistics and the Atlanta Fed.

wages, search and matching frictions in the labor market imply that it takes time for people who value WFH to sort into jobs that offer the amenity. That, too, slows the aggregate wage-adjustment process, as in the analysis of Bagga et al. (2023).

If this line of argument is correct, we should see unusually slow growth in aggregate real wages from the first quarter of 2021 through at least the middle of 2023. We should also see persistent shifts in the structure of real wages, with greater wage-growth restraint in sectors that offer more scope for remote work. I now take up these two matters in turn.

Figure 15.5 plots the US Consumer Price Index and two real wage measures from 2019 Q1 through 2024 Q1. All series are normalized to a value of 100 in 2021 Q1. I use the Employment Cost Index (ECI) and the Atlanta Fed Wage Growth Tracker to measure average wages. The ECI aims to control for changes in the mix of jobs over time, and the Wage Tracker aims to control for changes in the mix of workers. Other leading wage indexes do not control for compositional shifts, which makes them less suitable for my purposes.<sup>6</sup>

The deflated Wage Tracker series fell 0.2 ppts from 2021 Q1 through 2024 Q1, and the deflated ECI fell 3.3 ppts. Just how unusual is this real wage behavior? As a point of reference, consider the period from 2006 to 2019. The deflated ECI rose by an average of 0.4 ppts per year over this period, and the deflated Wage Tracker rose by 1.1 ppts per year. Both real wage measures moved in a procyclical manner during this period. In light of this history, and taking note of the very tight US labor markets since 2021, it's reasonable to expect cumulative real wage growth from 2021 Q1 to 2024 Q1 of *at least* 1.3 ppts according to the deflated ECI and 3.3 ppts according to the deflated Wage Tracker. We saw nothing like that. Indeed, average real wages are down 3.5 to 4.4 ppts in the period from 2021 Q1 to 2024 Q1 relative to what's expected from history. That's a huge shortfall in real wage growth, and it aligns with my interpretation of the recent disinflation.<sup>7</sup>

Figure 15.6 displays the deflated ECI by major industry sector at a quarterly frequency from 2019 Q1 to 2024 Q1. As before, each series is indexed to 100 in 2021 Q1. Industry-level wage-growth differences over this period are broadly in line with the amenityvalue interpretation of sluggish real wage growth sketched above.<sup>8</sup> The Leisure & Hospitality sector exhibits the strongest wage growth from 2021 Q1 to 2024 Q1. There are few WFH opportunities in this sector and, hence, there is little scope for amenityvalue gains to restrain wage growth. Retail Trade, Healthcare & Social Assistance, and Other Services also show relatively strong wage growth since 2021 Q1. These sectors also offer limited scope to work from home. At the bottom of the ECI wage-growth distribution is Finance & Insurance, with a drop of more than 8% from 2021 Q1 to 2024 Q1. This sector has among the highest WFH rates in the economy and much scope for amenity-value

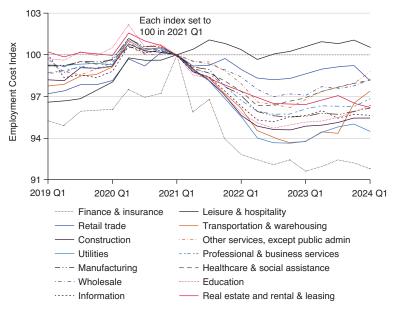


FIGURE 15.6. ECI by industry, deflated by the CPI, 2019 Q1 to 2024 Q1. Source: Author's calculations based on data from the Bureau of Labor Statistics.

gains to restrain wage growth. However, two other sectors with high WFH rates—Information and Professional & Business Services—had wage growth from 2021 Q1 to 2024 Q1 that place them near the middle of the ECI wage-growth distribution. And the Construction sector, which offers limited WFH opportunities, experienced relatively slow wage growth from 2021 Q1 to 2024 Q1. Clearly, the amenity-value story does not fully explain the distribution of industry-level wage changes since early 2021.

## **Concluding Remarks**

This essay presents evidence that two extraordinary labor market developments exerted unusual restraints on wage growth (and other labor-related costs) in recent years. First, a rebound in the labor force participation rate raised labor supply and restrained wage growth starting in the first quarter of 2022, and perhaps earlier. Second, the big shift to WFH lowered average wage growth by two percentage points from spring 2021 to spring 2023, and it likely exerted downward pressure on wage growth outside of this time interval as well.

These developments came at a fortuitous time for the Fed, as it sought to bring inflation back to acceptable levels with a series of policy rate hikes that began in March 2022. By exerting downward pressure on wages and other labor-related costs, these developments eased the way for a sharp reduction in inflation with no rise in unemployment—even before the effects of monetary policy tightening added to the disinflationary pressures.

My interpretation of the recent disinflation implies a period of unusually sluggish real wage growth as these labor market developments played out. In this respect, I show that average real wages were down 3.5 to 4.4 ppts in the period from 2021 Q1 to 2024 Q1 relative to what's expected from history. That's a huge shortfall in real wage growth, and an unusual one from a historical perspective.

Some economists attribute this shortfall in real wage growth to the surprise nature of the inflation surge that began in 2021 and continued through mid-2022. Because nominal wages adjust slowly, real wages initially fell in the wake of the inflation surge but will catch up over time, according to this story. No doubt, the surprise nature of the inflation surge played a role in short-run real wage dynamics. As the main explanation for the real wage shortfall since early 2021, however, this story looks increasingly untenable. It has now been nearly two years since the inflation surge began to reverse. Yet, as figure 15.5 shows, we have yet to see any signs of a real wage catch-up effect.

If the alternative story is correct, we can expect unusually strong real wage growth in the near future as wages finally catch up with the surprise inflation. That will raise labor costs relative to productivity, creating inflationary pressures. In contrast, my interpretation carries no implication of unusually strong real wage growth in the

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near future. Instead, it says we can expect real wage behavior to resume prepandemic patterns once (a) social distancing no longer depresses labor force participation, and (b) compensation fully adjusts to higher WFH levels. Social distancing is a largely spent force and will remain so, barring another pandemic-like shock. The wage-moderation effects of the shift to WFH have mostly played out by now, in my judgment. Thus, I anticipate that, going forward, real wage growth will return to its usual relationship with productivity growth and labor market tightness.

That said, the shift to WFH set in motion two longer-term forces that may restrain labor costs (relative to productivity) for several years to come. First, it initiated a partial untethering of worker residential locations from employer work site locations (Akan et al. 2024). This process operates mainly on the new-hires margin and will continue for many years as company-level workforces gradually turn over. For employers in high-cost locations, including most dense urban areas, this untethering process facilitates the sourcing of labor from places with lower living costs and lower wages. Second, the shift to WFH opens up new employment possibilities for persons with physical impairments, those with cognitive and psychological conditions that deter face-to-face encounters, persons who live in remote and job-scarce areas, dual-career couples facing joint-location constraints, and those with caregiving responsibilities at or near home. It remains to be seen whether, and how much, these opportunities for new and better employment options will be realized. There is potential for an expansion in labor supply that moderates wage-growth pressures over several years or more.

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#### Notes

This essay draws on my research with Jose Maria Barrero, Nick Bloom, Brent Mayer, and Emil Mihaylov. Hyoseul Kim assisted in the preparation of figures and tables. Errors are my own.

- These statistics reflect the CPIAUCSL\_PC1 series on Federal Reserve Economic Data (FRED) at https://fred.stlouisfed.org (accessed June 4, 2024).
- 2. See the Fed's description of the "FOMC's target federal funds rate or change" at https://www.federalreserve.gov/monetarypolicy/openmarket .htm (accessed June 4, 2024).
- 3. See Federal Reserve Bank of St. Louis (2023). The concept of long and variable lags appears to have originated with Friedman (1948).
- 4. See, for example, Barrero et al. (2022) and Aksoy et al. (2022).
- 5. This section is largely drawn from Davis (2024).
- 6. Initially, the pandemic greatly reduced the share of low-wage jobs and low-wage workers. Later, as the economy rebounded from the pandemic shock and labor force participation recovered, the share of low-wage jobs and low-wage workers returned to more normal levels. I am interested in the behavior of average real wages net of these compositional shifts, which is why I turn to the ECI and the Wage Tracker.
- 7. Other economists have also taken note of slow real-wage growth in recent years. See Blanchard and Bernanke (2023), for example.
- That's also true in the industry breakdown of data from the Survey of Business Uncertainty previously discussed. See Barrero et al. (2022). However, the survey data support only coarse industry breakdowns.

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# **16** Unemployment and Inflation Dynamics in the Monetary Policy Armamentarium

Marianna Kudlyak

In the last fifteen years, the unemployment rate and inflation have exhibited behavior that is hard to reconcile with conventional views (figure 16.1). Specifically, during the 2009–19 recovery, unemployment declined from 10.0% to 3.5%, while inflation stuck closely to the Federal Reserve's target of a constant 2%. A constant-natural-unemployment-rate view suggests inflation would rise. In the pandemic cycle, unemployment shot up to 14.7%, while inflation did not move much; then unemployment declined rapidly, while inflation rose to 7% and remains today above the 2% target.

We present the findings from our research on the unemployment recoveries and the natural rate of unemployment that help explain this behavior. Specifically, we talk about three things:

- 1. We find that during a cyclical recovery, unemployment glides down inexorably at a constant, proportional rate.
- 2. During the 2009–19 recovery, the natural rate of unemployment declined along a similar path.

This chapter discusses findings published in Robert E. Hall and Marianna Kudlyak, "Unemployment and Inflation Dynamics in the Monetary Policy Armamentarium," Hoover Institution, Economics Working Papers, April 18, 2024. The opinions expressed are those of the authors and do not reflect those of the Federal Reserve Bank of San Francisco, the Federal Reserve System, or any other organization with which the authors are affiliated.

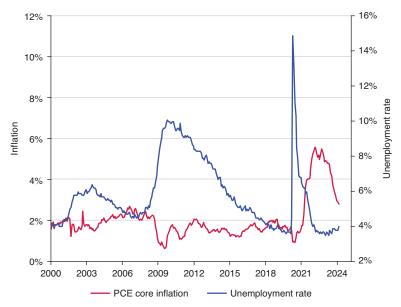


FIGURE 16.1. Unemployment and inflation, 2000–March 2024. Source: Calculations by Robert E. Hall and Marianna Kudlyak using data from the Current Population Survey.

- 3. We talk about unemployment and inflation in the pandemic cycle:
  - There are two kinds of unemployment: temporary-layoff unemployment and unemployment due to other reasons. The first kind accounted for the explosion of unemployment in the pandemic but is not associated with declining inflation. The other kind rose only slightly.
  - Regarding the period of excess inflation: the pandemic shock likely loosened inflation anchoring, which resulted in higher inflation during the shock, but also in a faster return of inflation to more moderate levels as the shock dissipated.

## Inexorable Recoveries of Unemployment

We start with the summary of findings of the historical behavior of unemployment. Figure 16.2 shows the log of the unemployment rate

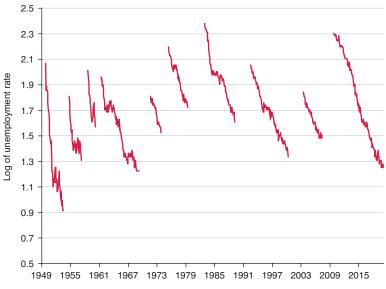


FIGURE 16.2. Paths of unemployment during recoveries, pre-2020. Source: Hall and Kudlyak (2022b).

during cyclical recoveries. The recession periods are left blank; that is, we plot only the recoveries—from the period when unemployment was highest, during a recession, all the way until it reached a low point right before going up again. In Hall and Kudlyak (2022b), we make two points. First, the speed of a recovery remains approximately constant *during* the recovery. Second, that speed remained approximately similar *across* prepandemic recoveries.

When analyzing the historical behavior of unemployment, we find that it comprises occasional sharp upward movements in economic crises, and, at other times, an inexorable downward glide at a low but reliable proportional rate of about 0.1 log points per year. The rate of decline is approximately similar across the ten recoveries prior to the pandemic. The glide continues until unemployment reaches approximately 3.5% or until another economic crisis interrupts the glide.

In Hall and Kudlyak (2022a), we ask what can be behind these inexorable recoveries of unemployment. Why did unemployment

recover so consistently after every recession from 1948 through 2008? Despite high variations in monetary and fiscal policy, productivity, and labor force growth, there was little variation in the rate of decline of unemployment. Our thesis is that the economy has a powerful tendency to self-recover from adverse shocks. A natural force causes job seekers to match with available jobs and to lower unemployment. The process is slow because a typical crisis breaks worker-firm employment relationships, and creating new, stable relationships is time-consuming (Hall and Kudlyak 2019). Recoveries are endogenous-the economy includes a strong internal force toward recovery that operates apart from policy instruments or productivity growth. The internal force is job creation as in the Diamond-Mortensen-Pissarides model, but operating more slowly via negative feedback from unemployment to job creation; the bulge of unemployment created by crises at the beginning of a recovery endogenously slows the recovery.

The conclusion from this research is that during a recovery, unemployment seems little responsive to disturbances. This tentative conclusion, however, still leaves room for effective policy to prevent or moderate recessions.

# The Active Role of the Natural Rate of Unemployment

We now proceed to the natural rate of unemployment. Consider a standard Phillips curve in a widely used regression framework. On the left-hand side, we have inflation minus inflation anchor. On the right-hand side, we have a term capturing inflationary pressure. Inflationary pressure is a product of the Phillips curve slope coefficient and the unemployment gap, i.e., the unemployment rate minus the natural rate of unemployment,  $u^*$ . Suppose that we have data on inflation and the unemployment rate, and suppose that we also have some construct for the inflation anchor, for example, a measure of

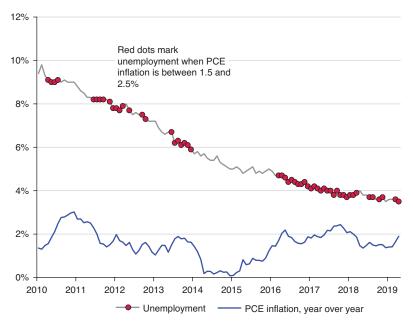


FIGURE 16.3. In the 2009–19 recovery, the natural rate of unemployment stayed close to the actual rate, given an inflation anchor of 2%. Source: Hall and Kudlyak (2023).

inflation expectations. In this framework, given the data on inflation, inflation anchor, and unemployment, the slope of the Phillips curve and the natural rate of unemployment are not identified. Identification requires bringing in assumptions or additional data.

In Hall and Kudlyak (2023), we propose a new method to identify the natural rate of unemployment based on the Phillips curve's property that when inflation is at its anchored level, unemployment is at its natural rate. This method can only be applied to the periods with stable inflation. The 2007–19 recovery is such a period.

In figure 16.3, the blue line shows inflation, the gray line shows unemployment during the 2009–19 recovery, and the red dots along the gray line denote the months when inflation was within a narrow band of the target of 2%. During those months, the actual unemployment rate reveals the natural rate of unemployment. The figure shows that during the long recovery from the 2007–9 recession, the natural rate of unemployment closely followed the actual rate of unemployment. This method applies only to the recovery with stable inflation. There is no case of a recession with constant inflation, so we cannot use this approach to learn about the natural rate in recessions.

Existing literature provides other methods to identify the natural rate of unemployment. We can summarize these methods in three broad categories:

- Conjecture that the natural rate of unemployment is a long-run trend in the actual unemployment rate. The Congressional Budget Office's (CBO) measure of the noncyclical unemployment rate is an application of such an approach.
- Build a submodel for the natural rate, which expresses the natural rate as a latent variable that follows a specified stochastic process, and estimate the submodel jointly with the Phillips curve. For examples of this approach, see Gordon (1997), Laubach (2001), King and Morley (2007), and Crump et al. (2019 and 2022).
- 3. Use a general equilibrium model to calculate a counterfactual path of the unemployment rate in a model free of wage stickiness. For examples of this approach, see Galí, Smets, and Wouters (2011) and Furlanetto and Groshenny (2016), among others.

The different methods of identification of the natural rate of unemployment deliver different correlations of the natural rate with the actual rate of unemployment. For example, the CBO's measure implies that variation in the natural rate is a small and unimportant component of actual unemployment. The natural rate of King and Morley (2007) accounts for almost all the movement of the actual rate. The natural rate of Galí, Smets, and Wouters (2011) accounts for around half of the movement of the actual rate.

Why is the correlation between the natural rate of unemployment and the actual rate of unemployment important? The correlation between the natural and the actual rate of unemployment matters

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for identification of the slope of the Phillips curve. Since the natural rate of unemployment is unobserved, suppose for a moment that it is left out from the Phillips curve regression. That is, the Phillips curve regression is estimated with the unemployment rate in place of the unemployment gap. It is straightforward to see that the slope coefficient estimated from this regression is the product of two things: the true slope of the Phillips curve (the one estimated with the unemployment gap) and a term (1 - C), where C is the unobserved regression coefficient of the natural rate of unemployment on the actual unemployment rate. If C is zero, that is, if the natural rate of unemployment is uncorrelated with the actual rate, then the slope estimated from this misspecified regression reveals the true slope of the Phillips curve. If, however, there is a positive correlation between the natural rate and the actual rate of unemployment, C > 0, then the slope estimate from the misspecified regression will inevitably be close to zero. It is an example of a bias. The Phillips curve estimated from a regression with the unemployment rate instead of the unemployment gap will be inevitably close to flat if the natural rate of unemployment is positively correlated with the actual rate of unemployment (see Hall and Kudlyak 2023).

Consequently, identification of the natural rate of unemployment has implications for a view about the slope of the Phillips curve. The range of opinions about the 2009–19 recovery illustrates the different views. Under one view, which we call the *sticky-and-low* view, the slope of the Phillips curve is small—the curve is flat, while the unemployment gap is large. Under another view, which we call the *flexible* view, the slope is high—the curve is steep, but the gap between the actual unemployment rate and the natural rate of unemployment is small. Both views fit the data that we have discussed. Therefore, more data is needed to distinguish which of these two views holds true.

Under both views, the inflationary pressure during the 2009–19 recovery was low. Evidence from our and other research suggests that the natural rate of unemployment, rather than being a slow-moving

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function of mainly demographic forces uncorrelated with actual unemployment, is substantially positively correlated with the actual rate. Under this flexible view, the inflationary pressure during the recovery is low because the unemployment gap is low. Under the contrasting, sticky-and-low view, the inflationary pressure is low because the slope of the Phillips curve is low.

The summary from this research is that low unemployment during recoveries does not necessarily signal high inflationary pressure. This is because the natural rate of unemployment likely closely follows the actual rate.

## Unemployment and Inflation in the Pandemic Cycle

Finally, we move on to unemployment and inflation during the pandemic cycle. During the pandemic, unemployment shot up rapidly during a brief period of two months, in March–April 2020. It appears that the rapid increase was not due to a typical deterioration in demand. Instead, the increase coincided with the government-mandated stay-at-home orders (Kudlyak and Wolcott 2020). Unemployment also recovered rapidly, at a much faster speed than during the previous recoveries.

In Hall and Kudlyak (2022c), we show that to understand the labor market during the pandemic and its aftermath, one should examine separately temporary-layoff unemployment and unemployment due to other reasons—*jobless unemployment*. The unemployed on temporary layoff wait to be called back to their jobs and do not go through the search-and-matching process. Historically, a large fraction of unemployment was jobless (Wolcott et al. 2020). For example, in the 2007–9 recession, jobless unemployment reached 9%. In contrast, during the pandemic, the entire run-up in total unemployment from 3.5% to 14.7% in April 2020 was due to temporary-layoff unemployment. The jobless unemployment rate increased slowly and peaked at 4.9% in September–November 2020.

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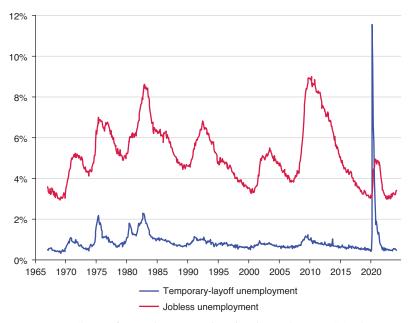


FIGURE 16.4. Rates of unemployment with and without jobs, 1967–March 2024. Source: Updated from Hall and Kudlyak (2022c).

A key distinction between jobless and temporary-layoff unemployment is that temporary-layoff unemployment returns to normal much faster than jobless unemployment does. A decline in temporary-layoff unemployment takes place as conditions improve and firms recall workers. No search or matching is involved. A decline in jobless unemployment takes time. Creation of new, stable firm-worker relationships is a long and costly process (Hall and Kudlyak 2019). Terminated workers often circle through several short-term jobs before finding a stable job.

When we examine the labor market in the pandemic recession, we find that despite the historically high unemployment rate in 2020, the labor market was comparatively tight. The jobless unemployment rate reached its peak of 4.9%, while in the 2007–9 recession it increased to 9% (figure 16.4). The job-finding rates

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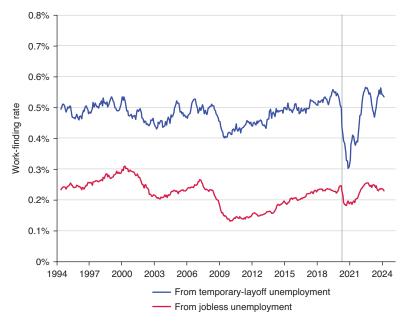


FIGURE 16.5. Work-finding rates, showing the rate at which the unemployed transition into employment from one month to the next. Source: Updated from Hall and Kudlyak (2022c).

of the jobless unemployed remained relatively high (figure 16.5). The vacancy-jobless unemployment ratio did not drop that much (figure 16.6).

What about inflation postpandemic? Through the lens of our discussion above, the natural rate of unemployment likely closely followed the actual rate during the recovery from the pandemic. However, the pandemic dealt a major turbulence shock to anchored inflation. During the long 2009–19 recovery, inflation became anchored at 2%. The turbulence that the pandemic brought to sellers' economic situations induced more frequent price changes than in the tranquil prepandemic times. The pandemic loosened the anchoring of the inflation rate that prevailed during the 2009–19

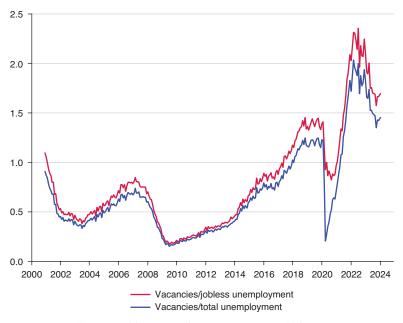


FIGURE 16.6. Vacancy-jobless unemployment ratio, 2000–February 2024. Source: Vacancy data from Bureau of Labor Statistics, Job Openings and Labor Turnover Survey; unemployment data from the Current Population Survey.

recovery. In the Phillips curve framework, an increase in turbulence makes the curve steeper. That also means that inflation declines faster when the turbulence shock subsides. Our framework does not preclude other factors besides the unemployment gap to affect inflation.

# Conclusions

To conclude, we find, first, that in a cyclical recovery, unemployment glides down at a low and predictable rate. Second, in the Great Recovery of 2009–19, the natural rate of unemployment likely glided down a similar path to that of the actual rate of unemployment. Finally, during recoveries, the labor market tightness is an indicator of labor market pressure, but not necessarily of inflationary pressure. That is, when unemployment is low, the labor market is tight. However, it does not mean that the inflationary pressure is high. Similarly, during recoveries, when unemployment is high, the labor market is slack. However, it does not mean that inflationary pressure is low.

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#### GENERAL DISCUSSION

- VALERIE RAMEY: Okay, we will now take questions from the floor. And, remember, please state your name and affiliation. So, we'll start with John Cochrane. And then, I can't see your name tag, you'll be second. And then Jim Bullard.
- JOHN COCHRANE: I have a talent for raising my hand fast, because I know lots of people will want to get in on this one. Marianna [Kudlyak], the lesson I get from your plot is that starting about 2010, u equals  $u^*$ . We're in real business cycle land. Forward guidance, quantitative easing, negative interest rates, and fiscal stimulus are just a waste of time. More aggregate demand would not speed anything up. We just have to sit and wait. Supply equals demand. Call us on the next recession.
- ROBERT HALL: That's exactly right. Bingo. I don't have to say any more. KRISHNA GUHA: Thank you. Krishna Guha with Evercore Partners. A question also for Marianna, but anyone else on the panel who'd like to address it as well. There's an interesting story whereby the very elevated level of churn in the US labor market around the pandemic, which we see in the JOLTS [Job Openings and Labor Turnover Survey] flow data for quits and hires, is associated with breaking stale matches and allowing new, better quality matches to form under a strong labor market as the recovery got underway. And a contrast is sometimes drawn between that and the European situation, where furlough-type programs locked in place old and stale matches. It could have different implications for productivity going forward. I was interested whether, for instance, Marianna, your distinction between temporary layoffs and jobless would lead you to reject that as an important story as to what might be going on. Or alternatively,

whether you'd still see a place for that within the sort of larger framing that you provided. Thank you.

JAMES BULLARD: Thank you. Jim Bullard, Daniels School of Business, Purdue. I have two questions for Steve Davis. So one question is, you know, you tell a story about remote-work technology. The technology was around prepandemic, but why weren't the firms, if it was so beneficial, why weren't firms using it more prepandemic? Why was it that this was all revealed by the pandemic shock? So do you have a model of how they had to learn about the technology or something like that in mind, and there would be some transition in there?

And then a related question would be, you know, these workers that are living more than fifty miles from their employer, that sounds like a contract worker to me, or an outsourced worker. So why isn't the firm just saying, okay, I'll just hire you to do some stuff for me, but you'll be a contract worker since you're not going to be at the firm. And you'll do the work that way. And then how would that change some of the data that you are showing about the nature of work? Not only could it be outsourced fifty miles away, but five thousand miles away. So that's another consideration.

RAMEY: Okay, I will let the authors answer the first three questioners. After those answers, the next questioner will be Pat Kehoe. MARIANNA KUDLYAK: Okay, so on the first question about whether during the recovery the economy resembles a more real-businesscycle economy. When the slope of the Phillips curve is large, we can rewrite the Phillips curve in a supply form where we have *u* equals *u*<sup>\*</sup> plus a term 1 over phi multiplied by (pi minus pi<sup>\*</sup>). The larger phi is, the smaller the effect of the (pi minus pi<sup>\*</sup>) term is on the actual unemployment rate. The larger phi is, the closer the economy is to the real-business-cycle economy.

During the pandemic, there were lots of temporary layoffs in the US. The firms might recall these workers or might choose to hire new ones. Such an arrangement seems to be more flexible than the government-sponsored furlough programs in Europe. I would conjecture that we can see the difference in the productivities in these economies.

STEVEN DAVIS: Thanks for the questions. On why weren't we doing more work from home before the pandemic, the main explanation turns on the costs and the consequences of experimentation. There was a rational reluctance to experiment, well captured by a quotation from Morgan Stanley's CEO, James Gorman, in 2020, speaking about his own organization. Paraphrasing, he said: "We never would've tried to work remotely of our own accord, of our own free will, because the risks of getting it wrong were too high." So that's the rational reluctance to experiment.

The other thing that was interesting about the pandemic is that certain kinds of experimentation were impossible to do before the pandemic. Think about a professional services firm. It could not see what happens when all of its employees work remotely at the same time as all of its customers and suppliers work remotely. But that's the experiment that we ran, okay? That's not an experiment that would've been feasible for any single firm to run in advance. So my interpretation is that there was a mass compulsory experimentation. The experimentation revealed a great deal of new information. I have direct evidence on that of the following sort. We first did this in the United States. We asked workers: "Well, how did remote work work out for you?" We allowed a range of responses, of course. Most workers were positively surprised by their work-from-home experience. In addition, those workers who claimed to be more successful than anticipated, in terms of productivity when working remotely, were the same ones whose employers planned for them to do more work from home after the pandemic. So survey-based measures of who was favorably surprised by their work-from-home experience line up very well with employer plans for what they would do after the pandemic.

We were so struck by this result that a year or so later we ran a global survey across twenty-seven countries with the same kinds of questions. We found this kind of relationship in every single country; that is, many individuals were favorably surprised by how effectively they could work from home. And it's those same employees in each country who had employers who said, "You know what? You're going to work from home some of the time going forward." So, I think the costs and consequences of experimentation explain why the shift to work from home did not happen sooner and why it stuck, to a considerable extent, after the pandemic struck.

It's also important to understand that the same pandemic event, had it happened twenty years earlier, would probably not have resulted in the same response in working arrangements, because the preconditions were not in place: the internet, broadband internet access in the residential sector, the cloud, remote collaboration tools, videoconferencing technology of acceptable quality—all of those things that came online, more or less, in the previous twenty years that made it practical and productive to carry out many work tasks from home. You can write down a model that tells you that, but I think the evidence is more compelling.

Let me turn to the question about the people living more than fifty miles from their employer. In the Survey of Business Uncertainty fielded by the Atlanta Fed, the executives who tell us that they are relying more on remote work in their organizations as a way to moderate wage costs also tend to be the same ones who are turning more to contract workers. It's not a huge effect, but it's in that direction. So there is something to what you say. But I think it's also important to understand that the biggest shift in working arrangements isn't from traditional working arrangements to people working remotely five days a week or so. The biggest shift is people who used to work on-site five days a week who are now working at home two or three days a week. And for those people, apparently, their employers and the employees themselves still feel that some face-to-face contact each week is quite important. So I don't think there's as much scope for outsourcing abroad for those jobs and workers as there is for the people who work in an almost entirely remote capacity. For those workers and jobs, I share your view that the arrangement seems ripe for outsourcing abroad, or even just outsourcing somewhere in the United States.

RAMEY: Pat Kehoe.

- PATRICK KEHOE: This is for Steve Davis. I agree that when someone is able to work from home for several days per week, their utility is likely to be higher. But is there much direct evidence of how productivity at home and productivity in the workplace compare? At a personal level, I have some assistants who work from home on Thursday and Friday. If you try to call them during that time, there is no response until the next week, but when they are in the office there is an immediate response. Likewise, I thought my productivity would go to zero when I worked from home during COVID. Actually, my productivity only went in half, so I was favorably surprised, just as some people seem to be in your survey evidence. But my productivity at home was still lower than in the office. Would it be possible to find some direct evidence of relative productivity when working from home relative to working in the office?
- DAVIS: Yes, it is possible. So look, first, you hinted at something that's important at the end. If you write down a little model of how surprises about productivity in the work-from-home mode affect outcomes after the pandemic's over, if you start from a low enough base, you're right, even a positive surprise, you're still going to go back to the prepandemic arrangements. So that point's right. Look, we have a range of evidence now. It's complex, but I will give you my overall interpretation.

But first, let me tell you what the inference challenge is. What you would think of as hard evidence of the sort that the economists like from their quasi-natural experiments, those studies were done in 2020. But they don't really answer the right question. The question these studies of outcomes during the pandemic answer is: What happens if, with no advance warning, in an organization that's unprepared and has workers who are unprepared, everybody suddenly has to work from home without knowing what the hell they're doing, without knowing how to use the technology, without making the complementary investments? A lot of those studies fit this description, more and less, and find, you know what? There's a big productivity loss.

But that's not the relevant question going forward. The relevant question is, when you select on who works from home in what activities, when the organization has the time to figure out how to make it work and so on, when you select on and optimize over working arrangements, then you tend to see more favorable productivity outcomes. Now, that unfolds over time, so it doesn't lend itself so readily to a natural experiment. But I think perhaps the best overarching evidence that it seems to work okay in many jobs and activities is the picture I showed you, which reveals that work-from-home rates are now about four times the prepandemic level. While the US is a bit of an outlier on the extent of the increase in the work-from-home rate, this phenomenon is global when you focus on people who are college educated. So I think, to me, that's the most compelling evidence, that there were a number of people who were positively surprised, and that those surprises altered their work modes going forward.

The other thing that's worth remembering in this context is that before the pandemic almost everybody was at a corner, the corner being traditional working arrangements where you're on-site all the time. And even if only 20% of the folks who are forced to experiment learn that, well, you know what, we don't have to be at a corner. We can be at an interior solution, where we're working two days a week at home. And as long as I allocate my tasks effectively over the week, we can get just as much productivity as we had before, but we save on the commute, we get the other benefits of work from home. That's my interpretation of what's happened.

- RAMEY: Before we go to Bob King, who's the next questioner (and he'll also be the last questioner), I will use my chair's prerogative to interject a comment. *The Economist* yesterday had an interesting article based on one of the numbers from Steve's survey. Everybody knows that Americans work 15% more hours per year than Europeans. Ed Prescott wrote about this, arguing that higher taxes in Europe were the source of the difference. But it turns out, Steve's survey shows that Americans are now much more likely to work from home than Europeans, so much so that Americans now spend *fewer* hours in the office than Europeans, even though they work more hours overall. I just think that's a fascinating result of the work-from-home revolution that has emerged from Steve's surveys. So go ahead, Bob King.
- ROBERT KING: I've been fascinated by the Hall-Kudlyak research program. Can you elaborate on what the core structural features are that lead unemployment to behave so differently than in the standard DMP [Diamond-Mortensen-Pissarides] model, where the transition dynamics force things back really fast? Put another way, I'm curious about how you're going to spell out the real business cycle dimensions. It's clear that in your vision of the world, the natural rate of unemployment's moving around a lot. So it would be great to know why.
- HALL: Okay, so the most important thing to say is that there's a fiftypage paper in the Macro Annual in 2021 that's aimed exactly at Bob's question. And it's more successful in disposing of kind-ofstandard ideas than it is in erecting a completely plausible new

idea. But what's required in that analysis is something that really slows down the recovery process in the labor market relative to what the DMP model says. So we construct something which involves all the same assumptions of DMP, except for a congestion effect and others. There's a small literature on congestion effects in the DMP model, which we support. But this is still a research program, and we can eliminate things that are just sort of obvious, like it takes a long time for people who've lost work in a major cutback compared to ... And there is a literature on that. Steve Davis in particular is quotable on that. But we show that it's not nearly big enough to account for the actual slowbut-steady and predictable recovery. But it's very much a fact.

That's what we'd emphasize at this stage, that it's very much a fact and it really does not make sense. The current state of that is that we're very confident that you should not draw a horizontal line to represent the natural rate of unemployment. And we've done a very thorough scrubbing of the literature on that. All this material is available on Marianna's website.

- KUDLYAK: So let me also add the following. Our argument is that if the actual (jobless) unemployment rate at the beginning of the recovery is 9%, no policy can make it 5% in a year. The searchand-matching process takes time for these unemployed workers to find jobs. So if during a recovery actual jobless unemployment is 9%, the natural unemployment rate should be somewhere close to that.
- RAMEY: All right. Thank you, everybody. Thanks for the great papers. Thanks for the great questions.

#### THE NEXT STRATEGY REVIEWS

#### INTRODUCTORY REMARKS

John H. Cochrane

The US Federal Reserve and the European Central Bank (ECB) are beginning formal reviews of their policy strategies. Other central banks are asking themselves the same questions.

We have assembled here a panel with superb academic and practical experience in monetary policy, but none of whom currently serve in central banks. I think it's about the best set of outside-the-bubble consultants a central bank could ask for in a policy strategy review.

I like the word *strategy* that the Fed and ECB have adopted in this effort. John Taylor frequently reminds people that his "rule" is not meant as a recommendation that central banks mechanically follow a formula, but rather that rules anchor a strategy. Central banks consider the rule and think in terms of it, but also understand and explain deviations from a rule in response to other events. The stable strategy, not a mechanical rule, anchors expectations.

After an extended and collective deliberation, the Fed adopted a new strategy framework.<sup>1</sup>This framework was explicitly designed by a worldview that "the federal funds rate is likely to be constrained by its effective lower bound more frequently than in the past," and a consequent judgment that "downward risks to employment and inflation have increased." A shift to "inclusive" employment, a return to the old idea that economic "shortfalls" can be filled, and a promise not to stem future inflation but rather to let inflation run hot above 2% to make up for past shortfalls followed. These promises of future dovishness were intended to stimulate demand in the short run.

In short, in my words, the Fed adopted an elaborately constructed new-Keynesian forward-guidance defense against the perceived danger of deflation and stagnation at the zero lower bound (ZLB). No sooner was the ink dry on this grand effort, however, when inflation shot up to 8%, and the zero lower bound seemed like a quaint worry. Something clearly went drastically wrong. Naturally, the first question for a strategy review is: how can we avoid having *that* happen again?

Inflation eased without interest rates rising substantially higher than inflation and without a large recession. I think I have a clear and simple explanation (and the only one) for that fact, but I promise not to digress into a fiscal theory today.<sup>2</sup> Still, inflation is persistently high, raising the obvious worry that it's 1978 again. Obviously, central banks have a range of worries on which to focus a new strategy, not just a return to a long-lasting zero bound (though that could happen too).

I'm the moderator here, so I'll take it as my job to pose the *questions*, which I hope this review will answer, and invite the panelists to supply answers. (I wrote previously on strategy review at the 2020 St. Louis Fed Homer Jones Memorial Lecture, and most of those thoughts still apply.<sup>3</sup>)

*React or guide?* It seems clear to me that policy will have to be described more in terms of how the Fed will *react* to events, rather than in standard forward-guidance terms with unconditional promises of how the funds rate will evolve. It will involve more "data-dependent" rather than "time-dependent" policy.

In part, that must come, I think, as a result of the stunning failure of all inflation forecasts, including the Fed's. Forecasts did not see inflation coming, did not see that it would surge up, and basically always saw a swift AR(1) response from whatever it was at any moment back to 2%. Either the strategy review needs to dramatically improve forecasts or the strategy needs to abandon dependence on forecasts to prescribe a future policy path, and thus just state how policy will react to events and very-short-term forecasts. I state that as a question for debate, however. *Guidance and QE*? Is forward guidance as a separate policy tool worth keeping, and if so, how? I think not, because I think the theoretical basis for powerful forward guidance is wrong.<sup>4</sup> I also think quantitative easing (QE) is basically powerless except as a signal. But these additional "tools" were central parts of the zerobound efforts, so how much they should be retained in the new strategy is a central question.

*Price level?* Flexible average inflation targeting (FAIT) prescribes a period of above-target inflation following a period of unintended below-target inflation. In so doing, it moves toward a price-level target. Much of the intuition for the wisdom of that decision seems to apply in the other direction too: expectations of further inflation would be tamed if people thought the Fed would now move past disinflation to a period of below-target inflation. The Fed seems to have an asymmetric definition of "average." It does not, in practice, seem inclined to move below 2% in reaction to the large positive error, but perhaps it should. To what extent should the new strategy include such a move to a price-level target, and should it be symmetric?

*Rules or outcomes?* How much should a rule for the Fed's actions be part of the strategy? Should it include numerical guideposts? The FAIT was criticized for being too flexible, so that the Fed could rationalize practically any decision as being consistent with the strategy. Should the Fed hold itself more tightly to a quantitative benchmark? One can also argue that discretion in methods but commitment to outcome is just as effective. Mario Draghi said, "Whatever it takes," and markets believed him, though he did not say a word about just what he might do.

*Contingency plans? Stress tests?* How detailed should the Fed's internal and public contingency planning be? I hope a lot more. As Jón Steinsson remarked later, we all thought the FAIT included an implicit break-glass-in-case-of-emergency plan, "but if inflation surges we'll raise rates quickly." Apparently not. Having that plan

would have been useful. But as Amir Yaron's presentation about October 7 emphasizes, a central bank cannot lay out contingency plans for everything. Still, the Fed currently lays out a forecast, then plans as if that's certain. A few contingencies seem worth stating. Shouldn't the Fed stress-test its monetary policy?

*More shocks?* Surely a central lesson of 2021 is that there are inflationary (and maybe deflationary) shocks out there, and inflation is not just the result of interest rate-setting mistakes. The Fed seems to think "*supply shocks*" drove inflation massively above the 2% target. So, shouldn't the "strategy" then include a massive effort to measure, diagnose, and respond quickly to "supply shocks"? If TVs couldn't get through ports, and that caused 8% inflation, where is the team watching how many TVs can get through ports? "Supply shocks" are economics, not a dog-ate-my-homework excuse for inflation. Perhaps a sharp shift in relative demand for goods over services provoked inflation. All right, but how does that catch the Fed and its forecasters completely by surprise? That shouldn't be hard to see and react to appropriately. I, of course, think a massive fiscal shock drove inflation and its miraculous easing. The Fed studiously pays little attention to the inflationary possibilities of fiscal shocks.

An alternative theory is that the Fed diagnosed COVID-19 as a demand shock needing "stimulus." It agreed with the rest of the government's \$5 trillion spending, much of it raw fiscal stimulus, and helped by monetizing \$3 trillion of that. It further helped by deliberately keeping interest rates low, "flattening the LM (liquiditypreference money supply) curve" in traditional parlance, so the fiscal shock would work. Even inflation is regarded by some as a desirable Lucas-Stokey state-contingent default to finance the needed fiscal stimulus. If so, however, the current focus on transparency might suggest that the Fed admit it, and even defend it proudly.

What will the Fed do with a geopolitical shock, or a global sovereign debt shock? These will happen too. How will it respond to stagflation, not stagZLB?

Should monetary policy respond in the same way to output and inflation, no matter the source of the shock? Or should the Fed get a lot better at understanding shocks, which are currently really just error terms in equations—things we don't know—and then respond differently to different shocks? Surely the Fed should not respond to "supply"-driven output declines the same way it responds to "demand"-driven output declines. Now that the Fed admits "supply" shocks exist, an effort to respond appropriately seems right. But maybe not.

*Limits*. The environment has changed, imposing new limitations on monetary policy. How will the strategy think about these limits?

*Fiscal limitations loom.* Debt-to-GDP was 25% in 1980, and still constrained monetary policy. It's 100% now, and not 115% only because we inflated away a bunch of it. Each percentage point of real interest rate rise is now (quickly, thanks to the Treasury's decision to issue short and the Fed's QE, which shortened even that maturity structure) a percentage point extra interest cost on the debt, requiring a percent of GDP more primary surplus (taxes less spending). If that fiscal response is not forthcoming, higher interest rates just raise debt even more, and will have a hard time lowering inflation. In Europe, the problem is more acute, as higher interest costs could cause sovereign defaults. Many central banks have been told to hold down interest rates to make debt more sustainable. Those days can return.

Financial limitations loom as well. Many banks and other financial institutions will lose a lot of money if interest rates rise. Silicon Valley Bank (SVB) and the UK's pension fiasco described by Carolyn Wilkins are early warnings. I see that as a version of a fiscal limit, because higher rates then provoke bailouts. Shouldn't the strategy mix regulation and monetary policy a little better so that higher interest rates do not threaten financial trouble?

*Ignorance.* Finally, we should admit that neither we nor central banks really understand how the economy works and how mon-

etary policy affects the economy. There is a complex verbal doctrine that bounces around central banks, policy institutions, and private analysts asserting that interest rates have a relatively mechanical, reliable, and understood effect on "spending" through a "transmission mechanism" that, although operating through "long and variable lags," gives the Fed essentially complete control over inflation in a few years. The one thing I know from forty years of study, and that all of you know as well, is that there is no respectable, well-tested economic model that produces anything like that verbal doctrine.<sup>5</sup> Knowing what you don't know, and knowing that nobody else does either, is knowledge. Our empirical knowledge is also skimpy, and the historical episodes underlying that experience come with quite different fiscal and financial-structure preconditions. In many ways, 1980 was a different world.

So, what strategy do you adopt when you are really not sure how the levers are connected to the wheels?

John Taylor has long preached the Taylor rule not because it is exactly optimal in a given model, but because it does a pretty good job in a wide variety of models. We want that sort of robustness in a strategy even to models we haven't written yet, or to the possibility that the standard doctrine is also wrong.

I've asked a lot of questions. It's time for you to offer answers.

(Larry Summers's very provocative answer is, basically, "Don't try." Give up on the whole strategy-and-communication business. Given how hard an answer to all my questions is, it's an intriguing view.)

#### Notes

 For deliberations, see "Review of Monetary Policy Strategy, Tools, and Communications," Board of Governors of the Federal Reserve System (online), last updated August 27, 2020. For the new strategy, see "Statement on Longer-Run Goals and Monetary Policy Strategy," Board of Governors of the Federal Reserve System, adopted effective January 24, 2012; as reaffirmed effective January 30, 2024.

- See John H. Cochrane, "Fiscal Narratives for US Inflation," manuscript, January 29, 2024, https://www.johnhcochrane.com/research-all/sims -comment.
- John H. Cochrane, "Strategic Review and Beyond: Rethinking Monetary Policy and Independence," *Federal Reserve Bank of St. Louis Review* 102, no. 2 (second quarter 2020): 99–119.
- 4. See John H. Cochrane, "The New-Keynesian Liquidity Trap," *Journal of Monetary Economics* 92 (December 2017): 47–63.
- For an extensive treatment of this point, see John H. Cochrane, "Expectations and the Neutrality of Interest Rates," *Review of Economic Dynamics* 53 (July 2024): 194–223.

### **I7** Enhancing Resilience with Monetary Policy Rules

Athanasios Orphanides

Since its founding in 1913, the Federal Reserve has been adapting its policy strategy from time to time. In recent years, the Fed has been more open about this process. The ability to critically evaluate past performance, learn from mistakes, and espouse new knowledge is the hallmark of a good institution. Though the Fed's adaptation of its policy strategy has not been uniformly positive, Federal Reserve policy has improved over the past few decades with the adoption of some features of the inflation-targeting approach.

Yet, Fed policy continues to be hampered by episodes characterized by excessive use of discretion that is inconsistent with systematic policy. The postpandemic inflation episode provides a recent example of the consequences. The resilience of the Fed's monetary policy strategy would be enhanced by constraining discretion.

The Fed's next policy strategy review should aim to discipline discretion and help the Federal Open Market Committee (FOMC) be more systematic. This can be achieved by using simple policy rules to explain policy and by providing to the public pertinent information in real time.<sup>1</sup> Rules that have been part of the FOMC briefing materials but not disclosed to the public in real time can serve this purpose.

Simple rules can serve as a cross-check on the Fed's discretionary policy, as has been advocated by numerous observers over the years, including former and current Fed officials. Since notable persistent deviations of policy from simple rules would warrant explanation, public disclosure would discipline discretion. Two simple rules that have been presented in the Fed's Bluebook/Tealbook starting in 2004 provide an illustration of how this approach would have helped the Fed during the recovery from the pandemic.

#### The Postpandemic Policy Error

Following the successful disinflation of the 1980s and 1990s under chairs Paul Volcker and Alan Greenspan, the Fed generally succeeded in fulfilling its mandate better than in the past. From the 1980s until the pandemic, inflation and inflation expectations were better behaved (figure 17.1). The adoption of a 2% goal as a numerical definition of price stability in 2012 was a major positive step for the Fed. However, the postpandemic inflation raised questions about the resilience of the Fed's policy strategy. While the Fed eased policy forcefully in 2020, as was appropriate, it was far too late in normalizing policy during the recovery. What went wrong has been discussed extensively, including in previous editions of this conference (Bordo, Cochrane, and Taylor 2023 and 2024; Eggertsson and Kohn 2023; Orphanides 2023). Yes, some of the inflation was unavoidable and could be attributed to adverse shocks. But monetary policy was part of the problem. The Fed got trapped in the forward guidance it provided about future policy and deviated from what would be expected if policy had been systematic.

After the pandemic, the Fed used its discretion to peg the federal funds rate at zero for too long, even as inflation and inflation expectations were rising. With the Fed keeping nominal interest rates inappropriately low, *real* interest rates kept falling to more and more negative levels while the economy was growing rapidly, fueling inflation (figure 17.2). It is hard to square the Fed's policy during 2021 with a systematic policy approach. During the postpandemic recovery, policy not only violated the Taylor principle, as is evident in the figure; it also failed to respect the first of the two limitations on monetary policy that Milton Friedman had highlighted

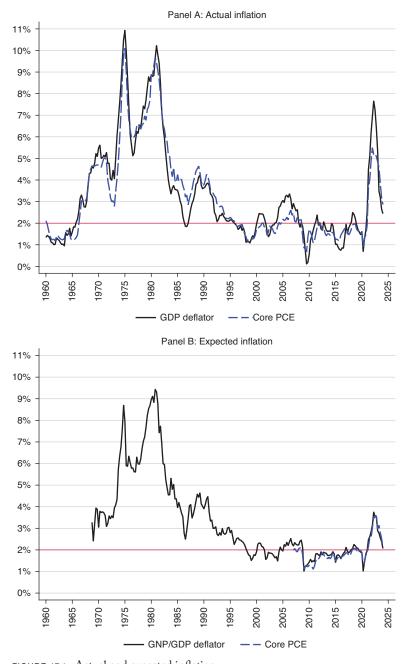


FIGURE 17.1. Actual and expected inflation. Notes: Actual inflation shown in quarter *t* reflects year-over-year inflation ending in quarter *t*. Expected inflation reflects SPF median of year-over-year inflation ending in t + 3. Source: Federal Reserve Bank of Philadelphia.

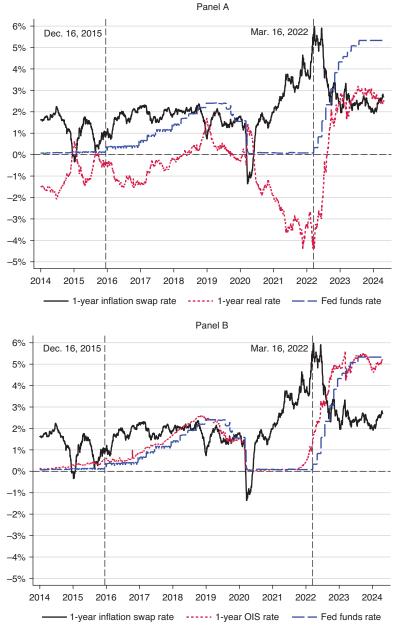


FIGURE 17.2. The postpandemic policy error.

Notes: Expected inflation as measured by the one-year inflation swap rate. The real interest rate reflects the one-year OIS rate minus the one-year inflation swap rate. Source: Bloomberg and author calculations.

in his 1967 American Economic Association (AEA) Presidential Address. Monetary policy, Friedman wrote, "cannot peg interest rates for more than very limited periods" (Friedman 1968, 5).

During the course of 2021, real interest rates at short and intermediate maturities were driven to extreme lows. The one-year real rate implied by OIS (overnight indexed swap) and inflation swap rates fell to below minus 4%, and stayed improperly low until after the Fed started adjusting rates in March 2022.

The recent experience illustrates that implementing policy with nominal interest rates can be challenging.<sup>2</sup> Of course, systematic monetary policy can be implemented and communicated with a nominal interest rate, but this requires adjustment in a systematic fashion to account for the evolution of the economy, especially inflation: policy must be informed by a well-specified policy reaction function (McCallum 1981 and 1986).

One lesson from the postpandemic policy error is that Fed policy has not been sufficiently systematic. The postpandemic experience is an illustration of an underlying challenge that has hampered monetary policy over time: a policymaker proclivity toward excessive discretion.

#### The Challenge of Constraining Unhelpful Discretion

Insufficient guidance from policy rules and excessive reliance on discretion is not a new challenge. This is a well-known problem for monetary policy design. The central bank may have the mandate to deliver price stability over time, but policymakers are human. At times, politics can get in the way, and behavioral biases can have an undue influence on policy decisions. The risk of inappropriate use of discretion is one of the reasons why in 1962 Milton Friedman had argued against central bank independence.<sup>3</sup>

A successful monetary policy framework requires a mechanism for *constraining* discretion. In the 1990s, informed by the early experience with inflation targeting around the world, Ben Bernanke and Rick Mishkin advocated that the Fed should adopt this framework. They suggested that constraining discretion was one of the major advantages of the approach:

Some useful policy strategies are "rule-like," in that by their forwardlooking nature they constrain central banks from systematically engaging in policies with undesirable long-run consequences; but which also allow some discretion for dealing with unforeseen or unusual circumstances. These hybrid or intermediate approaches may be said to subject the central bank to "constrained discretion." (Bernanke and Mishkin 1997, 104)

Indeed, the inflation-targeting framework has been an innovation that has had some success in this regard. Some of the steps adopted by the Fed over the past few decades have moved the Fed's policy strategy in that direction. However, success in practice is determined by institutional factors and what may appear to be implementation details that sometimes are not details at all.

One factor that hinders success for the Fed, unlike for many other central banks, is the formulation of its mandate. A literal interpretation of the Fed's statutory mandate to simultaneously deliver maximum employment and price stability is simply infeasible. In contrast, legislation of most inflation-targeting central banks identifies price stability as the primary mandate of the bank, which is, after all, the best way to support sustainable growth and employment over time.

Interestingly, before inflation targeting was adopted around the world, under chairs Volcker and Greenspan the Fed interpreted its mandate in this manner. I recall that when I joined the Federal Reserve as an economist, it was considered unhelpful to discuss in public the maximum-employment side of the Fed's mandate.

Monetary policy in the Volcker-Greenspan era was fairly systematic and more successful than in earlier years, because it focused, as Chair Greenspan summarized in 2004, on "maximizing the probabilities of achieving our goals of price stability and the maximum sustainable economic growth that we associate with it" (Greenspan 2004, 37).

Since 2012, the Fed has been far more explicit about the maximum-employment part of its mandate. However, the tension of simultaneously delivering maximum employment and price stability makes systematic policy harder. Constraining discretion successfully is more important for the Fed than for inflation-targeting central banks with a mandate that recognizes the primacy of price stability.

#### Simple Rules as a Cross-Check

One way to constrain discretion is by using simple policy rules as guidelines, acknowledging the limitations of simply following a specific mechanical formula at all times (Taylor 1993).

Viewed in this manner, simple rules can supplement other analytical tools associated with the inflation-targeting approach. Simple rules can serve as a cross-check, as proposed and implemented by Jan Qvigstad at the Norges Bank (Qvigstad 2005). The Norges Bank published a list of criteria for setting the interest rate, with criterion 6 describing the role of simple rules: "It may also be useful to cross-check by assessing interest rate setting in the light of some simple monetary policy rules. If the interest rate deviates systematically and substantially from simple rules, it should be possible to explain the reasons for this" (Norges Bank 2005, 28).

With this approach, while policy retains some discretion, decisions are informed by simple rules. The central bank is expected to provide information to the public that can be used to monitor deviations and explain the reasons for substantial deviations. The public disclosure and commitment to explain deviations constrains discretion, facilitating more systematic policy. Simple rules that are well suited to serving this purpose are rules with desirable robustness characteristics, informed by policy research. The rules employed as a cross-check should be subject to periodic reviews and adaptation. Since no single, simple rule can be robust against all possible sources of error in policy analysis, focusing on a couple of alternatives that are robust across different dimensions can prove incredibly useful in practice.

Desirable characteristics of robust interest rate policy rules have been studied extensively in recent decades and are well understood. Good rules must preserve price stability over time, and maintain inflation expectations well anchored, in line with the central bank's goal; they must be forward-looking, embracing the informational benefits of current analysis, nowcasting, and short-term projections; they must be somewhat countercyclical, tempering business cycle booms and busts; and they must be robust against imperfect knowledge.

#### Two Simple Rules from the Fed's Bluebook/Tealbook

How could the Fed adapt its current strategy in this direction? Fed staff has been at the forefront of policy research and analysis with simple rules and has been tracking prescriptions from simple interest rate rules since the 1990s. Starting with the January 2004 FOMC meeting, real-time prescriptions from simple rules have been presented to the FOMC in the Bluebook/Tealbook that is prepared for each regularly scheduled FOMC meeting. However, the Fed has not been disclosing this analysis to the public in real time. At present, prescriptions from simple rules monitored by staff and presented to the FOMC in real time are available until 2018.

The Fed's next policy strategy review could adopt the incremental step of providing simple rules analysis to the public in real time. The Fed could explain the systematic nature of policy with simple rules and, importantly, explain deviations of its policy decisions from simple rules when notable deviations are evident. Such analysis could be provided on a quarterly basis, with the presentation of the FOMC's Summary of Economic Projections (SEP). Public disclosure would discipline discretion and improve policy. Since notable deviations would warrant explanation, the Fed would be less prone to ignore deviations from systematic policy with no good reason.

The usefulness of this approach can be illustrated by considering two simple rules that have been part of the Bluebook/Tealbook prepared for all FOMC meetings for which the information has been available to the public, starting in January 2004. The first rule is a variant of the original Taylor rule: it provides a prescription for the level of the policy rate, using the sum of the inflation gap and the output gap as the main input. The second is a variant that provides a prescription for the quarterly change of the policy rate, using the projected deviation of nominal GDP growth from the natural growth rate as the input:<sup>4</sup>

Classic Taylor rule: 
$$i = r^* + \pi + \theta(\pi - \pi^*) + \theta y$$
  
Natural growth-targeting rule:  $\Delta i = \theta(n - n^*)$ 

Both are one-parameter rules, with their responsiveness to perceived deviations from the normal state of the economy governed by the parameter  $\theta$ . Following the original formulation in Taylor (1993), both rules have been tracked with  $\theta = 0.5$ .<sup>5</sup>

The Tealbook variant of the Taylor rule has been implemented using current-quarter projections of inflation and the output gap as inputs, in line with Taylor's original timing convention. The use of projections is necessary to make the rule operational because of the lags associated with data releases. Unlike the original formulation, however, the core PCE concept of inflation has been employed instead of GDP deflator inflation. In addition, the equilibrium real interest rate employed has varied over time, reflecting perceived variation in the concept by Fed staff and FOMC participants. The natural growth-targeting rule was originally formulated to respond to the deviations of projected nominal GDP growth, *n*, from the natural growth rate of nominal GDP,  $n^*$ , approximated as the inflation goal plus the growth rate of real potential GDP,  $n^* \approx (\pi^* + g^*)$ . It responds to the projected growth gap over four quarters, ending three quarters ahead. Instead of responding to the nominal GDP growth gap, this rule can be rewritten as responding to the sum of the inflation gap and the real-growth gap. In turn, the real-growth gap (over four quarters) can be approximated with the four-quarter difference in the output gap:  $(n - n^*) \approx (\pi - \pi^*) + (g - g^*) \approx (\pi - \pi^*) + \Delta^4 y$ . The Tealbook variant of the natural growth-targeting rule has been implemented with the core PCE concept of inflation and the four-quarter difference in the output gap. The Tealbook refers to this variant as the "first difference" rule.

Figure 17.3 compares the end-quarter federal funds target rate (or midpoint of target range) to the prescriptions for these rules obtained from the historical Bluebooks and Tealbooks prepared for the first FOMC meeting in each quarter. To illustrate how public disclosure of these simple rules would have helped the Fed avoid the postpandemic policy error, it would have been ideal to have the Tealbook prescriptions for 2021 and 2022. Since these are not yet available, we examine prescriptions from closely related variants that can be tracked in real time using public information. Instead of Tealbook projections, we can use projections from the quarterly Survey of Professional Forecasters (SPF), published by the Federal Reserve Bank of Philadelphia every quarter. Figure 17.4 superimposes the real-time prescriptions based on SPF projections to the Bluebook/Tealbook variants of the rules in figure 17.3.<sup>6</sup> As can be seen, though not identical, the differences between the Tealbook and SPF variants over the 2004-18 period (when both are available) are generally relatively small.

A comparison of actual policy with the Taylor rule and the natural growth rule indicates that both captured the contours of policy

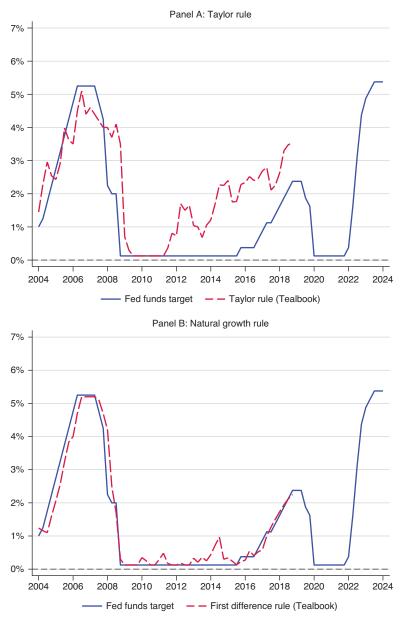


FIGURE 17.3. Two simple policy rules from the Fed's Bluebook/Tealbook. Notes: Fed funds target or midpoint of target range. Rule prescriptions are constrained by ZLB. Post-2018 Tealbooks are not yet available to the public. Source: Board of Governors of the Federal Reserve System.

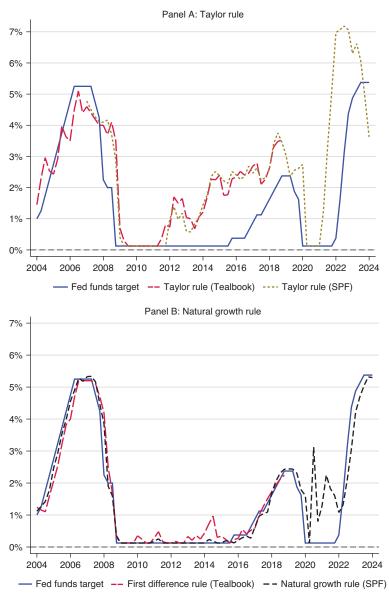


FIGURE 17.4. Two simple policy rules: Bluebook/Tealbook and SPF.

Notes: Fed funds target or midpoint of target range. Rule prescriptions are constrained by ZLB. The Tealbook variants are as shown in historical Bluebooks/Tealbooks; the SPF variants are constructed as described in the text.

Source: Federal Reserve and author calculations.

in the 2004–11 period, but also that their prescriptions diverged in later years. Actual policy deviated significantly and persistently from *both* simple rules in only one year, 2021. While the two rules provided different guidance on the timing of liftoff, both rules indicated that the Fed needed to normalize policy during 2021.<sup>7</sup> Instead, the Fed kept increasing the policy accommodation it provided to the economy that year, both by reducing real interest rates, as shown in figure 17.2, and by expanding its balance sheet with asset purchases.

Had the Fed started to provide information about the simple rules in the Tealbook to the public when it revised its policy strategy in August 2020, the inappropriate use of discretion during 2021 would have been checked.<sup>8</sup> The large deviations of policy from both of these simple rules would have likely first prompted an explanation and subsequently, as the deviations persisted, a reassessment of policy.

#### Conclusion

The Fed's next policy strategy review should aim to discipline discretion and help the FOMC be more systematic. Simple rules could serve as a cross-check on discretionary policy. The SEP could disclose in real time the prescriptions from benchmark policy rules that have been presented in the Bluebook/Tealbook since the January 2004 FOMC meeting. The simple rules would explain how monetary policy depends on the evolution of the economy. Since notable deviations of policy from simple rules with desirable robustness characteristics would warrant explanation, public disclosure of deviations would constrain discretion.

Providing this information would also help the public develop a better understanding of the likely future direction of policy and its systematic dependence on the evolution of the economic outlook, without explicit statements about the future policy rate. The unhelpful forward guidance provided with the dots should end. Explaining policy with simple rules can discipline discretion and enhance the resilience of the Fed's monetary policy strategy.

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#### Notes

I would like to thank Gregory Hess, Vincent Reinhart, and Tom Sargent for helpful discussions and comments.

1. See Fischer (1990) and Taylor and Williams (2011) for reviews of this literature.

- 2. With a monetary aggregate instrument, a robust rule for this can be simpler, for example, the k-percent money growth rule advocated by Milton Friedman. However, the financial innovation of recent decades has led to a deterioration of the effectiveness and robustness characteristics of such rules.
- 3. Friedman considered this to be a problem especially "in times of uncertainty and difficulty" (Friedman 1962, 188). Orphanides (2015) discusses the consequences of behavioral biases.
- 4. Here, *i* denotes the policy rate, *r*\* the natural/equilibrium real interest rate, π the inflation rate, *y* the output gap, and *n* nominal income growth. π\* and n\* are the inflation goal and the natural growth of nominal GDP that is consistent with the inflation goal.
- 5. The natural growth-targeting rule was developed at the Fed as a variation of the original Taylor rule that could emulate Friedman's k-percent rule for money growth, and McCallum's rule for the monetary base with an interest rate instrument instead of a monetary aggregate. Alternatively, it may be viewed as a price level-targeting variant of the Taylor rule, in first-difference form. See Nelson (2020), Orphanides and Williams (2002), Orphanides (2003 and 2024), and Williams (2017) for related discussion.
- 6. Additional detail on the SPF variant of the natural growth rule is provided in Orphanides (2024). Since the SPF does not include the output gap, the SPF variant of the Taylor rule shown in the figure employs the unemployment gap and Okun's law, y≈ κ(u-u\*), with κ=-2. The variation in perceived natural rates is captured by using the median SEP responses of FOMC participants. See Orphanides (2019) for additional details.
- Other simple rules also indicated that the Fed had fallen behind the curve well before liftoff in March 2022 (Papell and Prodan-Boul 2024; Tatar and Wieland 2024).
- Related proposals had been made before 2020, including by FOMC participants, but were not adopted. For example, before the work on the 2020 strategy review started, Federal Reserve Bank of Cleveland President Loretta Mester proposed "using simple monetary policy rules as benchmarks to explain our policy decisions" (Mester 2018, 11).

### **I 8** The Fed's Strategic Approach to Monetary Policy Needs a Reboot

Mickey D. Levy and Charles I. Plosser

In 2018–20, the Federal Reserve undertook a strategic review of its approach to monetary policy. It culminated in a New Strategic Framework (NSF) adopted in August 2020 that replaced and fundamentally changed its original January 2012 "Statement on Longer-Run Goals and Monetary Policy Strategy."<sup>1</sup> Commonly referred to as the consensus statement, the 2012 initiative established a numeric inflation target of 2% and explained that a numeric target for employment would be inappropriate. It was considered a major step for the Fed in terms of transparency and a commitment to how it would conduct monetary policy. It was followed by steady economic expansion with a significant decline in the unemployment rate and an inflation rate that hovered modestly below 2%, while inflationary expectations modestly declined from near 3% to between 2% and 2.5%.

Despite this performance, the Fed worried that the persistence of sub-2% inflation created an unstable condition that risked a sharp decline in inflationary expectations and a decline in nominal interest rates that could lead to more-frequent confrontations with the effective lower bound (ELB) and heighten the risk of deflation. The Fed was concerned that the scope of monetary policy in future downturns might be inhibited. In addition, the sustained low inflation amid low unemployment was inconsistent with the standard Phillips curve predictions. This led the Fed to conclude that a flatter Phillips curve was the new normal, which the Fed interpreted as meaning easier policy was more likely to boost job creation than to create inflation.

Based on these worries and perceptions, the NSF materially altered the Fed's interpretation of its dual mandate and restructured its strategic approach to monetary policy. The new framework replaced the symmetric 2% inflation target of the consensus statement with an asymmetric, flexible average inflation target that favored higher inflation to address the issues surrounding the ELB. The NSF also broadened the interpretation of the Fed's employment mandate to "maximum inclusive employment" and adopted an asymmetric focus on "shortfalls" in place of "deviations" from maximum employment. Combined with the Fed's perception that the Phillips curve was nearly flat, this effectively ended the Fed's historical practice of preemptive tightening in response to higher anticipated inflation. The NSF heightened the ambiguity and uncertainty regarding how monetary policy would be implemented, and its expanded complexity broadened the scope for discretionary policymaking.

In September 2020, we prepared a critique of the NSF in a paper aptly titled "The Murky Future of Monetary Policy."<sup>2</sup> We expressed concerns that the new strategy—with its greater emphasis on discretion and with less clarity and transparency regarding the conduct of monetary policy—was ill conceived and would eventually lead to monetary policy mistakes and higher inflation. It didn't take long for things to unravel. Within eight months of the Fed's adoption of the NSF, extraordinary monetary accommodation and unprecedented fiscal deficit spending in response to the pandemic generated monthly annualized inflation rates that rose above 5%. Ultimately, the inflation rate reached levels not seen in over forty years.

Following its adoption, the Fed rarely referenced the NSF, but implementation of monetary policy during the inflation run-up was consistent with it. Fed Chair Jerome Powell announced in late 2023 that the Fed would commence a new strategic review late in 2024, consistent with his earlier statements that a strategic review would take place every five years. Inflation has receded from its recent highs, and a concern is that, in its review, the Fed may choose to attribute its inflationary policy blunders to misinterpretations of the effects of the pandemic or minor errors in the implementation of an otherwise sound strategy, and therefore recommend few changes to its strategic framework. This would be a mistake. It is worth noting that despite the inflation fiasco of 2020–22, each January from 2021 to 2024 the Fed reaffirmed its commitment to the NSF. The upcoming strategic review is an important opportunity for the Fed to acknowledge and address the shortcomings of the 2020 NSF and put in place a framework that will improve the Fed's conduct of monetary policy.

First we briefly review the evolution of monetary policy during the recovery from the Great Financial Crisis (GFC) and the conditions that motivated the Fed to undertake a strategic review. The next section describes the process and results of the strategic review. The following section summarizes the NSF. Next we describe our critique of the NSF and why it was flawed from the outset. In the following section, we assess the performance of the NSF in the 2020s. In the final section of this report, we suggest which issues should be addressed in a new strategic review and elements of what a new framework might contain.

In summary, the experiences of the last four years highlight how the Fed needs to take a step back in its strategic review before it tries to move forward. First, it needs a more thoughtful and thorough review of the inflation process and its dynamics as it relates to its monetary policy toolkit. The Fed's understanding of inflation is adrift. Reliance on an unstable or time-varying Phillips curve is inadequate. The Fed must conduct more research on the monetary transmission mechanism, the role of the Fed's balance sheet, fiscal policy, and other factors that influence aggregate demand. Nominal GDP and what affects aggregate demand must be a focus. Second,

the Fed must correct its asymmetric interpretations of its dual mandate, tone back excessive wordsmithing, and aim to develop a clear, balanced strategy that is suitably robust. It must reassess its asymmetric concerns about inflation and correct the obvious flaws in its flexible average inflation targeting. For example, the Fed could return to a symmetric 2% inflation target with numeric bands, as followed in many other countries, to convey uncertainty and the range of outcomes. Third, the Fed should consider systematic policy rules that may be used as guidelines and provide value as reaction functions. Complicated structures and formulations should be avoided in favor of simple and understandable objectives. Fourth, the Fed needs to abandon forward guidance as an independent policy tool and be more circumspect about the practicality of its complex modeling of managing inflationary expectations. Fifth, the Fed needs to consider ways to improve the interpretation of the Summaries of Economic Projections (SEPs) and potential ways to enhance risk management amid uncertainty.

# Evolution of Monetary Policy Prior to the Strategic Review of 2020

The consensus statement of 2012 was an important watershed in the evolution of monetary policymaking at the Fed (Board of Governors 2012). Many of the concepts incorporated in the statement, however, were not new. The idea of explicit targeting of a specific rate of inflation and the importance of anchoring inflationary expectations were widely acknowledged as important pillars of sound monetary policy and had already been publicly adopted by some leading central banks.<sup>3</sup> Preemptive monetary tightening was also generally considered an important element in controlling inflationary expectations and inflation. Low unemployment was always a high priority at the Fed and a key metric when interpreting its statutory employment mandate. The monetary policy debate revolved around the Phillips curve and the dynamics of inflation. The fact that employment is heavily influenced by nonmonetary factors beyond the Fed's control was understood, if not widely or publicly discussed or acknowledged by the Fed. Thus, the consensus statement mostly codified the existing state of monetary policy practice. Yet, it was profoundly consequential that the Fed was willing to summarize and acknowledge its commitment to a broad framework (Lacker 2020). The transparency of such a statement meant that policymakers could speak with more clarity, more commitment, and more accountability than ever before.

Of course, in the wake of the Great Financial Crisis, many aspects of policy were changed, and the adoption of the consensus statement was but one feature of the new policy environment. For example, in 2008 the Fed began paying banks interest on reserves (IOR) held on deposit at the central bank. This was instituted in conjunction with the Federal Open Market Committee's (FOMC) decision to lower the fed funds target rate to near zero and to engage in large-scale asset purchases (LSAPs, or quantitative easing, QE) of US Treasury and mortgage-backed securities (MBS). These LSAPs flooded the banking system with reserves and provided substantial credit support to the housing sector. IOR was originally intended to help control the consequences of the Fed's large balance sheet resulting from QE in an environment where the fed funds rate was constrained by the effective lower bound.

Another major change in the policy environment that impacted monetary policy was the Dodd-Frank Act of 2010. Like interest on reserves and QE, the Dodd-Frank Act altered the regulatory environment for banks in significant ways. At the same time, the Fed instituted annual stress tests that forced large banks to raise capital standards and adopt more rigorous risk-management practices. These changes in the policy environment impacted the lending and borrowing decisions of banking institutions, likely changing the traditional understanding of the transmission mechanism of monetary policy to the real economy and inflation.

During the ensuing eight years (2012 through 2019) prior to the pandemic, the economy continued its recovery and expansion from the GFC recession. Employment growth averaged 1.7% per year, the labor force expanded, and the unemployment rate fell to a fifty-year low of 3.5%. The Personal Consumption Expenditures (PCE) inflation rate dipped and remained modestly below the Fed's adopted inflation target, averaging about 1.4% over the 2012–19 period, while core PCE inflation excluding food and energy averaged 1.6%.<sup>4</sup> Inflationary expectations gradually declined from somewhat over 3% to about 2.5%.<sup>5</sup> And, in each of its quarterly SEPs, the Fed projected that under appropriate policy inflation would rise to its 2% target.<sup>6</sup>

The overall performance of the economy during the post-GFC expansion was moderate. Yet as it evolved, concerns about the slow improvements in labor markets and increasingly about the sub-2% inflation and the challenges caused by the limitations associated with the ELB on the policy rate came to dominate Fed policy discussions and research. These concerns became more frequent and more emphatic in 2015 following the rapid decline in oil prices in 2014 and 2015 that reduced headline inflation. Of note, these concerns about low inflation and the risk of sharp declines in inflationary expectations persisted even as inflation rebounded beginning in 2016 following the drop in oil prices. Headline and core PCE inflation each averaged about 1.7% during 2016 and 2019. The CPI (Consumer Price Index) inflation, which measures prices of consumer out-of-pocket expenditures and closely tracks survey-based measures of inflationary expectations, averaged 2.2% over the same period, and the core CPI averaged 2.1%. Thus, the very low inflation rate of 2014–15 and the fears of declining inflation or inflation expectations proved largely ephemeral.

Even as economic performance improved and inflation edged up toward the Fed's target, concerns about the economy, inflation, and low interest rates persisted. Worries about slow economic growth centered on excess saving relative to investment, insufficient demand, and the low inflation and low real interest rates that resulted (see, for example, Summers 2016). Fed researchers estimated that the natural real rate of interest was in a secular decline to very low levels, reflecting a lower trajectory of productivity and potential real growth (Laubach and Williams 2016).

As the unemployment rate receded, inflation remained modestly below 2%. According to the Fed, a key reason was the Phillips curve had flattened (Yellen 2019). This observation had several implications. First, it reinforced the view of many economists, dating back to Friedman (1968), that the Phillips curve should not be treated as a reliable or stable way to model inflation dynamics. Nevertheless, the Fed's econometric models and its approach to policy relied heavily on the Phillips curve for assessing and forecasting inflation dynamics. The Fed's inflation forecasts from its econometric models depended largely on a measure of "slack" (such as the deviations of the unemployment rate from some measure of the natural rate) and inflation expectations. If employment or unemployment and related measures of slack were not influencing inflation in a predictable way, then absent an alternative model of inflation dynamics, the Fed was forced to place more and more emphasis on inflationary expectations as the primary source of inflation. This involved trying to manage those expectations directly through forward guidance.<sup>7</sup> Using forward guidance to influence expectations had long played a role in the Fed's thinking (Nelson 2021). Effective forward guidance was integral to the "lower for longer" strategy proposed by Reifschneider and Williams (2000) that would stimulate demand if interest rates were stuck at the ELB. Fed Chair Bernanke emphasized that "influencing the public's expectations about future policy actions became a critical tool" and argued that forward guidance was an important complement to the Fed's QE3 (Bernanke 2011 and 2012). Woodford's emphasis on forward

guidance carried significant weight at the Fed (Woodford 2013). With the heightened emphasis on managing expectations, forward guidance became perceived as an independent tool of monetary policy. Second, the perceived flat Phillips curve amid low inflation provided an opportunity for some to argue that continued monetary ease could generate stronger employment without much risk of excessive inflation. Fed governor Brainard referred to "opportunistic reinflation" that would "take advantage of a modest increase in actual inflation to demonstrate to the public our commitment to our inflation goal on a symmetric basis" (Brainard 2019).

To summarize, concerns about low inflation, low real rates, and the ELB came to dominate policy discussions at the Fed. As a result, these concerns came to dominate the agenda of the strategic review.

## The Fed's Strategic Review and the Development of its 2020 Framework

In November 2018, the Fed announced its intention to review the "strategies, tools, and communication practices it uses to pursue its congressionally-assigned mandates" (Board of Governors 2018). The Fed stated that its strategic review would focus on three areas: (1) the need for a new strategy to offset past misses, (2) whether the current monetary policy tools are adequate to achieve the Fed's mandate or it would be necessary to expand the toolkit, and (3) improving communications (Clarida 2019). The Fed's review process included internal research, research commissioned on specific topics, and a series of "Fed listens" seminars in which the Fed would convene public forums to obtain perspectives from various interested parties.

In reality, the Fed's reference to offsetting "misses" pertained primarily to below-target inflation outcomes. The premise that a new strategy should seek to offset past misses signaled strongly that the

Fed intended that the review would conclude that inflation targeting would no longer be the strategic imperative that it was in the original 2012 statement.<sup>8</sup> The strategic review focused on the inflation misses and how to reinterpret its inflation mandate to allow for a time-varying (and presumably higher) medium-term inflation rate. The Fed's goal was to boost inflation expectations in the medium term when confronting shortfalls to keep the expectations from declining, while maintaining its longer-term focus on 2% inflation to keep expectations anchored and meet its price-stability mandate. The Fed's review of its monetary policy toolkit necessary to achieve its mandate focused almost exclusively on what monetary policy tools would be most appropriate in case the Fed faced the ELB. There was no focus on the risks of higher inflation, as the Fed presumed it would know what to do if inflation rose. The Fed had ruled out negative interest rates as impractical and undesirable (Powell 2019b). The Fed knew that its communications were a problem, but it did not consider adopting systematic rules or a better-defined reaction function that would help clarify how the Fed would respond to inflation and labor market conditions.

Unfortunately, the Fed's review mostly ignored or dismissed the impact of other important policy developments such as IOR, QE, and the increased regulatory oversight of banks and short-term funding markets, each of which may have contributed to changes in the transmission mechanism of monetary policy to inflation. Nor did the review analyze the implications of fiscal policy or the major credit allocations pursued by the Fed or the growth of its balance sheet.<sup>9</sup> Instead, the Fed's concerns about the ELB focused the review almost exclusively on low inflation; on unstable, low inflationary expectations; and on a presumed secular decline in the steady-state real interest rate. The narrow scope of the review may have led the Fed to misinterpret the causes of the economic outcomes during the expansion and thus develop flawed or inappropriate changes in its strategic approach to monetary policy.

The content and results of the Fed's strategic review were largely in place prior to when the formal review began. In February, Clarida (2019) described the Fed's concerns, outlined the review process, and strongly hinted that the review process would conclude the need for flexible inflation averaging and a makeup strategy following periods of subtarget inflation.

Research on inflation conducted internally and by some external sources had developed models that illustrated (1) how the misses on inflation from its 2% target could be a potential source of falling inflationary expectations and instability, suggesting that a new strategy was needed; (2) how the existing monetary policy tools (for example, interest rates and balance sheet adjustments) needed to be augmented or enhanced by a more flexible approach to inflation that allowed for higher inflation and higher expected inflation in the medium term to prevent a downward spiral in expectations that could be induced by the ELB considerations; (3) how forward guidance should play a prominent role in managing inflationary expectations, and how it is a powerful independent monetary policy tool that would enhance and clarify communications; and (4) how research on labor markets showed that even with the unemployment rate below estimates of the natural rate of unemployment, wage increases were not accelerating and select groups were materially behind. The flat Phillips curve therefore supported a more aggressive policy focused on the labor market. The Fed's review did not come up with much about its communications.

As part of its strategic review, the Fed held a two-day conference in June 2019 hosted by the Federal Reserve Bank of Chicago. In his welcoming remarks to the conference, Powell (2019a) applauded the benefits of the extended economic expansion and sustained improvement in labor markets, but his focus was primarily on the ELB and the fears it engendered at the Fed. Strikingly, in the nineteen paragraphs of Powell's speech, nine of them mentioned and focused on the ELB. The academic papers presented at the conference were consistent with the concerns expressed in Powell's welcoming remarks. One paper analyzed the unstable situation posed by inflation that persisted below 2% and emphasized the important role of forward guidance in managing inflationary expectations (Svensson 2019). A study of labor markets concluded that there was more slack in labor markets than generally perceived, suggesting that there was more room for monetary expansion without being inflationary (Abraham and Haltiwanger 2019). In two separate panels, community leaders effectively articulated the benefits of sustained economic expansion and lower unemployment to their constituents.

# The New Strategic Framework: Its Components and Characteristics

Powell (2020) announced the NSF at the Kansas City Fed's Jackson Hole symposium in August 2020. The new approach significantly changed the Fed's interpretation of its congressional mandates, introducing important asymmetries and flexibilities to its inflation and employment goals. This altered its strategic approach to monetary policy. The new flexible average inflation targeting (FAIT) favored higher inflation. The enhanced maximum inclusive employment objective broadened the scope of the Fed's mandate to consider distributional aspects of the labor market. The shift in focus to "shortfalls" from "deviations" from maximum employment represented to Fed Vice Chair Clarida a "robust evolution in the Federal Reserve's policy framework" (Clarida 2020). The consequence of these changes was to materially elevate the priority of employment.

# The Inflation Target-the New FAIT

In place of the Fed's 2012 balanced 2% inflation target, the NSF instituted a form of flexible average inflation targeting in which

inflation would average 2% over time with a makeup strategy following a period of sub-2% inflation. The new plan was purposely asymmetric by not including a makeup strategy following a period of above-2% inflation. The NSF reads: "In order to anchor longerterm inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time" (Board of Governors 2020a).

The differences from the 2012 strategic plan are significant. The 2012 strategic plan made it clear that whether actual inflation was above or below the Fed's target, policy would seek to return inflation to 2%. In contrast, the NSF did not include any numeric guidelines for the makeup strategy or guidelines as to when it would be used, leaving open the issue of how high and for how long the Fed would pursue and tolerate above-2% inflation. This ambiguity about when and how the makeup strategy would be implemented added uncertainty about the Fed's inflation goals and how policy would be conducted and made it more difficult to judge the Fed's success and to hold it accountable.

The Fed provided little additional interpretation to its FAIT because it presumed inflation would stay low, and it was confident in its ability to manage inflation and inflationary expectations even if inflation did rise.

#### Maximum Inclusive Employment and "Shortfalls"

The NSF materially reinterpreted the employment mandate as well. It repeated the 2012 statement that stressed that the maximum level of employment was "largely determined by nonmonetary factors that affect the structure and dynamics of the labor market," yet it expanded the mandate to "maximum inclusive employment" (Board of Governors 2012). This broadening implicitly establishes a goal of maximum employment for all subgroups of the labor force. In addition, whereas the 2012 statement stated that monetary policy "seeks to mitigate deviations of inflation from its longer term goal and deviations of employment from the Committee's assessments of its maximum level," the new strategy added a critical asymmetry that "the Committee's policy decisions must be informed by assessments of the shortfalls of employment from its maximum level" (Board of Governors 2012 and 2020a).

Importantly, the shift to shortfalls combined with the Fed's perception that maximum employment was compatible with stable, low inflation and that the Phillips curve was flat effectively discarded the Fed's traditional reliance on preemptive monetary tightening. The Fed's preemptive tightening in anticipation of higher inflation—"leaning against the wind"—had been a critical tool the Fed had used in managing inflationary expectations.

#### Assessing the Flaws in the New Strategic Framework

Our initial critiques of the NSF in October 2020 proved warranted. First, we emphasized that the primary impetus driving the Fed's strategic review was the Fed's overly narrow focus on the ELB as a prime culprit preventing inflation from returning to target through its impact on inflationary expectations. In doing so, it dismissed or ignored other factors that may have been important.<sup>10</sup>

Second, we emphasized how the asymmetries and lack of constructive guidelines in the FAIT favored higher inflation. Combined with the broadened employment objective, this would reinforce the Fed's discretionary approach to monetary policy and steer the Fed further away from rules-based guidelines that could have been useful for avoiding past policy mistakes.

Third, we noted that the NSF's dismissal of preemptive tightening would undercut a traditional mainstay of the Fed's efforts to anchor inflationary expectations. Fourth, we viewed the Fed's heightened reliance on using forward guidance to manage inflation expectations as highly problematic and risky. Fifth, the lack of clarity of the objectives and implementation of the NSF complicated rather than simplified its communications.

We concluded that it would only be a matter of time before undesirable outcomes and problems would emerge. These concerns are detailed below.<sup>11</sup>

# The Fed's Excessive Fears of Low Inflation and Falling Inflationary Expectations

The Fed's overstated fears of low inflation, falling inflationary expectations, and the ELB stem in part from its misperception of why inflation remained low following the GFC.

Following the GFC, the Fed's SEPs projected a strong economic recovery and higher inflation, reflecting its sustained zero interest rate policy and LSAPs combined with the fiscal stimulus of the American Recovery and Reinvestment Act of 2009. When the recovery was less robust than anticipated and inflation remained subdued, the Fed simply attributed it to a flatter Phillips curve than it had previously presumed. This ex post explanation was inadequate, and failed to explain why the Fed's model hadn't worked. There are at least two likely alternative explanations.

First, the negative impacts on the monetary transmission channels imposed by changes in aspects of the Fed's operating framework and practices offset the zero interest rates and LSAPs and fiscal stimulus. Plosser (2019) described how the Fed's paying of IOR, increased capital and liquidity standards, and LSAPs that dominated and interrupted short-term funding markets disrupted monetary transmission channels. Supporting this view, M2 money velocity collapsed during the GFC and never fully recovered. Bank lending to businesses and households fell and didn't recover to their pre-GFC levels until 2015.

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Second, the GFC's severe blow to household net wealth and perceived permanent income led consumers and businesses to save more and spend less. This slowed aggregate demand. Over eight million jobs were lost (5.4%) and the unemployment rate more than doubled to 10%, the highest since the Great Depression. Household net worth fell 15.8%, reflecting maximum declines of 25.5% in home values and 46.9% in the S&P 500. Approximately \$1.4 trillion of outstanding home equity loans became a severe financial burden as loan-to-value ratios soared, weighing on household cash flows and balance sheets. Commercial banks were crippled, and the largest banks required capital infusions from the government. Before the GFC, the housing bubble had fueled debt-financed consumption that lowered the rate of personal saving below 3%. Following the crisis, the rate of personal saving rose sharply as households replenished their balance sheets. It took approximately five years of zero interest rates and gradual gains in employment and personal income to restore household balance sheets and confidence in future prospects.

Even though consumption, aggregate demand, and inflation picked up in the second half of the decade, the Fed continued to focus on the sub-2% PCE inflation and the risks that falling inflationary expectations could lead to encounters with the ELB. These Fed fears were embedded in specified models that posed the ELB as an existential threat. Amid stable moderate inflation and inflationary expectations relatively anchored near 2%, the Fed seemed to be fighting the last battle and not the current one.

The Fed did not explain why inflation that remained modestly below 2% ran the risk of a downward spiral in inflationary expectations. This fear was particularly odd since through most of the decade the Fed believed inflation expectations were reasonably well anchored near target, and it seemed confident in its ability to manage inflationary expectations. This calls into question the basic premise of the need for a new strategic framework characterized by asymmetries that favored higher inflation.

#### The New FAIT

The FAIT reinterpreted the Fed's longer-run inflation objective by introducing unnecessary complexity and asymmetry that tilted toward higher average inflation and undermined the Fed's pricestability commitment.

The FAIT's lack of numeric guidelines for its makeup strategy added confusion and uncertainty about the Fed's intermediateterm goals. Powell (2020) explicitly dismissed the idea that the goal of an average inflation rate of 2% had any specific meaning or accountability associated with it, stating, "In seeking to achieve inflation that averages 2 percent over time, we are not tying ourselves to a particular mathematical formula that defines the average." Such statements undermine the Fed's credibility and its commitment to its goals, thus reinforcing its discretionary desires.<sup>12</sup>

By undermining the public and financial markets' ability to gauge the Fed's intentions, the FAIT damaged the Fed's ability to credibly manage inflationary expectations. How can the Fed credibly anchor inflation expectations to 2% when its strategy clearly gives the impression that it favors above-2% inflation?

#### The Enhanced Employment Mandate

Broadening the Fed's maximum-employment mandate to be inclusive placed a higher priority on employment and tilted policy toward monetary ease. It also expanded the Fed's role to encompass labor market objectives beyond the scope of monetary policy.

The 2012 strategic plan's emphasis on "deviations" of employment from maximum reflected a symmetric view on employment and stemmed, in part, from the Fed's long-held embrace of the Phillips curve as an important determinant of inflation dynamics. Specifically, the Phillips curve view adopted by the Fed meant that a robust economy where employment was above trend or some natural level (or the unemployment rate was below its natural rate) caused inflation to rise, while employment deviations below the natural level would exert downward pressure on inflation.

Similar to the Fed's January 2012 consensus statement, the NSF emphasizes that the maximum-employment objective cannot be defined by a numeric target and that employment is affected by an array of nonmonetary factors.<sup>13</sup> Powell (2020) acknowledged the important roles of education and skills training, healthcare, and fiscal policy on employment. Labor markets are also influenced by demographics, taxes, and regulations on businesses.

The unobservable aspect of a maximum-employment mandate has always made the Fed's task difficult, and making the objective "inclusive" adds an extra layer of difficulty and challenge. How will the Fed interpret trends in employment-to-population ratios, participation rates, and the employment/unemployment of groups of people that were considered challenged? What is the mechanism by which monetary policy can shape the desired outcomes? Even if such mechanisms exist, are there trade-offs that impact the Fed's other goals?

An inclusive labor market for all citizens is an important and desirable feature of an efficient market economy. Lifting employment of underprivileged and minority citizens would enhance economic performance and lift potential growth. Yet monetary policy is not an appropriate or effective policy tool for achieving such an objective, and singling it out gives the impression that monetary policy can effectively address these laudable objectives. It can't. Trying to achieve these broader goals through monetary policy would involve unintended side effects and risk higher inflation.

# Discarding Preemptive Monetary Tightening and Relying on Forward Guidance

The Fed's shift to focusing on shortfalls rather than deviations from maximum inclusive employment, coupled with its assessment that

the Phillips curve is flat, implied that it had walked away from its practice of preemptive tightening: "This change conveys our judgment that a low unemployment rate by itself, in the absence of evidence that price inflation is running or is likely to run persistently above mandate-consistent levels . . . will not, under our new framework, be a sufficient trigger for policy action" (Clarida 2020).

This interpretation was reinforced by the Fed's press release following its September 2020 FOMC meeting immediately following the enactment of the NFS:

The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time. (Board of Governors 2020b)

Downgrading the relevance of preemptive monetary tightening without a clear understanding of the inflation process and lags between monetary policy tools and inflation seems risky. The Fed's acknowledgement that the Phillips curve had become an unreliable predictor of inflation had evolved over a long period, and it is wise that Fed Chair Powell and other members finally downgraded its importance. The Phillips curve was an empirical finding that described certain periods in the data, but it is flawed analytically and has not been a reliable or quantitatively important predictor of inflation for some time. While taking this step, however, the Fed has not replaced the Phillips curve with any framework or model for predicting inflation, except to emphasize the importance of inflationary expectations in the inflation process.

The Fed stressed that keeping inflation expectations well anchored would require a heightened role for forward guidance. In our early assessment of the Fed's NSF, we questioned the reliability of forward

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guidance as an independent monetary policy tool (Plosser 2013). This seemed to be a risky tool, particularly in the absence of a clear understanding of the inflation process. We noted that if the Fed truly believed it could credibly manage inflationary expectations, why did it fear a collapse in inflationary expectations in the first place? This problem became clear in 2021 and early 2022 when the Fed kept rates anchored to zero and its forward guidance failed to constrain inflationary expectations. It is not surprising that inflationary expectations rose after the Fed made clear that unemployment rates were not closely tied to inflation (that is, the Phillips curve was flat), so its traditional path to reducing inflation was weakened. Oddly enough, in 2022 the Fed restored the Phillips curve as an explanation for why it needed to be more restrictive.

#### Fed Communications

The Fed's NSF muddled rather than improved its communications by fundamentally changing its historical reaction function as it has come to be understood by the public and the markets, generating a wide range of interpretations that lack clarity. Communicating the Fed's assessment of inflationary expectations and at the same time its strategy of using forward guidance to manage those expectations would be difficult. The Fed's communications were stuck in the middle of an unhealthy relationship between the Fed and financial markets in which the Fed looks to markets for indicators of expectations at the same time the markets seek advice from the Fed on its future policies.

The vagaries of the NSF also complicate and add uncertainties to the Fed's quarterly SEPs, which are thought of as forward guidance, but the conditionality of their projections is frequently misinterpreted and ignored. The appropriate policy paths constructed by participants for the NSF will have to implicitly contain guesses as to if and how any makeup strategies will be implemented. Suggestions for modifying the SEPs will be described in the final section of this chapter.

#### The Performance of the New Strategic Framework

The high inflation of 2021 quickly revealed the flaws in the Fed's new strategy and its biased premises that influenced monetary policy. The Fed failed to tighten monetary policy when inflation soared, inflationary expectations became unanchored to 2%, and signs of labor market tightness and inflationary wage gains became widespread and wages accelerated. The NSF heightened the Fed's discretion, and the Fed's poor judgment led it to ignore simple rules that universally signaled that monetary policy needed to be tightened.

The Fed's failure to respond reflected its misunderstanding of the inflation process and its unwillingness to acknowledge that the rise in inflation resulted from the monetary- and fiscal-stimulated excess demand and not just the pandemic supply constraints. The Fed's preconceived notion that inflation would stay low, similar to its pattern following the GFC, led it to attribute the higher inflation to transitory supply shocks. The rapid acceleration of aggregate demand was largely ignored. As inflation kept rising, the Fed continued to project and provide forward guidance that maintaining a fed funds rate appreciably below the inflation rate would result in inflation quickly returning to 2% (Levy 2024).

Even if the new FAIT had included numeric guidelines, the Fed's calculations for the inflation makeup strategy likely would have been driven by its projections that inflation would quickly fall to 2%. By May 2021, market-based inflation expectations had risen to 2.5% and the University of Michigan one-year inflation expectation reached 4.6% and its five-year expectation reached 3.0%. Closely followed measures developed by the Fed, including the Federal Reserve Bank of New York's Underlying Inflation Gauge (3.5%) and the Federal Reserve Bank of Cleveland's trimmed-

mean CPI (5.0%) indicated inflation momentum. This had little impact on the Fed's behavior.

Even as PCE inflation soared above 4.5%, Powell expressed support of the NSF at the highly visible Jackson Hole symposium in August 2021: "The changes we made last year to our Statement on Longer-Run Goals and Monetary Policy Strategy are well suited to address today's challenges" (Powell 2021). There were no dissents among FOMC members, and there was a startlingly close bunching of FOMC participants' projections that inflation would fall quickly in the Fed's SEPs. No Fed member estimated the need to raise interest rates even to 2%. This lack of diversity of thought among FOMC members reflects the need for improved risk-management tools. It also likely reflects a mounting "circle the wagons" mentality in response to the pandemic crisis.

As the Fed's communications were increasingly strained by realities, the Fed stubbornly continued to attribute the higher inflation to large price increases for a small number of items (Board of Governors 2021; Brainard 2021). As such, it argued that it was appropriate to keep rates at zero since the unemployment rate remained high and its employment goal had not been achieved.

The Fed's bad judgment proved costly. As inflation continued to rise, the Fed did not refer to the Taylor rule or other simple rules that clearly showed that anchoring the fed funds rate at zero was inappropriate.

The Fed's reliance on forward guidance was ineffective in constraining inflationary expectations without raising interest rates. Expectations began declining only when Powell announced that the Fed would be raising rates and the Fed began doing so. As Plosser (2013) had warned, forward guidance as an independent policy tool is flawed theoretically and in practice. The Fed cannot exercise discretion and simultaneously expect forward guidance to be effective.

The NSF did not include any strategy for the Fed's balance sheet. The Fed provided no clear explanation for its ongoing purchases of US Treasuries and MBS or how they related to its inflation and employment mandates. This had many undesired side effects, including large subsidies to real estate (including higher rental costs) and distortions to short-term funding markets. The Fed stumbled on the timing and sequencing of unwinding its asset purchases and raising rates, delaying its first interest rate increase (Waller 2023). This forced significant adjustments in financial markets.

As financial markets speculated on how much the Fed would need to raise interest rates, its communications were in a catch-up mode. The Fed's estimates of the appropriate policy rate needed to achieve its inflation objective (as reflected in the SEPs) and its forward guidance proved far off the mark: the Fed's median dots for the appropriate fed funds rate for year-end 2023 rose from 1.6% in its December 2021 SEP to less than 3% in its March 2022 SEP and less than 4% in its June SEP (Levy 2024). Even these radically changed estimates fell far below what unfolded.

Inflation has subsided significantly, and recent Fed statements that it remains committed to maintaining a restrictive monetary policy to reduce inflation to 2% are welcomed. However, the Fed's commitment to reducing inflation to 2% also confirms that it has no intention to make up for the high inflation with a period of sub-2% inflation. This highlights how the FAIT results in above-2% average inflation and a rise in the general price level well above the outcome of a 2% trajectory.

# The New Review: Suggestions for Research and Rebooting the Framework

The last four years highlight how the Fed's strategic framework is adrift. The upcoming strategic review provides an opportunity for the Fed to step back and think through its objectives and its capabilities and limitations. The NSF envisioned monetary policy as having much greater capacity to fine-tune and manage expectations through forward guidance than it is likely to possess. If so, the review should consider frameworks and strategies that are less ambitious and more robust. This is likely to require the Fed to scale back the expectations of the public and elected officials as to what the Fed can or should be doing rather than continuing to expand its authorities.

# First, the Fed should conduct a more thoughtful and thorough review of the inflation process and dynamics as it relates to monetary policy's tools.

Relying on an ever-changing or time-varying Phillips curve is not an adequate basis for understanding inflation or the Fed's objective of attaining its 2% inflation target. Is the Phillips curve "flat," as the Fed argued in 2019 to explain the low inflation of the post-GFC period, or is it steepening, as some Fed members argued to explain the 2021–23 current low unemployment rate and mounting inflation pressures? If the Phillips curve is unstable, what is a better and more reliable framework for predicting inflation and conducting monetary policy?

The Fed needs to analyze key factors that affect aggregate demand, including fiscal policy, the monetary transmission mechanisms and how they may be affected by operational changes including paying IOR, and the Fed's asset purchases and its balance sheet. Alternative frameworks for achieving the Fed's inflation target, such as focusing on nominal GDP and the role of money supply, should be considered. Efforts to explain inflation based on wage-and-price-setting dynamics in the absence of considering aggregate demand are missing a critical element in the inflation process.

A deeper understanding of why inflation remained low during the post-financial crisis recovery is needed. The Fed significantly increased its projections of economic growth and inflation based on the stimulus of the American Recovery and Reinvestment Act of 2009 and the Fed's zero interest rates and QE, but barely changed its projections in 2020–21 following the unprecedented \$5 trillion increase in deficit spending and the Fed's zero rates and massive asset purchases.<sup>14</sup> Following the GFC, to what extent were consumption and aggregate demand dampened by the jarring impacts of the deep recession and collapse in home values and the stock market on consumers' pocketbooks and perceptions of well-being? Following the pandemic, to what extent did these factors reverse and have the opposite effect of buoying spending and aggregate demand?

Consideration of alternative frameworks for conducting monetary policy should include a focus on nominal GDP, as recently discussed by Athanasios Orphanides (2024) and Peter Ireland (2022 and 2024). Their approaches avoid some of the pitfalls of the Phillips curve and would have avoided major policy mistakes of the past, including the 2020–21 inflation. Other frameworks that focus on aggregate demand and supply, including money supply, should be explored (see, for example: Bordo and Duca 2023; and Ireland 2022).

The Fed seems to view its balance sheet and asset purchases sometimes as a financial-stability tool, sometimes as a fiscal policy tool to conduct credit allocation, and sometimes as a monetary policy tool, but it does not provide a framework or structure that describes when and how it should be used.<sup>15</sup> If the balance sheet is an important tool in normal times (as opposed to in emergencies such as at the ELB), how does it complement or substitute for interest rate policy? In 2021, the Fed focused financial markets on the timing and sequencing of its balance sheet tapering and the beginning of its interest rate increases, but never articulated the influences of these monetary policy tools. A more thorough review of the Fed's balance sheet policies is clearly called for.

#### Second, the Fed needs a clearer interpretation of its mandate.

Correcting the asymmetric and overly complex interpretations of the Fed's inflation and employment objectives should be a top priority. The excessive wordsmithing and fine-tuning of the Fed's objectives muddle the understanding of its goals and complicates its strategy. The Fed should strive for balance, clarity, and robustness.

The FAIT was based on the Fed's concerns about the ELB, reflecting its worries about low inflation, falling inflationary expectations, and its estimates of a secular decline in the neutral rate of interest. Concerns about the ELB are history. Recent events suggest that a more balanced interpretation is needed. The Fed's fears that sub-2% inflation would risk a downward spiral in inflationary expectations need to be reassessed. Despite the fact that some theoretical models found such downward slides were possible, these fears are not supported by the inflation data or measures of inflationary expectations, which were relatively stable.<sup>16</sup>

The Fed could consider returning to a 2% inflation targeting regime. The FAIT should be discarded and replaced by a balanced interpretation, much like the 2012 consensus statement. This would remove the upward bias in inflation, clarify the Fed's inflation intentions, and reduce ambiguities. The Fed's delayed responses to the inflation in 2021 highlighted the flaws in the FAIT and the perspective adopted by the Fed. The Fed might also consider including numerical bounds as guidelines around its 2% target. This could help convey a more realistic view of the uncertainty while acknowledging noise in the inflation data. On the other hand, simply specifying a band does not really describe how the Fed would be expected to react at the boundaries.

Alternatively, the Fed could explore a symmetric price-leveltargeting regime. That would be closer to an average inflation target but would require offsetting persistent periods of sub-2% and over-2% inflation. Such a scheme does have useful properties but may be difficult to implement politically, in particular.<sup>17</sup> Third, the Fed's review should consider systematic policy rules as guidelines for the conduct of monetary policy.

John Taylor has, of course, long argued that a more systematic or rule-like approach to monetary policy could substantially improve outcomes (Taylor 1993, 1999, and 2017). Thinking about rules should not conjure up rigid formulas that dictate or lock in monetary policy. Rather, systematic rules can provide important inputs and guidelines for the conduct of policy, and discussing rules and reaction functions can be a useful way of improving communications as well as outcomes.<sup>18</sup> They can add clarity and transparency about policy and the Fed's approach to data-dependent policymaking. A more direct discussion about policy decisions put in the context of rules would go far in helping the public and markets to understand monetary policy and policy choices. A more robust discussion of this topic would be a welcome addition to the review and to the strategic framework.

An assessment of systematic rules would be beneficial compared to the highly theoretical, untested, and complicated structures and formulations that underlie the NSF. The Fed includes a description and current estimates of some rules in its semiannual Monetary Policy Report to Congress, but the text highlights the problems and limitations of the rules rather than the benefits they may provide. Research shows that such guidelines would have helped avoid major policy mistakes. An evenhanded assessment of such rules and how they may be used to improve the conduct of monetary policy would be a welcomed addition to this strategic review.

# Fourth, the Fed should dismiss the notion that forward guidance is an appropriate or effective independent tool of policy.

Using forward guidance as an independent tool not supported by interest rate and balance sheet policies is flawed in theory and makes little sense practically. It can be confusing and counterproductive. Relying solely on forward guidance when the Fed simultaneously touts its willingness to be flexible and data dependent complicates the Fed's communications and may undercut its credibility. The 2021–22 experience showed that the Fed's forward guidance, unsupported by changes in monetary policy or the credible commitment to use its tools, proved inadequate in managing expectations. A careful and evenhanded assessment of forward guidance will confirm that its impacts and influences are unreliable when conducted independently of traditional tools of monetary policy.

Fifth, the Fed should clarify the quarterly SEPs and consider ways to improve them.

The Fed's purpose of the SEPs-to provide clarity and enhance transparency—is well intended.<sup>19</sup> SEPs are closely scrutinized and are critical to the Fed's communications and forward guidance. However, they are often misunderstood and misinterpreted, and can be improved. The Fed clearly states (in the footnotes of its quarterly summary projection tables) that the economic and inflation projections of each FOMC member are conditional on the federal funds rate that members estimate to be appropriate, and that the policy rate estimates are not a commitment to any policy path. Yet the SEPs often create confusion, in part because it is impossible to link the estimated appropriate policy rate of any individual FOMC member to his or her economic and inflation projections. The commentary on the SEPs tends to focus on the median points. Aggregating all FOMC members' estimates into medians muddles any interpretation of the appropriate policy rate that would achieve an economic projection.

However, there can be exceptions to this when appropriate policy paths of the FOMC members are highly concentrated. As inflation soared during 2021, FOMC members unanimously estimated that the *most appropriate monetary policy* was to keep the fed funds rate anchored to zero. Through June 2022, as FOMC members raised their estimates of inflation, all of them estimated that the most appropriate policy was to keep the funds rate below the median projection of inflation. The Fed's assessments of appropriate policy were wildly inconsistent with estimates that simple rules provided for monetary policy (Orphanides 2024).

These observations suggest various ways to improve the SEPs. The Fed has data on different members' projections and estimates. Associating the dots anonymously with individual projections (without attributing the projections to member names) could help clarify the reaction functions of individual Fed members and improve communications. Second, adding information that links FOMC projections of inflation and the economy to select rules would enhance the SEPs and provide guidance on how the Fed should react to inflation and economic projections. Third, since the Fed perceives that its balance sheet is an important monetary policy tool, the strategic review should seek ways to convey information about the balance sheet in the SEPs. Since the Fed uses the balance sheet for many different purposes, this will not be an easy task. Moreover, FOMC members may not have a common view of what is happening to the balance sheet and what channels it may be working in to shape inflation and employment goals. Fourth, based on the unreliable track record of the SEPs' projections, the Fed may consider augmenting the SEPs with an annual exercise that includes alternative scenarios that could be used for risk-management purposes. This approach has been advocated by Bordo, Levin, and Levy (2020). The full SEP report now includes valuable information on the FOMC participants' perceptions of risk, but they get little attention. There are several ways to develop the alternatives (Levy 2020 and 2024; Davis 2024).

The Fed established the SEPs to improve clarity and make the Fed's thinking more transparent. The current SEPs have fallen shy

of those well-intended objectives. The Fed should use its upcoming strategic review to consider ways to improve the SEPs.

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#### Notes

- For the original consensus statement and the new revision, see Board of Governors of the Federal Reserve System (2012) and Board of Governors of the Federal Reserve System (2020a), respectively.
- 2. Levy and Plosser (2020) appeared as a Hoover Institution Economics Working Paper, and a subsequently published and updated version can be found as Levy and Plosser (2022). In addition, Plosser (2021) elaborated on the shortcomings of the NSF, which later appeared as Plosser (2022a).
- Some of the earliest central banks to adopt inflation targeting did so between 1990 and 1993, including those in New Zealand, Canada, United Kingdom, Australia, and Sweden.
- 4. The inflation performance over this period was influenced by the significant drop in oil prices in 2014–15. West Texas Intermediate Crude prices fell almost 60% between June 2014 and December 2015. This accounts for the core PCE inflation rate being above the headline. Over the same period, headline and core Consumer Price Index (CPI) inflation rates were 1.6% and 2.0%, respectively.
- 5. This decline is based on the University of Michigan consumer survey of the one-year-ahead expected inflation.
- 6. The Fed uses the SEPs as forward guidance and always projects inflation to move toward 2%. It is more accurate to say that FOMC participants all believed that "appropriate policy" would move inflation back toward the Fed's target, although they had differing views as to what that policy would have to be, as evidenced by the dispersion among the interest rate policies reported in the SEP. The conclusion must be that the actual policies chosen by the Fed were flawed, or that the transmission mechanism of monetary policy as understood by the Fed was flawed, or both.
- 7. Of course, if unemployment was no longer a useful determinant of inflation dynamics in the Fed's models, it becomes unclear how the Fed's policy

instrument, the fed funds rate, is expected to achieve the Fed's desired inflation objective. The Fed has no answer for this as yet.

- 8. Inflation targeting is a time-consistent policy in the sense that bygones are bygones. Asserting that a new strategy must offset past misses requires a time-inconsistent policy. Price-level targeting rather than inflation targeting would be an example of such a time-inconsistent policy.
- 9. Some of these factors may not have been central to the inflation performance. Some (QE, credit allocations) were major efforts of the central bank and perhaps now should be reviewed and included in the strategic framework if the Fed considers them important tools or instruments it intends to use in the future.
- 10. See Plosser (2003) for a critique of the widely repeated fears of deflation.
- 11. More recently, Eggertsson and Kohn (2023) argued that the new framework led the Fed to pursue excessively easy monetary policy that generated higher inflation. Their argument focuses on the Fed placing maximum inclusive employment as a higher priority than inflation as the primary driver of the Fed's new strategy. Their analysis of the Fed's inflationary mistakes was based on a neo-Keynesian framework in which the Phillips curve played a central role, but which the Fed explicitly downplayed.
- 12. Clarida (2020) stated that "inflation that averages 2 percent over time" represents an "ex-ante aspiration."
- 13. The Fed's Statement of Longer-Run Goals and Monetary Policy Strategy states: "The maximum level of employment is a broad-based and inclusive goal that is not directly measurable and changes over time owing largely to nonmonetary factors that affect the structure and dynamics of the labor market. Consequently, it would not be appropriate to specify a fixed goal for employment" (Board of Governors of the Federal Reserve System 2020a).
- 14. Deficit spending was increased to more than 25% of GDP in response to the pandemic, and the Fed effectively purchased roughly one-half of the new debt. Why did this have very little impact on the Fed's projections? The \$1.9 trillion American Rescue Plan of March 2019 and a 10% increase in deficit spending, primarily due to income-support payments to households in April 2021, had no noticeable effect on the Fed's SEP in June 2021 or the Fed's senior staff forecast.
- 15. Goodfriend and King (1997) usefully characterize monetary policy as variations in the size of the balance sheet and credit policy, which is captured by changes in the composition of assets held. See Goodfriend (1994) and Plosser (2022b).

- 16. For example, during the four years 2016–19 the University of Michigan consumer survey showed monthly one-year-ahead expected inflation rates fluctuating between 2.2% and 3.0%, with a yearly average for each of the four years fluctuating between 2.5% and 2.8%, beginning in 2016 at 2.4% and ending in 2019 at 2.6%. The less-volatile monthly five-year-ahead expected inflation rate fluctuated between 2.3% and 2.7%, while the yearly average for each of the four years varied between 2.2% and 2.5%, beginning in 2016 at 2.5% and ending in 2019 at 2.5%.
- 17. Plosser (2019) briefly discusses the pros and cons of price-level targeting.
- 18. See Plosser (2014) and Lacker and Plosser (2022) for discussions of how the Fed might incorporate systematic rules in its policy process.
- 19. The SEPs were instituted in 2009 to provide more information about economic and financial conditions and monetary policy than the prior semiannual projections. In 2012, the SEPs began including FOMC members' estimates of the year-end fed funds rate they deemed appropriate to achieve their economic and inflation projections. The FOMC members' estimates are shown as a median, range, and central tendency that eliminates the three highest and lowest estimates. The member estimates of the appropriate fed funds rates are shown separately as "dots," but the dots are not related to each member's economic and inflation projections.

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# 19

# Thoughts on the Federal Reserve's Policy and Framework

Jón Steinsson

The last few years have been unusually eventful from a monetary policy point of view. After several decades of price stability, the United States experienced a bout of inflation in 2021 and 2022. The Federal Reserve was widely viewed as having been slow to react. But in 2022 it reacted forcefully, raising interest rates more rapidly than it had since the early 1980s. As of this writing, inflation has returned most of the way back to target.

Remarkably, the Fed has been able to engineer this disinflation without triggering a recession. Actually, the economy seems not to have skipped a beat when it comes to output and employment growth. Two years ago, few commentators believed this to be a likely outcome.

These events make this an opportune time for the Fed to reevaluate its monetary policy framework. The last framework review was conducted at a time when the Fed had been so successful at bringing about rough price stability for so long that the main problem being debated was the fact that inflation had persistently undershot its target by a few tenths of a percent. It seemed lost on many at the time what a sign of success that debate was. The COVID-19 recession and subsequent bout of inflation have refocused discourse about monetary policy on bigger, more fundamental issues.

What conclusions one draws from the experience of the last few years depend critically on how one interprets what happened. The COVID recession caused a number of unusual developments, both on the demand side of the economy and on the supply side. On the demand side, large fiscal stimulus measures were passed in 2020 and 2021 and households built up unusually large savings early in the pandemic, which they then proceeded to spend down. On the supply side, COVID resulted in a substantial reduction in labor supply, which reversed slowly. Furthermore, COVID resulted in a substantial shift in expenditure patterns of households away from services and toward goods. This resulted in severe bottlenecks in the goods-producing sector of the economy and called for a sizable temporary increase in the relative price of goods.

# Did the Fed Make a Serious Policy Error in 2021?

How should the Fed have reacted to this set of circumstances? One view is that the Fed made a serious error in 2021 by failing to raise rates aggressively as inflation rose. The Fed's failure to act aggressively in 2021 may have been caused by some of the novel aspects the framework the Fed adopted in 2020. First, the Fed adopted a flexible average inflation target (FAIT), which prescribed that inflation should be allowed to run moderately above 2% for some time after periods when inflation had persistently undershot the 2% target. Since inflation had indeed persistently undershot the target in the years prior to COVID, the FAIT framework prescribed patience during the early months of the rise in inflation in 2021.

Second, the Fed had come under sustained criticism in the years prior to COVID for preemptively tightening policy starting in 2015. That preemptive tightening was seen as hampering the economy's ability to reach full employment. The preemptive tightening was motivated by a concern that the labor market was reaching full employment and was at risk of overheating. But estimates of the natural rate of unemployment have repeatedly turned out to be too pessimistic, suggesting that policy was tightened too early. Because of this, the Fed faced intense pressure prior to COVID to allow the labor market to find the true level of full employment without reference to potentially faulty estimates of the natural rate.

This strand of thought found its way into the Fed's 2020 framework in that the working definition of maximum employment was changed to the "highest level of employment that does not generate sustained pressures that put the price-stability mandate at risk" (Clarida 2022). The language in the framework statement emphasized the elimination of shortfalls rather than the symmetric elimination of gaps from the natural rate. In effect, the Fed adopted more of a "plucking" view of the labor market rather than a traditional natural rate view (Friedman 1964 and 1993; Dupraz, Nakamura, and Steinsson 2024).

Perhaps due to these types of considerations, the Federal Open Market Committee (FOMC) adopted the policy stance in the aftermath of COVID that interest rates would not be increased before the economy had reached full employment and inflation was on track to moderately exceed 2% for some time. The exact language of the FOMC statement from September and November 2021 was as follows:

The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time. (Board of Governors 2021)

Somewhat surprisingly, it was not clear from these statements that this aspect of policy was subject to an escape clause in situations where inflation was substantially above target. I recall thinking at the time that this went without saying. But others did not see things this way. Since it was not clear whether the economy had reached full employment in the fall of 2021, the focus on maximum employment contributed to a slow response of the Fed. (Twelvemonth personal consumption expenditures (PCE) inflation was 5.5% in October 2021 and the unemployment rate was 4.5%.)

In addition to these factors, Chair Jerome Powell was up for renomination in the fall of 2021, making an unpopular pivot to tighter monetary policy more difficult politically. Finally, the FOMC had led markets to expect that it would curtail quantitative easing (QE) prior to raising rates. This, arguably, resulted in a slower pivot toward tighter policy than was optimal.

# A More Positive View

As I mentioned above, an important reason for the inflation spike was the large shift in demand away from services and toward goods during and after COVID. This shift meant that the relative price of goods needed to rise. This could happen by goods prices increasing, services prices decreasing, or some combination. In addition, a considerable part of the increase in inflation in 2021 and 2022 was due to food and energy. A key policy question was then whether the Fed should have tightened policy enough to force down services prices to offset the rise in the prices of goods, food, and energy.

An alternative policy was to seek to prevent the price increases in goods, food, and energy from spilling over into services. If successful, this type of policy would result in a relatively short-lived deviation of inflation from target. Inflation would come down once the relative price of goods, food, and energy had stabilized, and might even reverse as the relative price of goods reversed when bottlenecks in the supply of goods eased.

This seems to have been largely the policy that the Fed has followed over the past few years. This policy has been remarkably successful in avoiding a recession, an achievement that is hard to overstate. It has not been fully successful when it comes to spillovers of goods, food, and energy inflation to services inflation. The contribution of services to overall inflation rose from about 1.5% prior to COVID to about 3.5% in early 2023 before starting to recede. At the same time, inflation in goods, food, and energy had fallen to approximately zero by early 2024.

My overall assessment of the Fed's policy in 2021 and 2022 is that the Fed did get behind the curve in the late fall of 2021 and early 2022. The fact that the language of the FOMC statement was not changed between September and November 2021 was a mistake that delayed the policy pivot by at least a month. The fact that the FOMC felt the need to end QE before starting to raise interest rates also unnecessarily slowed the needed policy pivot. However, the Fed's historically aggressive interest rate increases in 2022—four 75-basis-point increases in a row—made up this ground relatively quickly. As a result, the damage was likely modest.

Arguably, a key reason why the Fed was able to engineer a disinflation over the past few years without triggering a recession was that longer-run inflation expectations remained largely anchored. There were some signs of unanchoring between September 2021 and March 2022, with five-year breakeven inflation from Treasury Inflation-Protected Securities (TIPS) rising from 2.5% to 3.5%. But this quickly reversed once the Fed began its aggressive rate increases. Inflation expectations even further out (e.g., the five-year-five-year-forward breakeven inflation rate from TIPS) did not budge at all during this period. The fact that longer-run inflation expectations were relatively well anchored was the consequence of a relentless focus on price stability over the prior forty years. This was therefore a hard-earned win for the Fed and demonstrated the value of having a large amount of credibility.

# Maximal Employment and Preemptive Tightening

One of the key questions that faces the Fed as it reviews its policy framework is how best to fulfill its employment mandate. I am quite sympathetic to the "plucking" view of business cycles, that is, the view that business cycles largely represent shortfalls of employment below a full-employment level rather than symmetric fluctuations around a natural rate. This view suggests that the Fed should be aiming for lower levels of unemployment than traditional analysis has indicated. Traditional analysis that pegs the natural rate of unemployment at something like 5% (or more) is in my view not supported by much good evidence. It seems to me that the level of unemployment that represents full employment is closer to 3.5% and perhaps even lower. I believe the Fed should take this plucking view very seriously and should calibrate its policy accordingly.

However, the fact that views about the natural rate of unemployment have been poorly calibrated in the past does not imply that the Fed should forswear preemptive tightening of policy. Monetary policy operates on the economy with some lag, and the economy can be highly inertial. Just as the captain of a large ship must turn the wheel far before the ship hits an obstacle, the Fed must adjust policy with an eye toward where it wants the economy to end up six to twelve months hence. This logic calls for preemptive tightening of policy at times (and preemptive loosening of policy at other times). The Fed's framework should make clear that preemptive policy actions are an integral part of the Fed's policy toolkit.

# Flexible Average Inflation Targeting

The goal of adopting flexible average inflation targeting in 2020 was to better anchor long-run inflation expectations at the target rate of 2%. This is an important goal. However, the problem that led to the specific design of flexible average inflation targeting in 2020 was only one of several problems that the Fed might face regarding the anchoring of long-run inflation expectations. At that time, the Fed was worried that small but persistent undershoots of inflation in the years before 2020 might eventually get embedded in longerrun inflation expectations. The subsequent, much larger increase in inflation has brought some needed perspective to this issue.

A heavy emphasis on anchoring long-term inflation expectations is appropriate and important for the Fed's Statement on Longer-Run Goals and Monetary Policy Strategy. The trouble is that it is not clear that we have a good understanding of how to achieve such anchoring. The idea of moving slightly toward pricelevel targeting—which is what flexible average inflation targeting does—is theoretically appealing in simple models. But whether it works in practice is not at all clear.

I used to think that central banks' relentless and constant focus on credibility in the post-Volcker era was at times too much of a good thing. But the experience of the last four years has changed my view in this regard. This experience has fortified my belief that credibility is hugely valuable when the central bank needs to respond to adverse shocks (supply shocks or fiscal shocks) and that credibility is most often earned slowly over time by both the actions and words of central bankers. This suggests that a heavy focus on the anchoring of longer-run inflation expectations is appropriate. Exactly what form this heavy focus should take is less clear to me. More research is needed on this issue.

# Credibility and the Sacrifice Ratio

Why was the "sacrifice ratio" so favorable in this disinflation in contrast to earlier disinflations? My guess is that a key reason for this is that the Fed had built up enormous amounts of credibility over the preceding four decades. This credibility allowed it to respond more cautiously to the shocks that hit the economy in the aftermath of COVID without this leading to an increase in longerrun inflation expectations.

For simplicity, consider the situation of an economy hit by an adverse temporary supply shock. The central bank may want to

allow inflation to temporarily increase in response to this shock, so as to avoid having to engineer a large recession. This is what optimal policy looks like in simple models. The trouble is that a central bank with poor credibility will see inflation expectations rise rapidly when inflation rises. This will in turn further push up inflation. The dynamics of inflation may thus deviate sharply from the dynamics of the original supply shock. Even if the original supply shock is transitory, the dynamics of inflation will take on a life of their own because of the feedback loop between inflation expectations and inflation. To bring inflation back to target, the central bank is then likely to need to engineer a recession. So, the central bank with poor credibility is not really able to avoid engineering a recession.

Contrast this with a central bank that has good credibility. It can communicate to the markets that it is temporarily allowing inflation to rise above target due to the temporary supply shock but that it will conduct policy so that inflation falls back down to target when the supply shock dissipates. The central bank's credibility will imply that longer-run inflation expectations remain anchored. This in turn implies that the deviation of inflation from target will have similar dynamics to those of the supply shock itself. As a consequence, the central bank can be patient and avoid driving the economy into recession.

The situation after COVID was more complicated than just an adverse supply shock. But I think the basic story from the paragraphs above captures the essence of why the sacrifice ratio was more favorable over the past few years than in earlier disinflation episodes. In the early 1980s, the Fed's credibility was poor and long-run inflation expectations were poorly anchored. The Volcker Fed acted very aggressively to convince markets of its commitment to lower inflation. But credibility is difficult to attain quickly. As a result, markets were skeptical for years of the degree to which inflation would stay low, and long-run inflation expectations only

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gradually converged to low levels. This meant that the Fed needed to engineer a recession to bring inflation down.

#### Scars to Credibility

The Fed's high level of credibility was extremely valuable over the past few years and arguably allowed the US economy to avoid recession. But the Fed "used up" some of its credibility in this episode. What I mean by this is that the Fed would likely be harder pressed to pull off the same thing again in the immediate future. More than one episode of elevated inflation within a short period may, to some, start to look like a pattern. This implies that it is especially important for the Fed to build credibility over the next five to ten years. The Fed will, for some time, have scarred credibility, and during that time its ability to respond to adverse shocks with a low sacrifice ratio will be impaired. Erring on the side of tighter policy during this period is likely prudent since the Fed cannot lean as heavily on its credibility before the scars of 2021–22 heal.

# A Higher Inflation Target?

The notion that the Fed might consider raising its inflation target perhaps to 3% or 4%—has been debated since the economy hit the zero lower bound (ZLB) on nominal interest rates in late 2008. The main argument in favor of this view is that it would provide the Fed with more room to ease policy during a severe downturn. The conventional wisdom that  $r^*$  may have fallen over the past few decades has also played an important role in this debate.

I was at one point somewhat sympathetic to this view. But I have become less sympathetic over the past five years. The main reason for this change in my views is simply the fact that people really dislike inflation, even relatively modest amounts of inflation. This intense dislike of inflation has become abundantly clear over the past few years. This has driven home to me the wisdom of Alan Greenspan's definition of price stability as a state when "households and businesses need not factor expectations of changes in the average level of price in their decisions" (Greenspan 1994). I worry that an increase in the inflation target will result in a situation where the public does not feel that price stability—defined in this way—has been achieved.

The success of the Fed in responding to both the Great Recession and the COVID recession also plays into my view on keeping the inflation target at 2%. More room to ease policy would indeed have been valuable during and in the immediate aftermath of the Great Recession. But what happened was a far cry from the deflationary death spiral that some models predict can happen at the ZLB. Likewise, the Fed was able to provide a large amount of accommodation during COVID through a combination of rate cuts, forward guidance, and quantitative easing.

# Lender of Last Resort

The final argument that I would like to make is that the Fed's framework should incorporate the Fed's role as a lender of last resort. The Fed's 2020 Statement on Longer-Run Goals and Monetary Policy Strategy implicitly defines monetary policy narrowly as interest rate policy (and perhaps quantitative easing) and does not discuss its role or its policy as a lender of last resort. But one of the core roles of a central bank is to act as a lender of last resort in a banking panic. The Fed has a checkered history in this regard. Its failure to act in the Great Depression was arguably a disaster, and the wisdom of allowing Lehman Brothers to fail in 2008 is a highly contentious issue. Furthermore, for historical reasons, the most straightforward mechanism through which the Fed can act as a lender of last resort—the discount window—is impaired by the stigma associated with its use. This is not a good state of affairs. The Fed has developed a considerable amount of expertise in acting as a lender of last resort since 2008 and did so quite successfully during the COVID period. However, the Fed's role as a lender of last resort is not continually acknowledged as a core function of the Fed. Nor am I aware of a statement of policy principle by the Fed on this important topic. This risks demoting financial stability and crisis management to a secondary status in public and academic discourse. Fortunately, all is quiet on this front most of the time. But the Fed's actions as a lender of last resort in times of crisis (and commitments to act if needed) are a no-less-consequential part of the Fed's overall policy than "normal" monetary policy.

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# 20

# Reflections on Central Bank Communication

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The practice of central banking has undergone a seismic shift over the last forty years. Formerly circumspect in communication and judicious in the use of tools, central banks across the world have embraced policies of constant transparency along with an everexpanding toolkit. At the beginning of his highly successful tenure, Alan Greenspan said he had "learned to mumble with great incoherence. If I seem unduly clear to you, you must have misunderstood what I said" (Geraats 2007). Contrast that with today's Federal Open Market Committee (FOMC), which releases quarterly forecasts for future interest rates.

While central banking practice has been revolutionized, its effectiveness has not improved notably. The twenty years from 1980 to 2000 featured a dramatic decline in inflation, strong economic and productivity growth, and (largely consequently) high public esteem for the Federal Reserve, personified by Alan Greenspan. The ensuing nearly twenty-five years have witnessed unmoored inflation (first below desired levels and more recently well above), a productivity and growth slowdown, and a decline in public approval.

So central bankers have been doing much more, but they are not clearly accomplishing better outcomes. This could indicate that

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the underlying macro environment has become more challenging. But it could also suggest that central banks should proceed with caution and introspection. In the context of their regular framework reviews, central bankers may benefit from scaling back some of their recent policy innovations and thereby realize improved economic performance and greater credibility and autonomy.

Fundamentally, central banks should be judged by the macroeconomic outcomes that they are able to achieve. But there is an agency problem, in which central bank officials, financial journalists, and especially academics and the Fed-watcher community benefit from "transparency" (as either producers of information who are building up their personal brands or consumers of that information) irrespective of whether more information is helpful or harmful for economic outcomes.<sup>1</sup>

As of 2007 there was a substantial debate, at least in the United States, on the merits of inflation targeting and institutionalized transparency. The debate was resolved in favor of inflation targeting and institutional transparency because of the exigencies of the Great Financial Crisis (GFC). Now that we have reemerged from the zero lower bound (ZLB), it is appropriate to revisit the debate as part of the Fed's upcoming review of monetary policy strategy, tools, and communication. The focus of this paper is to question whether transparency, inflation targeting, and extraordinary measures should be part of the regular toolkit. This would be moot if we were likely to be at the zero lower bound for a large fraction of the time going forward. But the ZLB seems to be an unlikely prospect, as we detail reasons that the neutral rate has likely risen. To paraphrase Theodore Roosevelt, the Fed might benefit from speaking less, with a bigger short-term interest rate stick.

Approaches based on transparency and precommitments presuppose a much higher degree of economic predictability, comprehension, and stability than is realistic. They also suffer from the following five problems:

- 1. Precommitment impedes the ability to pivot once a mistake becomes apparent, as was the case in 2021.
- 2. Excessive forecasting can undermine institutional credibility when it is inevitably wrong.
- 3. Precommitments muddy previously reliable market signals on the state of the economy, such as inverted yield curves.
- 4. Quantitative easing (QE) risks fiscal losses and interferes with the Treasury's debt management.
- 5. Excessive communication increases market volatility, notably in the intraday reaction to press conferences. Different channels of Fed communications can move the market in opposite directions, sometimes within the span of minutes, despite no "real" change in policy direction.

A difficulty with precommitments is that they risk being counterproductive if markets do not fully internalize the precommitments, but (as we suggest later) ex post the Fed feels constrained by them. Then there may be little gain from realigning expectations, but there is a cost from constrained policies.

The rest of the paper is organized by section in the following order: how precommitments rely on a higher level of economic knowledge than is reasonable; precommitments as a barrier to needed action; a detailed, participant-by-participant analysis of the Fed's interest rate forecasts (dot plots), which finds that they produce no useful information; the ways that precommitments attenuate the information coming out of market signals; how quantitative easing creates fiscal risk for the government and interferes with Treasury debt management; the paradoxical and often counterproductive nature of having unscripted press conferences in which a single committee member performs; and finally, a variety of reasons why we believe that the zero lower bound may not be a problem in the near future with higher rates, affording the Fed the opportunity to scale back some of its new tools and practices.

# Central Banks Need to Return to Humility about Economists' Degree of Understanding

Inflation targeting presupposes an ability to forecast, which I don't think any of us has, or can have.... One of the things that we always forget, looking back, is how little we knew at the time things were occurring or about to occur.... It is very tough to implement an inflation targeting system without far greater knowledge than we have.

—Alan Greenspan, Federal Open Market Committee, February 2, 2005

It would be wonderful if economics was a confidently understood science à la classical physics. Given our confidence level about planetary orbits, it would be perfectly reasonable to plan a space probe to visit Halley's Comet in 2061 or perhaps even a study of solar eclipses in 2186. Alas, that is not the situation with economics. Here our knowledge is more tentative, and underlying relationships can often be inconstant. Consider that as late as 2021, the Fed's median projections still held that there would be no interest rate hikes until at least 2024 (Federal Open Market Committee 2021).

Roughly once a decade something happens that causes a big shock that changes everything. Economists term this "Knightian uncertainty."<sup>2</sup> The late Donald Rumsfeld popularized the phrase "unknown unknowns." We have seen this with COVID-19, the Great Financial Crisis, September 11, and the late-1990s productivity surge. Regardless, economists have no way of knowing where and when these shocks will come or how they will change our models.

Even without shocks, there is continuing uncertainty over economic theory. In the span of several hours at the conference that served as gestation for this paper, an eminent labor economist cast doubt on conventional measures of the labor market (Hall and Kudlyak 2023) while another postulated that the natural rate is not the right way to think about macroeconomics. And even if models like  $r^*$  are correct, the estimated numerical parameters can shift radically from year to year or with different specifications.

Making specific long-term plans under these conditions would be like planning to view the 2186 solar eclipse if there was controversy over whether the Earth revolves around the sun and the gravitational constant is fluctuating. It would be like mandating school closures out to 2040 any time COVID community spread exceeds 1%.

What do you do when you have a stunning amount of uncertainty? You avoid making specific forecasts, committing yourself to specific rules. It is better not to take overly strong views or make overly strong commitments because they may well prove inappropriate in light of evolving circumstances and knowledge. The very act of committing is likely to delay recognition of new circumstances and will certainly make adjustment more difficult by undermining credibility.

Rather than making specific forecasts under uncertainty, it is better to state general values. For instance, when faced with the possible disintegration of the eurozone during the European debt crisis, Mario Draghi did not give a lot of specific forecasts such as saying he would limit the spread on Italian bonds over German bunds to 100 basis points. Rather, he stated the general value that he was going to do "whatever it takes to preserve the euro. And believe me, it will be enough" (Draghi 2012).

Or consider Treasury Secretary Bob Rubin's dollar policy. The market was gyrating and Bob said our policy is that "a strong dollar is in our national interest." Was the dollar too strong? Rubin answered, "Strong dollar is in our national interest." Are you concerned about the excessive weakness of the yen? Rubin would respond, "A strong dollar is in our national interest" (Bradsher 1995). That was the response to all questions. And everybody thought we had a really shrewd, sage dollar policy, and dramatic fluctuations were attenuated. All this was accomplished by stating the principle while deliberately avoiding getting into specifics.

The Oracle of Delphi understood something fundamentally important: if you are believed to be omniscient but are in fact human and uncertain, it is best to pronounce vaguely, infrequently, and unfalsifiably. This is particularly the case in situations, such as central banking, where being more credible by itself enhances effectiveness.

Such constructive ambiguity has been discarded in the Fed's new suite of policy tools that are primarily intended to affect longerterm interest rates. Financial markets are forward-looking, so manipulating longer-term rates necessarily entails at least implying some type of precommitment (e.g., "guidance") or manipulating the amount of available longer-term assets (e.g., QE). And of the two avenues, precommitment (if credible) will clearly affect longer-term interest rates. In contrast, QE relies upon the (debatable) presence of market imperfections. As Ben Bernanke famously joked, "The problem with QE is it works in practice, but it doesn't work in theory" (Bernanke 2014).

Naturally, the longer and less conditional a precommitment is, the more it will affect interest rates. For instance, Bernanke (2020) noted that the forward guidance he modeled was less effective because it was assumed to be credible for only *seven years*. But even in the less prescriptive "Delphic" strategies, there is an implicit precommitment to a particular economic modeling paradigm and objective function. For instance, in order to precommit to, say, not raising interest rates until unemployment falls below X percent, one must have confidence in the permanence of the relationship between unemployment and inflation. And in order to set a longrun inflation target, one must have confidence in the desirability of the social-loss function involved.

For most of the post-2012 inflation-targeting period, this problem of an unstable/uncertain social-loss function has been obscured because the primary concern was not managing the trade-off between unemployment and output, but rather getting inflation (and output) to return to a satisfactory level. With inflation too low, anything that increased output was also salutary on the inflation front as well. Policymakers could have their cake and eat it too, as there was no trade-off. In the current moment, with inflation *moderately* above target, the problem reasserts itself. But because the Fed happens to have a 2% target-arguably based largely on a circa-1996 analysis-it is implicitly committed to forcing a recession if that is what is required to get inflation to 2%.<sup>3</sup> This might well be the correct conclusion, and we take no view on what should constitute price stability for the Fed. But given the magnitude of welfare lost to both recession and inflation, at the very least there should be a continual impetus to rerun the analysis with the benefit of new information, rather than just say, "We have to hit 2% to be credible."

Put differently, a problem with long-term commitments is that they tend to lock in the initial level of ignorance. In the 2000-era solidification of a consensus around a roughly 2% optimal inflation rate, the ZLB was an important, arguably primary, consideration.<sup>4</sup> In an influential paper, Reifschneider and Williams (1999) used the FRB/US model to predict that with a 2% target, the ZLB would be binding 5% of the time. But this has proven to be off by nearly an order of magnitude; since 2000, the fed funds rate has been at zero in 37% of months, and within spitting distance of it (1% or less) a full 48% of the time, though as we describe later, we expect that the ZLB will be much less likely to bind in the future.<sup>5</sup>

# Precommitment Is a Barrier to Needed Action under Changing Circumstances, as Was Apparent in 2021

I am strongly opposed to the adoption of formal multi-year inflation targets.... I do not think inflation targets would raise credibility for the simple reason that they would not be credible.

> —Governor Janet Yellen, Federal Open Market Committee, February 1, 1995

It is widely accepted that the Fed "fell behind the curve" in the post-COVID inflation surge. In February 2021, as Congress was considering passing \$1.9 trillion of fiscal stimulus, one of the authors of this paper predicted that inflation might rapidly get out of hand (Summers 2021). In March, President Biden signed the American Rescue Plan into law, and in the coming months inflation steadily accelerated to a high of 7%, around which time the Fed began to hike rates (US Bureau of Economic Analysis 2024a). Approximately a year passed between when the 2% threshold was surpassed and when the Fed first raised its target range for the fed funds rate (FFR) (US Bureau of Economic Analysis 2024c).

It is only the Fed's forward guidance that explains why we did not have the appropriate tightening, even when it was apparent that it was necessary. As described by Eggertsson and Kohn (2023), the Fed precommitted in September 2020 to not raising rates until inflation was "moderately above 2 percent" *and* maximum employment was achieved (Federal Open Market Committee 2020).<sup>6</sup> The Fed committed itself even more firmly when it promised to keep rates low while asset purchases were still ongoing. As late as December 2021, when year-over-year personal consumption expenditures (PCE) inflation was above 6%, Chairman Jerome Powell reiterated that it would not be "appropriate" for the Fed to raise rates until the tapering of bond purchases had finished, which would be in two meetings (US Bureau of Economic Analysis 2024a; Powell 2021). Three meetings later, the Fed announced its first rate hike. Therefore, while it is impossible to read minds, it appears that precommitment was the primary reason for the Fed's inaction. Even when inflation was raging, the Fed was unwilling to break its own principles. However, once it was free from the burden of its own promise, it moved swiftly and aggressively in order to act on inflation.

For all of the headache that it caused in 2021, forward guidance had basically no effect in helping the Fed to achieve its goals in 2020. Preliminary research suggests that the gains from 2020 forward guidance were marginal in terms of shaping the public's expectations. Janson and Jia (2020) found that forward guidance was effective in shaping the public's expectations of the future path of the Fed policy rate (especially when guidance was reinforced by the Summary of Economic Projections) but had marginal effects on short-run inflation expectations and almost no effect on long-run inflation expectations. In short, the public believed the Fed's precommitment to low rates, yet precommitment did almost nothing to move inflation expectations in the direction that the Fed wanted.

With the benefit of hindsight, it seems clear that the Fed underestimated the risks of precommitment and overestimated its benefits. While it had been controversial in the 1990s and 2000s, forward guidance gained popular support in the years following the Great Financial Crisis, when forward guidance was widely credited with having helped to stabilize the economy.<sup>7</sup> However, the central banking community has been too quick to extrapolate the experience of 2011–15.

In the wake of the Great Financial Crisis, the Fed experimented with softer language for several years and then began to use explicit Odyssean forward guidance in 2011, with immediate impact on market expectations (Campbell et al. 2017; Bernanke 2020). As Bernanke (2020) described, this was when the FOMC began to explicitly promise low rates until specific dates. For example, in the January 2012 statement, the FOMC committed to maintaining "exceptionally low levels for the federal funds rate at least through late 2014," a hard policy commitment of almost two years (Board of Governors 2012).

From early 2012 to late 2014, inflation rarely ever rose above 2%. In fact, during the entire period of "calendar guidance," which began in August 2011 and extended "at least through mid-2015," inflation exceeded 2% only in the short period from August 2011 through March 2012 (Bernanke 2020; US Bureau of Economic Analysis 2024a). This suggests the Fed would have kept rates low even without the constraint of its own forward guidance.<sup>8</sup> Since inflation stayed persistently low, there never came a time when the path of policy decisions that the Fed committed to ever deviated from the policy decisions that it would have voluntarily taken.

However, there's no such thing as a free lunch. Precommitment works by committing the Fed to a future course of action that may be inconsistent with the Fed's future incentives. By committing the Fed to a specific course of action, even if that action may later turn out to be situationally suboptimal, the Fed aims to move market expectations of inflation and thereby keep them within a target range. Assuming the market is rational and cannot be deceived by the Fed, there has to be some future scenario in which the Fed is worse off due to its precommitment for the precommitment to have any real bite. In 2011, the Fed got lucky because the timeinconsistency scenario never materialized. In 2021, it did.

The inflation of 2021 took most observers and forecasters by surprise. In large part, this was due to the massive changes that had occurred in macroeconomic fundamentals. COVID rewired the labor market, especially in jobs matching where the Beveridge curve shifted substantially (Blanchard, Domash, and Summers 2022). Supply chain disruptions and global conflict caused prices to rise on imported goods.<sup>9</sup> Major legislation passed by the Trump and Biden administrations added large fiscal stimuli that massively increased consumer spending. In the wake of these three upheavals, the Fed emerged from the pandemic to a deeply changed world, where many of its prior assumptions were no longer true. Whereas inflation had previously been stubbornly low, it was now rapidly growing and accelerating.<sup>10</sup>

The experience of 2021 lays bare one of the key weaknesses of precommitment. Almost by definition, it makes it impossible to quickly pivot once a mistake has been made or when circumstances change. This is especially problematic in a world where uncertainty and shifting conditions make it difficult to build stable models, as described in the prior section.<sup>11</sup>

# The Cacophony and the Dot Plots: Do They Do Anything but Pull Back the Wizard's Curtain?

Everyone says we'd gain credibility. I don't have a clue what that means. And there is no evidence of which I'm aware that tells me that announcing a target improves the performance of the central bank.

—Alan Greenspan, Federal Open Market Committee, September 15, 2003

Most FOMC participants communicate often via speeches and interviews, frequently moving markets (Gürkaynak, Sack, and Swanson 2004; Born, Ehrmann, and Fratzscher 2014). This intraorganization "cacophony" is unusual, and perhaps unique, among nonpartisan federal government agencies. The Fed has an extraordinary amount of transparency initiatives including minutes, hundreds of FOMC member speeches, press conferences, and eventual full transcripts. This disclosure has increased steadily, seemingly in a one-way ratchet, and is very different from how other federal bodies behave. The National Security Council does not publish minutes, nor does the Supreme Court, nor is every official encouraged to publicly elaborate on their particular view when it contravenes policy. A deputy assistant secretary must resign in order to express dissatisfaction with the broader administration's position. Appeals court dissents (and concurring opinions) are perhaps the closest analogue in that judges can use them to advocate for views that did not garner majority support. But such dissents are effective if they convince *other judges*. An FOMC member can be effective (as well as augment their public profile) by *moving the market* in the direction of their favored outcome given the Fed's dislike of surprising markets. Vissing-Jorgensen (2020) described how this incentive structure can approximate a welfare-reducing prisoner's dilemma.<sup>12</sup>

The introduction of the Summary of Economic Projections, in which all FOMC members make a variety of forecasts, has arguably added to the cacophony. In 2012, Fed officials began to use the dot plot, with the ostensible purpose of giving the markets a better understanding of the Fed's expectations and reaction function. In other words, what is the modal path for future short rates, and how would they respond to unexpected shocks? By increasing market acuity on this topic, the Fed could in theory get the markets to do more of its work for it.

Over time, the dot plots are likely to be believed if they turn out to be good predictors of Fed policy. If so, they could serve as a soft-policy tool, allowing the Fed to nudge long-term interest rates in a desired direction. But if the dot plots have little explanatory policy, the markets will likely (and justifiably) come to disregard them, which could make it more difficult for the Fed to explicitly signal its intentions when it so desires. In other words, poor forecasts could be credibility destroying in exactly the situations where credibility is most important.

Empirically, the dot plots have underperformed interest rate futures for predicting Fed policy. Across nearly all time horizons (current quarter through three years in the future), the mean absolute error of the dot plots is higher than that calculated with overnight indexed swaps (OIS), with the lone exception of the six-quarter horizon (table 20.1).

| Horizon (Quarters) | OIS  | DOTS |
|--------------------|------|------|
| 2                  | 0.14 | 0.26 |
| 3                  | 0.45 | 0.47 |
| 4                  | 0.71 | 0.74 |
| 5                  | 0.90 | 0.99 |
| 6                  | 1.16 | 1.06 |
| 7                  | 1.23 | 1.30 |
| 8                  | 1.32 | 1.53 |
| 9                  | 1.64 | 1.89 |
| 10                 | 1.65 | 1.92 |
| 11                 | 1.35 | 1.79 |
| 12                 | 1.42 | 1.87 |
| 13                 | 1.86 | 2.04 |
|                    |      |      |

TABLE 20.1. Forecast performance of the FOMC median dot versus market overnight indexed swaps.

Source: Bloomberg LP "DOTS Function" and fed funds rate. Data as of July 2024.

So the dots are not particularly good forecasts and may come to undermine credibility, or at the very least make it more difficult for the Fed to signal what is a forecast versus what is a precommitment.

#### Lack of a Coherent Reaction Function in the Dots

Perhaps in response to these shortcomings, there has been increasing talk about expanding the dot plots to encompass scenario analysis.<sup>13</sup> This could in theory help educate the public about the Fed's "reaction function," thereby making the Fed's job easier. If inflation surprised to the upside by 1% and markets understood that this implied the Fed would hike rates by 1.5%, long rates would move immediately by an appropriate amount. But this presupposes that the Fed has an advantage in economic forecasting along with a well-defined reaction function. If these conditions are not met, then over time making public pronouncements could undermine confidence in the Fed. As noted in Faust (2016), transparency that does not help predict future policy only "masquerades as helpful" while adding to public confusion.

While it might be thought that the detail in the dot plots is illuminating, that is not what we find when we look in detail at the tacit scenario analysis revealed by the actual individual forecasts. Instead, the dots imply counterintuitive things about policy. The Fed has released the individual forecasts for each meeting with a five-year lag, so we have data from the October 2007 through December 2018 meetings.<sup>14</sup> Each participant gives their forecast (at a variety of time horizons) for GDP, unemployment, headline and core PCE inflation, and the fed funds rate. In addition to providing individual forecasts, the FOMC provides an accompanying key that identifies each participant.<sup>15</sup>

By matching participant names with their forecasts, it is possible to create a meeting-to-meeting time series for each FOMC member. If there was a coherent reaction function that the markets could learn from the dots, it would presumably take the form of some type of Taylor rule. Rising inflation forecasts should require at least a one-for-one increase in the fed funds rate, and slowing growth (or rising unemployment) should correspond to lower rates.

However, that is not what the dots actually reveal. For time periods of less than one year (shown in table 20.2), core PCE inflation is totally insignificant (and has the wrong sign) in explaining changes in the fed funds rate. Overall inflation is marginally significant at the 6% level and has a coefficient of only 0.12, well below the >1 value called for by any Taylor rule. The unemployment rate is the most significant variable, but it also has the wrong sign. When Fed participants have revised their estimates upward for near-term unemployment, they also have tended to increase their rate projections.

Such short-term (less than a year ahead) forecasts may be unfair to the Fed, given the many influences on the economy over a single quarter. But the longer-term forecasts are counterintuitive as well. Regressing changes in the "appropriate" fed funds rate on changes in economic conditions (as shown in table 20.3) has an  $R^2$  of only

0.41

| R squared           |                        |          |          | 0.17    |       |          |     |             |
|---------------------|------------------------|----------|----------|---------|-------|----------|-----|-------------|
| Adjusted R          | djusted R squared 0.16 |          |          |         |       |          |     |             |
| Standard error 0.26 |                        |          | 0.26     |         |       |          |     |             |
| Observation         | ns                     |          |          | 488     |       |          |     |             |
|                     |                        |          |          |         |       |          |     |             |
| ANOVA               |                        |          |          |         |       |          |     |             |
|                     | df                     | S        | 6        | MS      |       | F        | Sig | nificance F |
| Regression          | 4                      | 6.70     | )693 1   | .676733 | 24    | .8297668 | 1.( | 0281E-18    |
| Residual            | 483                    | 32.61    | 657 0    | .067529 |       |          |     |             |
| Total               | 487                    | 39.32    | 235      |         |       |          |     |             |
|                     |                        | Standard |          |         |       | Lower    |     | Upper       |
|                     | Coefficients           | error    | t stat   | P-va    | lue   | 95%      |     | 95%         |
| Intercept           | -0.01791               | 0.013471 | -1.32967 | 0.18425 | 56246 | -0.04438 | 157 | 0.008557    |
| GDP                 | 0.257935               | 0.044986 | 5.733732 | 1.73337 | 7E-08 | 0.16954  | 356 | 0.346327    |
| UI                  | 0.438591               | 0.059845 | 7.328777 | 9.83506 | 6E-13 | 0.32100  | 224 | 0.55618     |
| PCE                 | 0.122175               | 0.06551  | 1.864989 | 0.06278 | 39081 | -0.00654 | 432 | 0.250895    |
| Core                | -0.04297               | 0.110102 | -0.3903  | 0.69648 | 38362 | -0.25930 | 974 | 0.173365    |

TABLE 20.2. Regression 1: Changes in FOMC dot plot fed funds rate versus economic variables, less than one year ahead.

Regression statistics

Multiple R

0.05. In other words, a full 95% of shifts in participant-level policy forecasts cannot be attributed to the reaction function to changing economic conditions. The coefficients all have the expected signs, but only unemployment is significant, and the coefficients on inflation are again much below unity.

So the dot plots do little to elucidate a coherent reaction function and, if anything, expose the lack of one. It is also possible that the very existence of the dot plots has partially attenuated the reaction function. Once people take a view on something, a panoply of behavioral biases may come into play. In particular, the endowment effect and loss aversion can apply to beliefs as well TABLE 20.3. Regression 2: Changes in FOMC dot plot fed funds rate versus economic variables, one to three years ahead.

| Regression statistics |      |
|-----------------------|------|
| Multiple R            | 0.23 |
| R squared             | 0.05 |
| Adjusted R squared    | 0.05 |
| Standard error        | 0.37 |
| Observations          | 541  |

| ANOVA      |     |          |          |          |                |  |
|------------|-----|----------|----------|----------|----------------|--|
|            | df  | SS       | MS       | F        | Significance F |  |
| Regression | 4   | 4.04346  | 1.010865 | 7.385994 | 8.54E-06       |  |
| Residual   | 536 | 73.35826 | 0.136862 |          |                |  |
| Total      | 540 | 77.40172 |          |          |                |  |

|           | Coefficients | Standard<br>error | t stat   | P-value  | Lower<br>95% | Upper<br>95% |
|-----------|--------------|-------------------|----------|----------|--------------|--------------|
| Intercept | -0.09677     | 0.018981          | -5.09823 | 4.76E-07 | -0.13406     | -0.05948     |
| GDP       | 0.044277     | 0.091843          | 0.482094 | 0.629936 | -0.13614     | 0.224693     |
| UI        | -0.24341     | 0.089695          | -2.71374 | 0.006867 | -0.41961     | -0.06721     |
| PCE       | 0.203719     | 0.258027          | 0.789524 | 0.430155 | -0.30315     | 0.710588     |
| Core      | 0.335693     | 0.265007          | 1.266733 | 0.205801 | -0.18489     | 0.856272     |

as possessions (Abelson and Prentice 1989; Litovsky et al. 2022). Forcing all FOMC members to "own" an interest rate forecast is not costless; it may create an inherent policy inertia.

Returning to the COVID policy analogy, in the spring of 2020 there was nothing more important than how the disease, and *especially* its attendant policy response, would unfold. One could have made the argument that for "transparency" the relevant policymakers (Anthony Fauci, Donald Trump, Andrew Cuomo, Ron DeSantis, etc.) should have each provided detailed quarterly forecasts for the number of COVID cases and the appropriate masking, lockdown, and school closures conditional on their forecast. Such transparency would allow the citizenry to make informed long-term plans, such as where to live and whether to shutter a restaurant if cases begin to spike. But given the uncertainties, such "transparency" would have served primarily to undermine confidence in those who made them.<sup>16</sup>

COVID policymakers understood that you should not forecast what you cannot forecast. The empirical performance of the dots suggests that the FOMC cannot forecast, as does the fact that as late as 2021 the median dot suggested that there would be no rate hike until at least 2024. If somebody suggested that a company should have a monthly earnings call where it forecasts what its earnings were going to be month by month going forward, some might say that it was information, and it was transparency, and it would make for a more efficient capital market. But the UK recently had the opposite experience, in which it rolled back a newly introduced quarterly reporting mandate.<sup>17</sup>

# Forward Guidance and Market Signals: The Hall of Mirrors Makes It Harder for the Fed to Predict the Economy

Markets have traditionally contained among the most reliable signals about future economic activity. This makes sense, as they reflect the collective judgments of millions of forward-looking investors, including many who are both highly expert and incented to be correct. The collective resources and wisdom in the financial markets dwarf those available to even the most competent central bank.

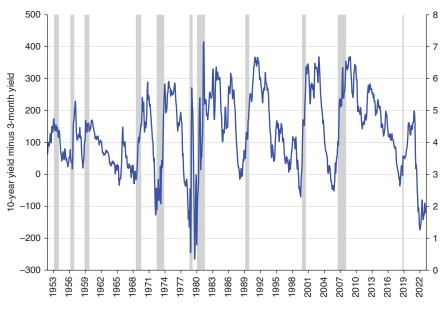
In particular, the yield-curve spread has been a particularly good, and closely followed, indicator. Estrella and Mishkin (1996) demonstrated that for predicting economic activity two or more quarters ahead (likely the time frame most relevant for central bank actions), the yield curve was a much more effective forecasting tool than any other indicator. Indeed, other studies (Rudebusch and Williams 2008) found that the slope of the yield curve *by itself* outperforms the consensus of professional forecasters.

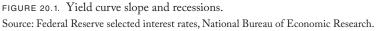
Before the era of Fed transparency, long rates largely reflected the market's independent judgment on economic prospects and appropriate future monetary policy. But now they largely reflect the information that the central banks (with much less collective expertise and resources) are spoon-feeding to markets. Numerous studies have found that markets react much less to economic news under forward guidance regimes (Ehrmann et al. 2019; Gaballo 2016). It would not be surprising if their information content suffered as a result, which could in turn reduce their critical abilities to forecast, in which case a worsened information set available to central banks would be a direct cost of forward guidance.<sup>18</sup>

In this context, it is interesting that the yield curve seems to have lost its previously impressive (and highly useful) forecasting ability. See figure 20.1.

### Quantitative Easing and Fed Legitimacy

Central bankers and academics have begun to make quantitative easing a nearly standard tool, not just for ensuring market functioning, but also for stimulating aggregate demand at the zero lower bound by bringing down long-term interest rates.<sup>19</sup> In March 2020, the Federal Reserve announced a new asset purchase program to ease turmoil in the Treasury and mortgage-backed securities (MBS) markets due to the COVID-19 pandemic, a program commonly referred to as QE4. However, even after financial conditions were eased in April 2020, the Federal Reserve continued largescale purchases of long-term Treasuries and MBS for more than a year, eventually beginning to taper purchases in November 2021.<sup>20</sup> In the absence of market turmoil, one can only conclude that post-April 2020, the goal of quantitative easing was to stimulate aggregate demand by bringing down long-term interest rates.





It is a matter of significant debate as to how and why quantitative easing works. There are two primary channels through which QE is hypothesized to work: through a portfolio-rebalancing mechanism and through a precommitment mechanism.<sup>21</sup>

In the former mechanism, QE is hypothesized to bring down long-term interest rates simply through a supply-demand effect. As Bernanke (2020) described, if investors have sticky preferences for bonds of different maturities, reducing the amount of long-term debt in circulation will increase the relative price of long-term debt. The change therefore would be reflected in the term premium.

In the latter mechanism, QE is hypothesized to bring down long-term interest rates by precommitting the Fed to keeping interest rates low. Since rate increases would cause losses to the central bank's balance sheet, holding bonds on the Fed's balance sheet acts as a soft precommitment to avoid rate hikes until the

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bonds have been sold off. Furthermore, the Fed has articulated that it is "inappropriate" for any rate hikes to occur while bond purchases are ongoing (Powell 2021). Since bond purchases can only be tapered off with a several-month lag, ongoing purchases essentially act as a hard precommitment to keep rates low for the short-term future (Eggertsson and Kohn 2023).

Quantitative easing has been employed twice: once in the aftermath of the Great Financial Crisis and once during the COVID pandemic. In the case of the GFC, Greenwood et al. (2014) found that the relative supply of long-term debt *increased* during the period of quantitative easing because the Treasury issued more long-term debt than was purchased by the Fed as part of its QE program. Therefore, any of the celebrated benefits of quantitative easing after the GFC could not have been because of portfolio rebalancing. In the case of COVID, Levin, Lu, and Nelson (2022) found that QE during the pandemic had no meaningful effect on term premia. Therefore, in both cases where it has been used, there is little empirical evidence to suggest that QE worked to reduce term premia and thereby bring down long-term interest rates.

Furthermore, even if the Fed were able to bring term premia down by decreasing the supply of long-term debt held by the public, it is unclear whether or not this would be something that the Fed should be able to do unilaterally. As Greenwood et al. (2014) pointed out, both the Fed and the Treasury have a vested interest in the maturity structure of the debt held by the US public. When the Fed engages in quantitative easing, it seeks to shorten the average maturity of publicly held debt in order to bring down long-term interest rates. At the same time, the Treasury often seeks to *lengthen* the average maturity of publicly held debt in order to reduce fiscal risk to the government. Without coordination between the two agencies, the Treasury and the Fed are effectively swapping securities between two government accounts, paying market makers a not-insignificant spread in the process.

In terms of the precommitment channel, there is the serious question of whether the Fed should be allowed to use fiscal risk to the government as a mechanism for showing its resolve. Precommitment via quantitative easing essentially works by transferring interest rate risk from the public to the government, thereby exposing the bank to serious fiscal risk if it changes policy by raising interest rates (Cavallo et al. 2019; Cecchetti and Hilscher 2024). However, once the bonds are on the Fed's balance sheet, moving them off is a slow and delicate process.<sup>22</sup> When changing policy direction is imperative, sometimes the Fed has to raise rates even before it has a chance to sell off all of the bonds. This was the case in 2022 when the Fed, already a year behind the inflation curve, rapidly raised rates even when it had a balance sheet of roughly \$8.9 trillion (Board of Governors 2022). As a result, the costs to the government due to QE losses have been enormous. Levin, Lu, and Nelson (2022) estimated the total fiscal cost of QE4 to be \$762 billion, with \$641 billion of that loss attributable to bonds purchased after markets had stabilized in April 2020.<sup>23</sup> Across other developed economies, the fiscal costs of quantitative easing have been comparably large.<sup>24</sup>

Given the extent to which QE interferes with Treasury operations and imposes fiscal risk on the government's balance sheet, the Fed should avoid using quantitative easing except to enable smooth market functioning. When it does engage in bond purchases, the Fed should coordinate with the Treasury to come up with an integrated debt-management policy.

None of the previous issues we have raised diminish the argument for quantitative easing in the presence of dysfunction and illiquidity in bond markets. In this case, the central bank behaves as a market maker of last resort, purchasing bonds in dysfunctional markets in order to provide liquidity and reduce risk spreads, thereby calming investor panic (Tucker 2009; Levin, Lu, and Nelson 2022; Chen et al. 2020). QE purely to provide liquidity to stabilize dysfunctional bond markets has a clear connection to the Fed's mandate of monetary stability, and the mechanism is more straightforward. Furthermore, as COVID has shown, the fiscal risks are much less. Less than 20% of the bond losses incurred as a result of QE4 were due to bonds that were purchased during market dysfunction (Levin, Lu, and Nelson 2022).

# Press Conferences: The Antithesis of Measured Committee Communication

Following the practice of other central banks, the Fed began holding regularly scheduled postmeeting press conferences in 2011. Narain and Sangani (2023) demonstrated that press conferences have had a market impact comparable to the Fed's statement. In fact, Chairman Powell's press conferences have been more influential than the Fed statements and have had a directly opposite market impact (see figure 20.2).

This disproportionate (and muddled) market reaction is symptomatic of deeper flaws in the press conference. The Fed strives for clarity in communication. But off-the-cuff answers, under time and other pressures, to a series of random questions is not a recipe for clarity of thought or comprehensibility of communication. Even if the Fed chair could respond perfectly to every question under these circumstances, they would still be at the mercy of the questioners to get their point across.<sup>25</sup> And even if they are asked a question that they want to answer, who is to say that the market will correctly interpret that answer as being more important than any of the other ones? In these conditions, the press conference risks becoming a Rorschach test in which journalists and market participants project whatever they want to hear.

While the Fed chair has always been powerful, the FOMC is ultimately a committee. The press conference is from the chair alone, aggrandizing their power and reducing that of the rest. At each Fed meeting there is an extensive discussion of the Fed state-

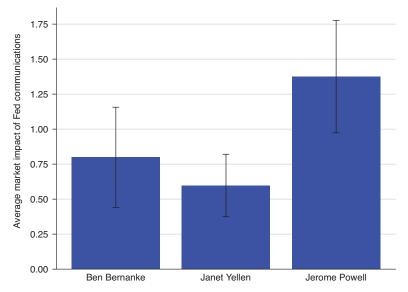


FIGURE 20.2. Average market impact of press conferences by three Federal Reserve chairs. The relative market impact of the press conference for each FOMC press conference date *t* is calculated as Relative Market Impact of Press Conference (t) = Volatility during Press Conference (t) / Volatility after FOMC Statement Release (t).

Source: Figure and caption partially reproduced from Narain and Sangani (2023), with permission.

ment. The staff prepare a set of possible statements for the meeting, and then each participant expresses their preferences in crafting a consensus statement. But no such process occurs for the press conference, which is now more influential to the market than the statement itself (Olson and Wessel 2016; Powell and Wessel 2020; Wessel and Boocker 2024).

As with the interest rate projections, the Fed publishes meeting transcripts with a five-year lag. In the available transcripts since press conferences began, there have been very few instances in which the chair had an extended discussion of what was planned for the press conference that approximated the normal procedure around a statement. The vast majority of discussion about press conferences revolved around whether a meeting was set to have a press conference (and was therefore thought to be more "live") rather than the actual *content* of the press conference.

#### Rates Are Likely Higher for Longer

As detailed earlier, unconventional policies have significant drawbacks. As long as rates are comfortably away from the ZLB, unconventional policies are also unnecessary; the Fed can act by adjusting the short rate. Fortunately, that is likely to remain the case for the foreseeable future. There is a variety of evidence that suggests that the neutral rate may have moved upward considerably, from the prepandemic level of 2.5% (for the nominal rate) to perhaps the neighborhood of 4%. We detail the evidence below.

First, the economy's contractive reaction to the Fed's monetary tightening has been much weaker than would be expected if the neutral rate were still at prepandemic levels. As of this writing in August 2024, the fed funds rate is at 5.5%.<sup>26</sup> Despite the target range having risen by 5.25% in the most rapid and unanticipated manner of the last forty years, there is little evidence in the real economy that conditions are especially tight. GDP has continued at near-trend growth. Broader financial conditions are much more accommodative than would be expected given Fed actions. Financial conditions are now as loose as they were when the Fed first began to hike rates, despite the fact that the Fed has maintained the FFR at 5.5% (US Bureau of Economic Analysis 2024b). The market is also signaling that real interest rates have risen (figure 20.3).

Second, several macroeconomic variables have fundamentally shifted in a way that would tend to push the neutral rate upward. Previous studies have shown that higher levels of government borrowing tend to increase the neutral interest rate.<sup>27</sup> The budget deficit is higher than it has ever been outside of war or recession and is projected to stay that way (figure 20.4). This puts upward pressure on rates. Studies have also attributed the long-run decline

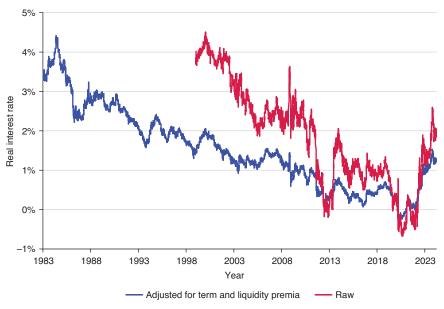


FIGURE 20.3. The five-year and five-year-forward real interest rates from 1983 to late 2023.

Source: D'Amico, Kim, and Wei (2008).

of neutral rates to aging demographics.<sup>28</sup> Now, immigration may be increasing, reversing some of the demographic-related decline to the neutral rate.

Before the pandemic, the United States had excessive savings and insufficient investment, a dynamic that caused neutral rates to reach historic lows (Summers 2016). Now, new investments in artificial intelligence (AI), the energy transition, and climate adaptation suggest that savings and investment may be coming more into balance. AI is adding meaningfully to investment. As shown in table 20.4, capital expenditures from just the four largest data center operators is expected to grow by \$52 billion in 2024. That would represent 37% growth. The green energy transition will also soak up investment funds. Treasury Secretary Janet Yellen has said there is over \$3 trillion a year in investment opportunities from green energy (Yellen 2023). This may be on the conservative end of the spectrum as the

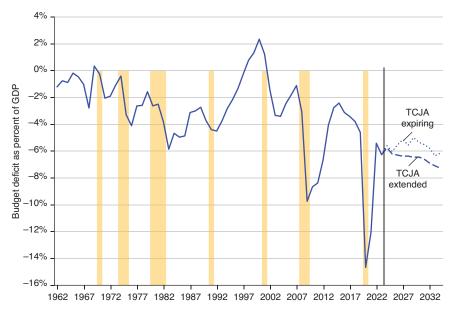


FIGURE 20.4. Budget deficits at historic highs. The dashed line represents deficit projections assuming that the tax cuts from the Tax Cuts and Jobs Act (TCJA) are extended in 2025; the dotted line represents deficit projections assuming that the tax cuts are allowed to expire.

Source: Congressional Budget Office and Penn-Wharton Budget Model.

International Energy Agency, UN, and BloombergNEF all forecast investments of between \$4 and \$6 trillion a year (BloombergNEF 2021; International Energy Agency 2021; United Nations n.d.). By way of comparison, the International Monetary Fund estimates that total global investment *on everything* will be \$29 trillion (International Monetary Fund 2024).

Therefore, both the economy's reaction to the Fed's monetary tightening and shifts in macroeconomic fundamentals suggest that the neutral nominal rate has likely moved upward. For instance, reasonable estimates of the slope of the IS curve suggest that an increase in the deficit equivalent to 3% of GDP may add 1.5% to the real interest rate by itself.<sup>29</sup> If this is the case, it means that

|           |      |      | Forecast |      |      |      |
|-----------|------|------|----------|------|------|------|
|           | 2020 | 2021 | 2022     | 2023 | 2024 | 2025 |
| Amazon    | 40   | 61   | 64       | 53   | 63   | 68   |
| Google    | 22   | 25   | 31       | 32   | 48   | 50   |
| Meta      | 15   | 19   | 31       | 27   | 37   | 41   |
| Microsoft | 15   | 21   | 24       | 28   | 44   | 51   |
| Total     | 93   | 125  | 150      | 140  | 192  | 210  |

TABLE 20.4. Capital expenditures at major data center owners (in billions of dollars).

Source: Bloomberg LP.

the zero lower bound is much less likely to bind policy and that conventional policy will likely be sufficient to provide monetary accommodation in the future.

#### Conclusion

Based on the evidence, we argue that many elements in the new Fed toolkit of unconventional policies, most of which were implemented in the wake of the Great Financial Crisis, have important downsides. In particular, more deliberative transparency is not necessarily better. The Fed's embrace of them was largely born out of necessity. At the zero lower bound, the Fed was out of options to improve economic outcomes. While these practices became ingrained, the Fed should nevertheless potentially scale them back in the context of its upcoming regularly scheduled framework review.

For a variety of reasons, the neutral policy rate is now likely much higher than it was before COVID, suggesting that the zero lower bound is less likely to bind. The economy has undergone a massive reconfiguration whose ramifications we are now only beginning to understand. Given the amount of uncertainty and rapid pace of change in economic fundamentals, policymakers would do well to be more nimble and humble.

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#### Notes

- Academics, in particular, benefit the most from transparency and are its biggest proponents. A survey conducted by Olson and Wessel (2016) found that academics had strongly more positive views about Fed communications' impact on the economy than private sector analysts. See also Wessel and Boocker (2024) and Powell and Wessel (2020).
- 2. See Sunstein (2023) for a discussion of unquantifiable (Knightian) uncertainty.
- 3. As early as 1991, one of the authors of this paper (Summers 1991) posited that 2% might be a good target inflation rate given his then-current guesstimate on nominal wage rigidities. It would be peculiar if that estimate turned out to be continually optimal over a four-decade span across a panoply of economically disparate countries employing varying

inflation-measurement methodologies. Don Kohn explained Greenspan's aversion to specific targets thus: "If you make 2 percent public, and you're running at 2.5 percent, then the question is, 'why aren't you creating unemployment to get to 2 percent?' That's not a position anyone really wanted to be in" (Wells 2024).

- 4. In discussing the optimal long-term inflation rate (OLIR), Bernanke (2003) explained that "in practice papers in this literature estimate the OLIR to be the lowest inflation rate for which the risk of the funds rate hitting the lower bound appears to be 'acceptably small.'"
- 5. See Clarida (2022) and Kohn (2022) for a discussion of the ways in which the perceived shortcomings of unconventional policy at the ZLB were instrumental in the Fed adopting the flexible average inflation targeting (FAIT) policy. This policy change was an example of learning in the context of precommitment, but with such long lags that it was counterproductive. It took several years to update the framework, and by the time it was done (in the throes of the COVID pandemic), the new framework was already stale.
- 6. Part of the overshoot can also be explained by the fact that this action was taken shortly after the release of the Fed's new flexible average inflation targeting policy. The rationale for targeting above 2% was that since inflation had been running below 2% for quite some time, by achieving above-2% inflation, the inflation rate would be on average close to 2% over a longer period of time. Dallas Federal Reserve President Robert Kaplan dissented at the meeting because he "prefer[red] that the Committee retain greater policy rate flexibility" (Eggertsson and Kohn 2023).
- 7. FOMC transcripts indicate that precommitment had been considered and repeatedly voted down as early as 1994.
- 8. When inflation was above 2% from August 2011 through March 2012, the Fed continued to extend its commitment to low rates, which suggests that it would have probably kept rates low even without any precommitment.
- 9. For this example and the next, see Eggertsson and Kohn (2023).
- 10. The accelerating nature of inflation was particularly problematic. Whereas before it was thought that the Fed could tolerate a moderate but controlled overshoot of inflation (which might occur as a result of precommitment), in 2021 it became clear that inflation might rapidly accelerate out of control.
- 11. As shown in Bernanke's (2024) review of the Bank of England forecasting system, building proper forecasting models is very hard and requires frequent updates and iterations.

- 12. The "prisoner's dilemma" is the best-known problem in game theory in which two actors will both be better off if they cooperate but have no way to enforce such coordination and face important incentives to not cooperate.
- 13. See Wessel (2024) for a recent thorough review of the discussion on scenario analysis.
- 14. Data for 2012–14 is not available on the Fed's website and is consequently not included in this analysis.
- 15. For examples, see Federal Open Market Committee (2018a and 2018b). The participant numbers change from meeting to meeting. For example, Robert Kaplan was participant no. 2 in the prior meeting and no. 9 in this meeting.
- 16. Even with their more judicious use of forecasting, COVID policymakers saw a notable decrease in public support due to the perception that their shifting recommendations were evidence of ignorance or incompetence. The Pew Research Center found that confidence in public health officials declined from 79% to 50% over the course of the pandemic and attributed the decline largely to the confusion over shifting recommendations (Tyson and Funk 2022).
- 17. See Kraft, Vashishtha, and Venkatachalam (2018) for a discussion of how the transition to quarterly reporting may have induced short-termism and reduced investment in the United States.
- 18. See Bernanke (1990) for an early analysis of how the informational content of credit spreads may vary based on changes in the manner of Fed action as well as shifts in financial market structure.
- 19. This section draws heavily from arguments made previously by one of the authors in Greenwood et al. (2014) and expands upon them. The viewpoint in favor of quantitative easing is most explicitly articulated by Bernanke (2020): "I argue that the new tools [quantitative easing and forward guidance] have proven effective at easing financial conditions when policy rates are constrained by the lower bound, even when financial markets are functioning normally, and that they can be made even more effective in the future. Accordingly, the new tools should become part of the standard central bank toolkit."
- 20. See Levin, Lu, and Nelson (2022) for a comprehensive history of the Fed's asset purchase program under COVID.
- 21. We base the following definitions of the two mechanisms on Bernanke's (2020) elaborate explanation of the theory behind both mechanisms.

- 22. The taper tantrum of 2013 is the quintessential example of quantitative easing making it difficult to change course (Milstein, Powell, and Wessel 2021).
- 23. Bernanke (2020) noted that Federal Reserve remittances tripled after the GFC to a cumulative \$800 billion over a decade. Interest rate risk is not a one-way bet, and QE may be profitable over the long term given the normal upward slope to the yield curve. Regardless, risk of (potentially large) losses is a drawback.
- 24. According to the Bank of England, the Asset Purchase Facility marked a loss of 169.1 billion pounds for the year ended in February 2023 (Bank of England 2023; Chadha and Allen 2023). Cecchetti and Hilscher (2024) found that the Swiss National Bank experienced losses of up to 17% of GDP, while losses in the European Central Bank were relatively modest (less than 0.4% of GDP).
- 25. As Bernanke noted in the December 12, 2012, meeting: "Most of the press conference is Q&A, and so the questions that come will determine what I have an opportunity to say" (Federal Open Market Committee 2012).
- 26. The Fed has signaled that a rate cut is likely in September, and markets are assigning an overwhelming probability to it as well as further reductions.
- 27. See Rachel and Summers (2019) and the studies referenced therein.
- 28. See Papetti (2021) for a discussion of some of the hypothesized channels through which aging demographics bring down neutral rates.
- 29. The IS curve is part of the IS-LM model (IS and LM stand for Investment-Savings and Liquidity-Money, respectively). The IS curve is generally represented as downward sloping and represents the inverse relationship between interest rates and aggregate income/output when savings and investment are in balance. Changes in deficit spending shift the IS curve to the right, which raises the equilibrium neutral interest rate, which is required for economic output to match potential. For background on the IS-LM model, see Mankiw (2006) and references therein. For estimates of the effect of government deficits on neutral rates, see Rachel and Summers (2019) and the studies referenced therein.

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#### GENERAL DISCUSSION

JOHN COCHRANE: Let's get some questions.

DAVID PAPELL: I want to take issue with the view that FAIT [flexible average inflation targeting] was an important part of the increase in inflation. If you look at the time of the March 2021 FOMC [Federal Open Market Committee] meeting, annual core PCE [personal consumption expenditure] inflation was 1.7% and the forecast for the end of 2021 was 2%. FAIT was clearly important at that point. By the June 2021 FOMC meeting, annual core PCE inflation was 3.5% and the forecast for the end of 2021 was 3%. FAIT became irrelevant, and it has stayed irrelevant. When people write about when the Fed started to fall behind the curve, including my work with Ruxandra Prodan-Boul, it's usually starting in September of 2021. So I don't see where FAIT had anything to do with the rise of inflation.

- PATRICK KEHOE: For Jón Steinsson. You had some interesting pictures, and so did Emi [Nakamura], about inflation in goods versus services, but at one point you seemed to say that when setting monetary policy the Fed should have targeted inflation in goods differently than inflation in services. My question is: how would the Fed be able to differentially affect the inflation rate in goods relative to that in services?
- SEBASTIAN EDWARDS: Thank you. I know that this is a panel on the Fed, but I want to ask the panel, what about the dollar and, in particular, the dollar-yen rate? It's astounding. The only similar exchange rate that has experienced such wide changes is the Mexican peso-dollar rate (which moved in the opposite direction). So let me ask this: Is there anything about the global economy, in particular exchange rates, that bothers you or that the Fed

should consider when rethinking its strategy? I think this is important since we are talking today about global monetary policy going back on track.

- ROBERT HALL: First of all, I deny that I'm the hypothetical economist that Larry [Summers] mentioned. Anyway, seriously, let's take Larry's point and look at it carefully. Hypothetically, if the unemployment rate is 10%, some disaster comparable to what happened in 2009 has caused major, major dislocation of the economy—comparable to what a war does. Our claim is that there's only one way to get out of that jump in unemployment, namely, a patient rebuilding of the economy. That's the hypothesis. If the unemployment rate suddenly for no reason and no disaster jumped by 10%, then obviously this wouldn't apply. So I recognize the debating value of Larry's point. As usual, he went directly to a potential weak point. But I think it's plausible that a real-world recession raises the natural rate of unemployment temporarily by a substantial amount.
- MICHAEL BORDO: I just have a quick question for Jón Steinsson. I like the plucking model, and I worked with it in the past with Joseph Haubrich. How do you square a plucking model with preemptive monetary policy? I'd like to understand how that works.
- JAMES BULLARD: Thank you. Jim Bullard. So in his role of provocateur, Larry Summers has suggested two outrageous things here, which I want to correct. One is to get rid of the 2% target. So, it's become an international standard to have the 2% target all around the world—wildly successful. I think if the leading economy dropped the target, you'd cause chaos around the world. You'd be back to the 1970s. So I do not think dropping the numerical target is a good idea.

And on the cacophony issue, sorry, I don't think you can stop what's happened with global monetary policy. Most of the people that are talking are not the members of the committee but are major investment houses and others that are talking, and many in this room that are talking, and former policymakers in this room, including me, that are talking sort of on a twentyfour-hour-a-day, 365-day-a-year debate about American monetary policy. To pull the policymakers out of that would be worse, I think, because you want the actual policymakers to be talking about what the policy actually is as opposed to everyone else speculating about what the policy actually is.

So I think it's good to have the big committee and also for the ECB [European Central Bank] to have a big committee and to be having the policymakers sort of fighting back or releasing the tension that's being driven by private sector commentary on what monetary policy should be doing or is doing.

- ANDREW FILARDO: Regarding the upcoming Federal Reserve policy review, I wonder if there should be a meaningful discussion about negative-policy interest rates. Various central banks around the world have allowed their policy rates to become negative as a way to achieve their monetary policy goals. The Federal Reserve has balked at this approach and has preferred an alternative strategy of "low for long." However, there is a growing consensus that "low for long" creates powerful economic and financial distortions, especially in the way homeowners, investors, and financial markets react. In contrast, a sharper decline in policy interest rates consistent with a Taylor rule prescription (unconstrained by zero bound) and a subsequent sharper policy rate reversal may prove less distortionary. So, is it time for the Fed to reconsider adding negative policy rates into its conventional policy toolkit?
- STEVEN DAVIS: Back to Larry Summers's comments, two points. One, presumably there's an intermediate possibility, which is even if you keep a 2% target, you don't make numerically precise projections. That's what I understand to be part of your argument, but I would like to hear your vision of what it means if we move toward your approach with more humility, more focus

on main objectives without being too precise about it, too much talking about it all the time. I'd like to hear your ideas about how we could facilitate an efficient evaluation of monetary policy performance under that type of approach. If the Fed does not offer precise guidance, it seems harder to assess performance. I don't want to go through another 1970s, where it takes a long time to have a course correction in terms of popular perceptions, popular desire to fight inflation, and to have the right person in the Fed. So, I'd just like to hear your thoughts on that.

- VOLKER WIELAND: Thank you. Volker Wieland, Goethe University in Frankfurt. Just one quick question on the shortfalls idea, I mean, the policy rules with the shortfalls element. It seems to me that introduces an inflation bias. If you simulate a macro model with symmetric shocks and, on average, the central bank only responds to shortfalls of employment, an average inflation bias results from that policy. There was work by Alex Cukierman years ago showing this result with asymmetric output gap targets in the policy rule. Surely the Fed must have looked at that. Why would they want such an inflation bias?
- ROBERT KING: I want to take the bait on something that Larry Summers said about central bank communication, and in particular I want to envision, as he did, going back to the 1990s. The Greenspan FOMC was notable in that it had systematic discussions about what the long-run goal for US inflation ought to be that involved presentations by Al Broaddus and Janet Yellen. They reasoned out that they could live with something that was like 2%, and then some of the many FOMC members talking at the time brought that 2% to the public, even though Alan Greenspan advised against it. Another feature of that period was that the Taylor rule became a reference point within the committee for thinking about the appropriate setting of monetary policy and the responses to various kinds of events.

The third thing was that during the 2000s, Greenspan began to signal the path of interest rates to the financial markets. And if one looks at the behavior of fed funds futures and Eurodollar futures, it is very clear that after the early 2000s, the markets sort of tuned in to what the Greenspan Fed was communicating. If you plot the financial futures, the outcomes are stunningly similar to the events that ultimately transpired, particularly during the tightening cycle in 2005, et cetera.

So, Larry, which of those things do you want to walk away from? Do you want to walk away from the idea that the central bank ought to have an internal goal? Do you want the staff not to produce Taylor rule calculations and use those as a focal point for some of the internal discussions? And do you want to stop talking to the markets so that the markets won't have expectations over the coming two years about the path of short-term interest rates? COCHRANE: That's all we have time for. Can we have some brief responses from the panel?

ATHANASIOS ORPHANIDES: Thanks. So, I will address a couple of the questions that came up. I actually agree with Jón. We need to be forward-looking in policy, but this is meant to capture the Fed staff's ability to do excellent nowcasting and short-term fore-casting. So, identifying these trends like one quarter ahead, it is much better to respond to that than waiting for the historical data released with lag. Being a little bit forward-looking actually can go a long way towards improving policy. But we also need to be robust. So we should not be guiding policy, as Larry pointed out, by stars that we don't know what they are. This is the whole point of running robustness exercises, so that we can have a benchmark rule that would be more robust than otherwise.

And I want to say something about the 2% target, the adoption by the Fed of the 2%, precise definition of price stability. In my view, this has been the most important improvement in

the Fed's strategy in the last half century. And I agree with Jim Bullard, it would be a terrible mistake to move away from that. And I think that overall, after that adoption and until the pandemic, the Fed had done a wonderful job. I mean, the fact that we were complaining about the Fed missing inflation by two or three tenths of a percent before the pandemic, I agree with the interpretation that that was a sign that the policy was pretty good. What I would have wanted is a strategy that actually makes that robust going forward. I would have wanted a strategy that would not allow the errors that happened later on with the forward guidance that was highlighted by many of us, and so forth. CHARLES PLOSSER: I just want to emphasize a couple of points. I think that one of the things that concerned me most about the FAIT regime was the asymmetry. If the Fed had adopted a straight pricelevel target, I might have supported that had it been symmetric. But what they did was lay out a complex strategy that depended on the Fed's ability to manage time-varying inflation expectations only after shortfalls. In the short run or intermediate term, they wanted higher than 2% inflation, and that had to be credible or it wasn't going to help solve the zero lower bound problem, but there was no specificity about how that would be conducted.

Moreover, they made clear that they were not going to deliberately offset overshoots of inflation. Yet they declared that they still wanted average inflation to be 2%. Well, if you only offset undershoots, you cannot achieve an average of 2%. So, what did [Jerome] Powell say? Oh, we're "not going to be hung up on a mathematical definition of average." We are going to be "flexible." Thus there was no coherent price-level target or inflation target commitment offered—everything became vague and discretionary. Even in the best of cases, such a regime would result in the price level drifting up at an undetermined rate above 2%. They made no commitment to anything in particular. And I think that damaged their own credibility and commitment to the price-stability mandate. In addition, as Larry said, and as Mickey [Levy] said, the Fed is not capable of managing expectations as if it were an independent tool of monetary policy. They can only manage it with their commitments to take policy actions in the process. And so I think that has been a, I don't want to say a false flag, a false dream that many people have relied on, and I think it's misguided.

So I very much agree with many of Larry's points. I think the Fed needs to step back. We need some more humility about what we are able to accomplish and more understanding of what the mechanisms are that allow that to happen. As Mickey and I said in our paper, inflation dynamics as we currently understand them are adrift. We don't know a lot about them. So what we need is good policies, committed policies that are robust, are supported by empirical evidence, and resist trying to fine-tune things in a way for which we are unable to be successful. And so that's why we say we need to take a step back, exercise a little humility, look for robust guidelines, and stick to them, and focus attention on objectives that we can actually achieve.

COCHRANE: Mickey, briefly?

MICKEY LEVY: Yeah, just two quick points. David [Papell], in the first half of 2021, while the Fed was attributing inflation to supply shocks and distribution problems, nominal GDP, the broadest measure of aggregate demand, was accelerating at its fastest pace in modern US history. That was a key source of the excess demand, along with supply constraints. Instead of focusing on trying to push down service prices, an option that Jón proposed to offset goods inflation, the Fed should focus on what it's most capable of, which is managing aggregate demand.

Second point in response to Sebastian. As Larry said, strong growth, and also a pickup in productivity, has lifted potential growth in the US significantly higher than in Europe, Japan, and other advanced nations. The higher returns on capital associated with the stronger real growth raises the real rate of interest and exchange. Thus, US real interest rates are higher than in other advanced nations, and the dollar is strong. The Mexican peso has been outperforming the US dollar, reflecting its tremendous capital inflows and high expected rates of return on pesodenominated assets. That's all positive.

JÓN STEINSSON: Michael asked about plucking and preemptive tightening. Volker Wieland asked a related question about shortfalls and biases. The plucking model, or the plucking view of the world, is a nonlinear world. We're much more comfortable with linear frameworks, and operating in linear frameworks is simpler in certain ways. Operating in a nonlinear framework is more complicated. For example, the policy has to be nonlinear. And it's true that preemptive tightening is going to be more complicated to think about in a nonlinear world. You don't know where the kink is. So, you don't know exactly when you want to do the preemptive tightening. That's tough about living in a nonlinear world. But it doesn't mean that the principle of conducting preemptive tightenings isn't still a valid thing you need to be thinking about. It's just very hard to know when you should do it. If the world really is nonlinear, it's harder to perform policy. But I still think the principle applies.

There's been a lot of criticism of forward guidance on the panel. I'm a big proponent of forward guidance. In this context, I want to bring us back to the hair plot that Emi showed us in the last panel. One of the things that was very striking in that figure is that the market never had a clue what the Fed was doing. The Fed was in the middle of a major easing cycle, like in 2001, and the market couldn't forecast even one more easing. Or in 2008, in the middle of 2008, the world is collapsing and the market is not forecasting one more easing. So the market doesn't have a clue what is going on until the Fed starts doing forward guidance. Then, finally, the market can tell since the Fed is telling them what they expect they're going to do. This allows the market to tell what is going to happen a little bit better. Not perfectly. Sometimes this guidance turns out to be wrong, and sometimes the Fed gets itself into a corner and is boxed in for a while, but at least it can transmit interest rate expectations into longer-term interest rates. And if the Fed wants to operate on the thirty-year mortgage rate and bank lending rates at five or ten years, this is a really valuable thing to do. And I think that's what forward guidance is about and why it's important.

I very much agree with Jim Bullard on the cacophony. I also agree with Athanasios on the basic fact that monetary policy has been spectacularly successful in a historical perspective over the last thirty-five years. So we don't want to break something that doesn't need fixing. Things are pretty good, in terms of monetary policy, if you take a historical perspective. And so I'm not really sure we should do something super-radical.

LAWRENCE SUMMERS: Bob [Hall], I think you misunderstood me. You might well be right, in your view. A good chance you are right, in my view. My point is the fact that you have your view and that it is so different from many standard views is a reminder that we all need to be humble about our understanding of the economy. And my intent was not to criticize your view.

The dollar is an interesting phenomenon. I think the leastremarked-on thing about the global economy that is really important to me is if you look at the fraction of stock market value that is made up of US companies, it is stunningly high relative to anything that anyone would have expected ten or twenty years ago. And that phenomenon and the strength of the dollar I suspect are very strongly related.

Plucking, I'll leave it to Jón to do it. I am sure that you can make a case that just because excess demand creating excess output is not the right way to think about excess demand, it is still a good idea to preempt excess demand, especially if you believe it will all go into inflation rather than only some of it going into inflation rather than output. So, I'm sure you can square plucking with preemption.

The cacophony. Maybe this theory's right, that since there are a lot of other people who will comment on policy, a lot of other policymakers need to comment. Maybe that's a good theory. It is not a theory we as a society apply in any other area. There are a lot of people commenting on policy toward the Middle East, but we do not decide that every part of the government and every random assistant secretary or deputy assistant secretary should be giving a speech every three weeks with their views. In general, we want coherence from authorities. No company allows full transparency of its deliberations. Presidents do not allow the minutes of their National Security Council meetings to be released even ten years later. So, maybe there's something very special about monetary policy. Or maybe monetary policy people have figured it out and the rest of the world has not. But the way we think about the cacophony issue with respect to monetary policy is very different from the way we think about any other issue.

The 2% target. Look, the question is not whether having a regime with stability and having a bunch of research projects done within the Fed is a good idea. Of course those things are good ideas. The question is whether defining a specific numerical target is a good idea and enshrining it as a principle. My best guess is that over the next three years, one of two things will happen: either we will end up settling out as a 2.75–3% inflation country; or in pursuit of 2%, because of extra actions taken in pursuit of 2%, we will have a fairly serious recession. But one of those two things will happen. And that we will end up in an unpleasant place is I think made more likely by having enshrined as firmly as we have the 2% target.

I agree with you that if it were my responsibility to actually make policy rather than to influence policy by commenting, that I would want to be very careful about the consequences and the way in which the adjustment was managed, given that we had announced a 2% target and it had become substantially enshrined. And I feel the same way about all this stuff. I mean, it is one thing to say that dot plots are a bad idea. It is another thing to say that having instituted the principle of dot plots, you are now going to remove dot plots.

One of the important issues that I probably should have highlighted is that there is a kind of ratchet in formal procedure. Whenever you put in place a new transparency thing, you can never take it away if it turns out to be a bad idea. And that is another reason to be cautious about transparency.

I'll conclude with this, because maybe I have not been quite outrageous enough. I think there is a 50% chance that the United States is going to elect a Juan Perón equivalent as its next president. If it does, inflation is going to be an important part of the reason that it happened. Whatever your detailed and nuanced arguments about flexible average inflation targeting and the ways in which it did or did not contribute to any of this, I believe that if Alan Greenspan or Paul Volcker had been chairman of the Fed in 2021, we would not have generated nearly as much inflation as we did. And I have no doubt that they would share my views on these points about forward guidance, cacophony, specific numerical targets, QE, and all of that. And I think that's something that is worth considering for those of you who are enthusiastic about all the apparatus.

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POLICY PANEL

#### INTRODUCTORY REMARKS

John B. Taylor

I'm always very pleased to chair our panels of policymakers. There's nothing like hearing from the people who have their hands on the tiller, making the decisions. So it's really a privilege for me to have Amir Yaron, the governor of the Bank of Israel; Austan Goolsbee, president of the Federal Reserve Bank of Chicago; and John Williams, president of the Federal Reserve Bank of New York. So thank you very much for being here. Anyway, the title is "Policy Panel," which means you can talk about whatever you want, and I know that Amir is going to start by talking a little bit about Israel, so please proceed. Thank you.

# 21

### **Monetary Policy in Small Open Economies**

Amir Yaron

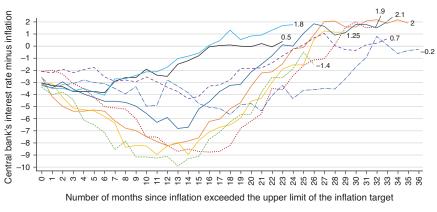
The Federal Reserve's monetary policy significantly affects small open economies' (SOEs') inflation, yet its monetary policy exhibits significant variations in the strength and timing with respect to the Fed. The variation in SOEs' policy reactions is influenced by factors such as the economy's exposure to global shocks, the effectiveness of monetary policy transmission, the central bank's policy objectives, and the exchange rate position.

## Synchronization and Divergence in Monetary Policy Response

Despite the diversity in economic structures, there is a notable commonality in business, inflation, and interest rate cycles across both large and small economies. However, the strength and timing of monetary policy responses among SOEs vary significantly. Some economies choose to raise interest rates proactively relative to the major central banks, while others adopt a more cautious approach and delay rate hikes. This variation is influenced by factors such as the economy's exposure to global shocks, the effectiveness of monetary policy transmission, the central bank's policy objectives, and the exchange rate position.

Figure 21.1 illustrates this variation by showing a particular notion for the restrictiveness of monetary policy during the current interest rate cycle. The graph in the figure illustrates the central bank's

Amir Yaron



| USA Europe UK Norway Sweden           |
|---------------------------------------|
| Canada South Korea Switzerland Israel |

FIGURE 21.1. The central bank's interest rate minus inflation (y-axis) and the duration of deviation of inflation from its target (x-axis) for nine countries. Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

interest rate minus inflation versus the duration of deviation of inflation from its target across different economies.

This variation is also reflected in the timing of interest rate increases relative to the Federal Reserve's raise. Some SOEs raised rates before the Fed did, while others waited and adjusted their rates afterward.

In the current cycle, economies that raised their rates after the Fed did experienced a faster decline in inflation, as can be seen in figure 21.2.

We first investigate the impact of US monetary policy on the inflation of SOEs. To do so, we employ a widely accepted method in the current literature, building on the work of Gürkaynak, Sack, and Swanson (2005) and Gertler and Karadi (2015). We examine the change in US one-year-forward bonds within a narrow window around the Federal Reserve's interest rate announcements. The underlying assumption is that this change

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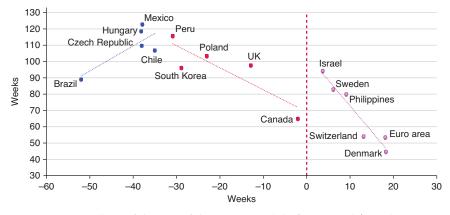


FIGURE 21.2. Date of the start of the interest rate hike (*x*-axis, weeks) in relation to that of the United States (0) and the time until inflation fell to half its peak (*y*-axis, weeks).

Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

captures the surprise element in the Fed's policy decision, as it represents the difference between the market's expectations before and after the announcement. The outcome variable is the average inflation of small, open, and advanced economies. Our empirical strategy follows the local projections approach, as introduced by Jordà (2005), which allows for a flexible estimation of the dynamic responses to policy shocks, using monthly data from January 1995 to July 2023.

Figure 21.3 shows that US monetary policy has significant influence over SOEs' inflation. The effect is also quantitatively strong—a 100-basis-point rise in the Fed's interest rates lowers average inflation in SOEs by 4% over twenty months. This effect is present even after controlling for countries' own interest rates, and thus the Fed policy can be viewed as providing a headwind in driving inflation in SOEs.

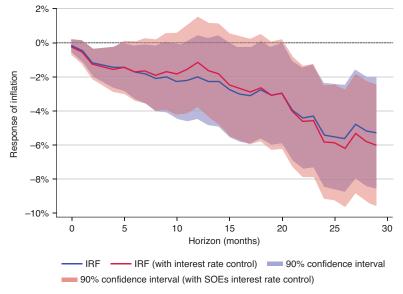


FIGURE 21.3. Impact of a 100-basis-point fed rate shock on average inflation in SOEs.

Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

#### Channels of the Fed's "Headwind" on SOEs' Inflation

#### US Weakened Global Demand

One significant channel through which US monetary policy affects SOEs is by weakening global demand. When the Fed raises rates, it exerts a disinflationary pressure on SOEs through multiple mechanisms. First, higher US interest rates lead to a stronger dollar, making US exports less competitive and dampening global economic activity (Ammer et al. 2016). Second, tighter US monetary policy can lead to a reallocation of capital flows as investors seek higher returns in the US, reducing capital flows to SOEs and constraining their economic activity (Miranda-Agrippino and Rey 2020; Dedola, Rivolta, and Stracca 2017). Finally, higher US rates tighten global financial conditions, as

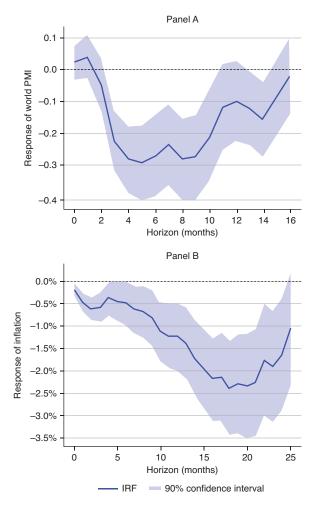


FIGURE 21.4. The impact of a 100-basis-point fed rate shock on world PMI, and the impact of a 1-percentage-point decrease in world PMI on SOEs' inflation. Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

many international financial transactions are denominated in US dollars. This increases the cost and reduces the availability of credit globally, further weakening investment and consumption (Rey 2015). The combined effect of these mechanisms can be observed in the graphs in figure 21.4 through the impact on the

global Purchasing Managers' Index (PMI), which subsequently influences inflation in SOEs.

#### US Weakened Global Commodity Prices

Another critical channel is the effect of US monetary policy on global commodity prices. Higher fed rates tend to lower global commodity prices, which in turn reduce inflation in SOEs. This mechanism is crucial for SOEs that are heavily reliant on commodity imports, as lower prices directly translate into lower inflationary pressures. The relationship between US monetary policy and commodity prices has been well documented in the literature. Frankel (2008) argues that tight monetary policy leads to lower commodity prices through a combination of reduced global demand, a stronger dollar, and the influence of interest rates on inventory holdings. Hammoudeh, Nguyen, and Sousa (2015) provide empirical evidence supporting the impact of US monetary policy on a wide range of commodity prices, including energy and metals. The graphs in figure 21.5 formalize this for our set of SOEs.

#### Imported Inflation from the United States

US inflation rates directly impact SOEs through imported goods. As the US is a major trading partner for many SOEs, changes in US inflation are transmitted to these economies, affecting their overall price levels. This is particularly relevant for countries with significant trade links to the US, making their inflation dynamics partly dependent on US economic conditions. Auer, Borio, and Filardo (2017) investigate the propagation of global value chains and find that a significant portion of domestic inflation in SOEs can be attributed to changes in the prices of imported intermediate goods. They highlight the role of the US as a key source

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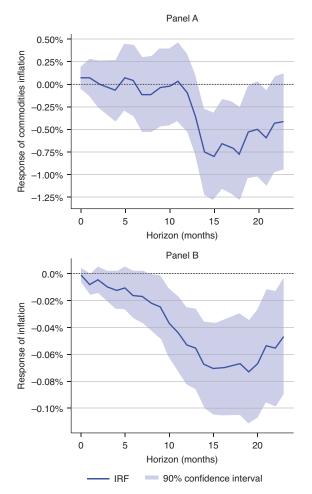


FIGURE 21.5. The impact of a 100-basis-point fed rate shock on world commodity prices, and the impact of a 1-percentage-point decrease in commodity prices on SOEs' inflation.

Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

of these price fluctuations. Borio and Filardo (2007) also discuss the growing importance of global factors, such as US inflation, in determining domestic inflation in SOEs, emphasizing the need for policymakers to consider these external influences. The graphs

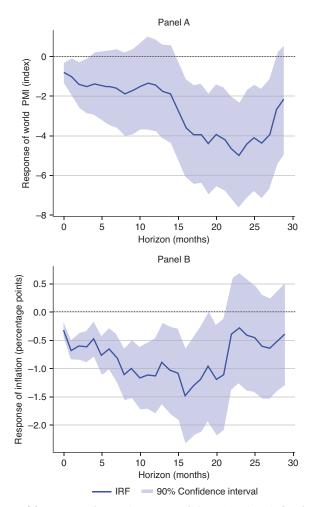


FIGURE 21.6. The impact of a 100-basis-point fed rate shock on US inflation (Panel A) and the impact of a 1-percentage-point decrease in US inflation on SOEs' inflation (controlling for commodity prices and the USD exchange rate). Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

in figure 21.6 provide the local projection results for the effects of US inflation on SOEs' inflation.

Given these mechanisms, a natural question arises: why do not all SOEs wait to raise interest rates until after the Fed does so and utilize its headwind to combat domestic inflation? The reasons for this heterogeneity in monetary policy responses are multifaceted and can be attributed to several key factors.

First, differences in exposure to energy and commodity prices play a significant role in shaping the timing and magnitude of monetary policy actions. SOEs that are more vulnerable to fluctuations in global commodity prices may need to act more swiftly to counteract inflationary pressures.

This has been particularly relevant in the context of the Russia-Ukraine war, which caused a significant rise in energy and commodity prices, particularly in natural gas, as Russia is a major supplier to many European countries. This has resulted in a high variation in inflation rates among European economies, with countries that have a higher dependence on energy, and particularly Russian energy imports, such as Czech Republic, Germany, and Italy, facing greater inflationary pressures.

Consequently, these countries may have been driven to raise interest rates earlier than the Fed to combat the rising inflation. In contrast, economies that are less energy dependent may have more flexibility in their monetary policy decisions.

Second, during the COVID-19 pandemic, there was significant variation across countries in the fiscal stimulus policy, with some implementing much larger stimulus packages than others (e.g., in the US, Germany, and Sweden, the fiscal stimuli in COVID were about 14.9, 6.0, and 2.6% of GDP, respectively). The interaction between fiscal and monetary policy is crucial in determining macroeconomic outcomes and inflation (Sims 2011). Moreover, the composition of fiscal expansions, such as the balance between direct transfers and infrastructure spending, can also influence the inflationary impact and the subsequent monetary policy response (Coenen et al. 2012).

SOEs that implemented more-expansionary fiscal policies, such as direct transfers to households or increased government spending, may have faced greater inflationary pressures, necessitating an earlier and tighter monetary policy even if they would have preferred to wait for the Fed's lead under different circumstances.

Third, the structure of mortgage markets can significantly affect the transmission of monetary policy. In economies with predominantly fixed-rate mortgages, such as the US, the impact of interest rate changes is primarily felt by new borrowers. However, in SOEs with a higher share of variable-rate mortgages, the effects of monetary policy are more quickly transmitted to the broader economy. These differences in mortgage market structures can therefore influence the timing and extent of monetary policy actions in managing inflation.

Finally, exchange rate dynamics play a crucial role in the monetary policy decisions of small open economies. When the US raises interest rates, it often leads to an appreciation of the US dollar, as higher yields attract capital inflows. Consequently, other currencies, particularly those of small open economies, may experience depreciation pressure. The extent to which an SOE's currency depreciates against the US dollar can have significant implications for its inflation outlook and, subsequently, its monetary policy response (Gagnon and Ihrig 2004). SOEs with currencies that weakened during the COVID-19 pandemic, such as Brazil and South Africa, faced greater inflationary risks due to the exchange rate pass-through effect. As a result, these countries may have been prompted to raise interest rates earlier than the Fed to stabilize their currencies and manage inflationary pressures. In contrast, countries whose currencies appreciated during COVID and before the inflation cycle, such as Switzerland and Israel, had more flexibility in their monetary policy decisions and degrees of freedom to wait for the Fed's headwind. The exchange rate considerations have been particularly relevant in the current global economic environment, where uncertainties surrounding the pandemic and diverging economic recoveries have led to heightened volatility in foreign exchange markets. Figure 21.7 demonstrates the different

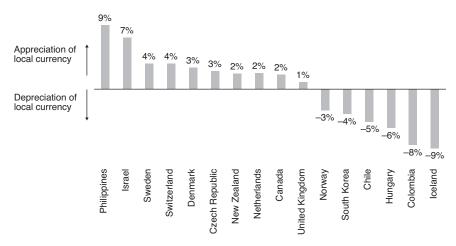


FIGURE 21.7. Real effective exchange rate (REER), 2019 to 2021. Source: Governor's Office at the Bank of Israel based on data from OECD and Bloomberg.

real effective exchange rate (REER) position leading into the inflation phase of the cycle.

There appears to be a notable correlation between countries in which central banks hiked rates at an early juncture (as shown in figure 21.2) and those countries whose REER depreciated during the initial phase of 2021.

#### The Taylor Rule in Small Open Economies

The Taylor rule, first introduced by John B. Taylor in 1993, provides a framework for setting interest rates based on inflation and the output gap. However, the application of the Taylor rule in small open economies is more complex due to the influence of additional factors, particularly exchange rates.

In Taylor (2001), he argued that including exchange rates in interest rate policy rules does not necessarily improve macroeconomic performance, and may even lead to suboptimal outcomes. The reasoning behind this is that the exchange rate already indirectly influences the economy through its impact on GDP and expected inflation, and explicitly incorporating it into the policy rule may lead to redundancy or even policy errors. Despite this, some SOEs still choose to incorporate exchange rate considerations into their monetary policy decisions.

Lubik and Schorfheide (2007) investigated the behavior of central banks in SOEs and found heterogeneity in their approach to exchange rates. Their research revealed that many central banks explicitly account for exchange rate fluctuations in their modified Taylor rules, while others opt not to include this factor directly in their policy formulations.

For instance, in Israel's dynamic stochastic general equilibrium (DSGE) model, the Taylor rule is modified to include a small coefficient of 0.03 for the exchange rate change ( $\Delta S_t$ ):

#### $r_{t} = 0.15 [R_{t}^{*} + \bar{\pi} + 2.26 (\pi_{t} - \bar{\pi}) + 0.137 \tilde{y}_{t}^{gap} + 0.03 \Delta S_{t}] + 0.85 r_{t-1} + \eta_{t}^{R}$

This modification suggests that Israel's monetary policy does consider exchange rate movements, albeit to a limited extent. The inclusion of the exchange rate term in the rule allows the central bank to respond to currency fluctuations that may have inflationary or deflationary effects not fully captured by the output gap and inflation measures alone. However, the small coefficient indicates that the exchange rate is not the primary driver of Israel's monetary policy decisions.

There are several reasons why central banks in SOEs might directly consider the exchange rate in their policy rules. Timing is a crucial factor, as exchange rate fluctuations can have impacts not adequately reflected in readily available GDP or inflation figures. For example, currency depreciation may affect inflation with a two-year lag, while the Taylor rule typically considers one-year expectations. Additionally, the exchange rate can serve as a valuable informational variable, providing signals about economic conditions that may not be fully captured by output gap and inflation measures. Furthermore, financial stability considerations play a role. Exchange rate fluctuations can impact financial stability, which may not be fully captured by traditional GDP and inflation metrics. For SOEs, maintaining financial stability is often a key objective of monetary policy, making the exchange rate a relevant factor in their monetary policies.

#### Conclusion

In summary, the monetary policy landscape in small open economies is shaped by both global influences and domestic conditions. The interplay between global forces, such as US monetary policy, and local policy decisions highlights the nuanced approach required for effective monetary management in SOEs. The variability in policy responses underscores the importance of understanding the unique economic contexts and structural differences that underlie each SOE. As central banks in these economies navigate the challenges posed by an interconnected global economy, further research and policy discussions are important to refine monetary policy frameworks and enhance their effectiveness in promoting price stability and growth.

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# 22

### Central Bank Communications beyond "How Many?"

Austan D. Goolsbee

Thank you so much for the invitation to this conference. It's a special treat for me to see John Cochrane here, my old neighbor from across the street. John and Beth used to keep our emergency house key for us. The alarm company would call him if we were out of town and something went wrong. So, I'm hoping that if things go sideways in my talk today, John, you're still willing to be the emergency contact.

And I should also add now, to the great relief of John Williams and my other colleagues here, that these views are my own. They do not represent the views of the Federal Reserve System or other members of the Federal Open Market Committee.

Today, rather than talk about the economy at a high level, I wanted to narrow the discussion to talk a bit about central bank communications. It's a topic that has received a lot of attention—including on the previous panel today (see section titled The Next Strategy Reviews) and increased public scrutiny recently.

I came to thinking about this in an odd way. When I moved at the beginning of last year from the University of Chicago to the Federal Reserve Bank of Chicago, it felt like we had just lived through a really crazy moment in economic history. We had started a rather historically rapid tightening cycle, and there were a large number of fundamental economic issues that needed discussion and resolution.

This chapter is taken from the transcript of spoken remarks at the conference and retains the character of live speech.

Ready to talk about that, I went to my first appearances where the press was present. And the questions always centered on the same thing: how many rate hikes do you have for the coming year?

Now, I was a little disappointed and a bit dismayed because by itself, with no economic context or rationale or understanding of what a person thinks will be happening with economic conditions, the answer to the question of "how many" is basically just speculation. There's very little economic content in a question like that. Why would they not ask about things that are actually informative about future decision making, say, questions like "What's your reaction function?" "What is your economic worldview?" or "What are your risk assessments?" I puzzled on this and tried to think through why they did not seem as interested in these questions. Why did they seem more interested in context-free numbers than in a description of the economy?

I somewhat concluded that a bit of this is our own fault because some aspects of our current communications, especially in the Summary of Economic Projections (SEP), actually encourage exactly this kind of speculation. So today, I basically would like to make three points: (1) where I think Fed communications and particularly the SEP fail to deliver on the kind of economic information that it could deliver; (2) how we might improve that; and then (3) the important role that I think the Federal Open Market Committee (FOMC) participants' public speaking and writings can play in communicating their reaction functions and conveying their risk-management considerations. And I will conclude with a bit of a defense of the cacophony problem, which is a muchmaligned bugaboo. But I will say there are some aspects of it that I think are positive.

So, point one: what is the problem, as I see it, with the SEP?

Now, given the previous panel, I have a little comment about why we should care about this. But it's probably obvious why. Everybody here knows the communications issues of central banks; they have been important and with us from the beginning. They're closely tied to inflation expectations, to central bank credibility, and even to public trust. I don't know that I'm fully on board with Ben Bernanke's comment that monetary policy is 98% talking and 2% action. But we all understand the importance of people having a clear understanding of central banks' goals and strategies in the transmission of monetary policy.

The Fed and many other central banks' approaches to communications have changed dramatically over the past thirty years. And they have shifted to much greater transparency. One of the leading components of that has been the SEP, especially its "dot plot" of FOMC participants' interest rate projections. In that dot plot, each person on the committee gives an anonymous answer to the "how many" question and does so for the next several years. It is widely followed. It provides a dose of transparency about the diverse collection of views on the committee. And its influence seems to be spreading. It was a subject of discussion in the Bernanke report for the Bank of England, and European Central Bank (ECB) executive board member Isabel Schnabel raised it for consideration in a recent speech.<sup>1</sup>

As a starting point, it is worth noting that in the 2020 Hutchins Center survey of academic and private sector Fed watchers, only about 50% of respondents reported that they find the dot plot useful.<sup>2</sup> Now, I think one of the things that may be pulling that number down is that the SEP is not actually that useful for identifying FOMC participants' monetary policy reaction functions. I'm defining the reaction function broadly as how a person would react to changes in economic conditions, rather than in a technical way, such as what that person's policy function coefficients are in the Taylor rule or something like that.

I find myself mostly in agreement with the old Mervyn King argument that it's a sign of success for the central bank when markets react to the new data releases more than to the statements of central banker opinions.<sup>3</sup> And one of the key ways to achieve that

kind of outcome is to have people understand FOMC participants' reaction functions.

The SEP isn't that helpful in communicating them, partly because each participant's rate path projection is tied to a forecast of economic conditions. But, as you know, the SEP does not report which conditions forecast goes with which rate prediction. And the widely reported median does not give you a coherent observation, because the person making the median rate projection is not likely to be the same person who made the median inflation or the median gross domestic product (GDP) projection. So, without the connection of the forecasts of economic conditions to the rate projections, the dot plot is just a collection of opinions lacking economic content.

So, it's no wonder that the press doesn't ask about anything else, because our own major communications document implicitly says that an economic rationale isn't needed. It says, just tell us how many, and we'll put them on this dot plot and hand it out. And because it can't be connected to those economic conditions of what the participant thinks will justify that rate, there is no way to explain why they're saying what they're doing.

So, point two: how would we improve it?

I think we can make it better in a way that folks have already talked about. Now, I think that it's worth noting that this is actually a cousin to the old debate about time-dependent versus statedependent forward guidance. I know that there's controversy about forward guidance—some people hate it, and some people like it. But this is like the old Trident gum ad, where four out of five dentists recommend sugarless gum for their patients who chew gum. So, regardless of whether you like or dislike forward guidance, I think we can agree that state-dependent guidance is more useful than time-dependent guidance because it conveys economic content and an implicit reaction function. For example, in 2011, the committee saying it doesn't expect to raise rates for two years is not nearly as helpful as the Evans rule that says the committee will not consider moving rates until the unemployment rate is below 6.5%, as long as inflation is below 2.5%.<sup>4</sup> The time-based guidance is basically just an opinion. The Evans rule clarifies what the committee is watching, and it conveys information about the reaction function.

So now think about that for the dot plot. The dot plot is a lot like time-dependent guidance. It's not tied to anything, and we would be better off if it could be more like state-dependent guidance in conveying a reaction function.

So how could it be done? First, I'm going to echo some of the suggestions that are in Mickey and Charlie's [Levy and Plosser's] paper that we just heard about. I think it would go a long way to simply publish the matrix that matches each participant's dots with their economic forecasts. It doesn't need to be personally attributed to each member. But at least anonymously matching the numbers allows you to answer some clarifying questions. For example, suppose you observe a high-rate dot for the next year's funds rate. You could tell, if we published the matrix, whether that was a person who thinks the economy is overheating and they want to rein in inflation or some-one who thinks that faster noninflationary growth implies a higher equilibrium rate. Today, you can't tell the difference between those.

Over time, as we observed changes in the economic environment and the impact that they had on the economic forecasts and projected rates, that would reveal even more about the reaction functions. Another, more direct form of state-contingent information might be to add something like the way we do stress tests for banks or the alternative simulations in the Tealbook. We could do this by asking on the submission form: what would you think would be the appropriate action to take if X happened? Now, it wouldn't be as easy to implement that as publishing the matrix. But it's food for thought as another way we could convey reaction functions through more state-dependent-type guidance.

Finally, I'd like to say something about FOMC participants' public commentary. Since you know my goal, you know I support

participants conveying information about how they might respond to economic developments, rather than just sharing speculative opinions about rates. I find it helpful when my colleagues' speeches and writings explain their thinking and go beyond simply making predictions.

This idea highlights another important piece of communications-which is conveying the implications of unusual circumstances and risk management for setting policy. Especially in times of heightened uncertainty and unusual risk, the policy playbook gets complicated, and it requires more than just dots. And such times, as Larry [Summers] said (see chapter 20), seem to be happening with uncomfortably high frequency these days. The committee has historically communicated unusual circumstances and practiced this kind of risk-management policy for a long time. It shows up in formal voted-on FOMC statements, policy tilts, and other communications over the past thirty years, as when we were faced with the Asian financial crisis, the Russian default, the threat of deflation, the Great Financial Crisis, the Great Recession, and the pandemic. In all of these cases, those communications were an important tool to get us beyond a kind of a context-free "how many?" discussion and provide the public with better state-contingent information.

So, I will conclude with a plea that we try to push our communications, and especially the SEP, to better convey how we respond to economic conditions. I think it does mean a larger number of voices saying a larger number of things. Alan Blinder, in an old paper, and others have called this the cacophony problem.<sup>5</sup> And they will probably view it as a negative to have this much information getting conveyed this frequently to the public before every meeting. But I don't agree with the complaints about there being too many voices. Yes, of course, it would be easier to understand if there was just one voice talking about policy, and it gave just one opinion. But fundamentally, the FOMC is a committee with lots of views, and policy gets forged in that environment of discussion. Without intentionally trying to offend the US Senate, in my view, in the twenty-first century the FOMC has become the world's greatest deliberative body. And I think having folks on that committee with different worldviews makes for better decision making, not worse. There's nothing wrong with the public knowing these views, because that's reality. There isn't just one dot, and there isn't just one worldview.

So today, I feel like we're conducting policy during a fascinating and uncertain time. How we communicate will be critical. If we put out an SEP-style communication of information, we should endeavor to convey our deliberations and our thinking, not just our opinions. That's why I say that "how many?" is not enough. Thank you.

### Notes

- Isabel Schnabel, "The Future of Inflation (Forecast) Targeting," European Central Bank, April 17, 2024.
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# 23

## **Connecting Theory and Practice**

John C. Williams

It's wonderful to be back at Stanford—especially with John Taylor chairing this panel. John was my advisor during my studies here, and he hired me as his research assistant in the early 1990s. It was an extraordinary privilege to have those two most wanted positions.

Based on some of my past speeches, you may expect me to give a few pop culture references from the 1990s that capture my time at Stanford before I move on to the substance of my remarks. But the truth is, I was so focused on my studies that there wasn't time to rollerblade, listen to R.E.M., or go to the arcade just for fun. Instead, like many in this room, I chose to forsake fun for the study of economics. As a result, I am simply useless when it comes to 1990s trivia.

What brought me to Stanford back then was a sense of purpose. Growing up in the 1970s and 1980s, I witnessed the toll that economic turmoil, high inflation, and slow growth took on families. By the time I arrived at Stanford in the fall of 1989, the Federal Reserve under Paul Volcker had tamed the very high inflation of the late 1960s and 1970s. But the work was far from done. Inflation was around 4%—a level, I should note, that is well above today's 2.7%. And it was not yet clear how the lessons of the past would shape the policies of the future to ensure economic prosperity and stability.

But change was afoot, and it was an exciting time to be thinking about economic policy. With the advent of inflation targeting, the practice of monetary policy was on the cusp of a revolution. The Reserve Bank of New Zealand led the way in December 1989, and the Bank of Canada and Bank of England soon followed suit. I recall seeing the excitement around this change when I was a student, as I listened to policymakers from New Zealand and Canada describe their new frameworks.

At the same time, economists were reassessing what good policy looks like and how it could make a difference. In particular, John Taylor and others were reexamining the theory and evidence behind the ways policymakers could consistently deliver low and stable inflation in the post–Bretton Woods era. My introduction to this topic was running multicountry model simulations for John's book, *Macroeconomic Policy in a World Economy*, which built on years of research by many experts.<sup>1</sup> The book provided a rigorous analysis of alternative monetary policy regimes in an open-economy context. This line of research culminated in John's seminal paper, "Discretion versus Policy Rules in Practice," which brilliantly synthesized theory and experience to yield clear prescriptions for good policy.<sup>2</sup>

What I learned then and have carried with me these past thirtyfive years is the importance of connecting theory and experience. The theories that shape good policy are derived from the experiences of the past, and therefore create lessons for the future. This prepared me well for my career, and it's what I'm going to talk about today.

Before I go further, I need to provide the standard Federal Reserve disclaimer that the views I express today are mine alone and do not necessarily reflect those of the Federal Open Market Committee (FOMC) or others in the Federal Reserve System.

## Act I: The Past

Between the time I left Stanford and the onset of the pandemic in 2020, the theory and practice of monetary policy changed dramati-

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cally.<sup>3</sup> Policymakers sought to avoid the mistakes of the past and worked hard to create new frameworks for the future. And economists developed and refined theories to guide policy. The result was a prolonged period of price stability that spanned a quarter of a century.

We learned three key lessons from theory and experience. The first is that central banks must own the responsibility for price stability and have the ability to act as needed to achieve it. Policymakers have the tools to attain and maintain low and stable inflation. However, too often in the past—most notably in the 1970s—central banks behaved as if they were powerless to control inflation. Although accountability for price stability is critically important, history also teaches us that central banks that have independence in their actions are more successful at delivering price stability and wellanchored inflation expectations.<sup>4</sup> In short, our job is to be the protector of price stability.

The second lesson is the importance of transparency and, in particular, the clear communication of a goal for price stability in the form of an explicit numerical inflation target. Agreeing on a longer-run target reinforces public accountability for price stability and focuses the internal policy debate on how to best achieve that goal. Central banks that adopted inflation targeting led the way on this. And the FOMC announced its 2% longer-run inflation goal in January 2012 as part of its Statement on Longer-Run Goals and Monetary Policy Strategy.<sup>5</sup>

That leads to the third lesson: the importance of well-anchored inflation expectations. By communicating an explicit inflation target—and then delivering inflation consistent with that target—central banks earn credibility with the public. That helps anchor expectations, which, in turn, contributes to low and stable inflation.<sup>6</sup> This feedback loop between policy actions and communications, expectations, and price stability is now a core tenet of modern

central banking, but it wasn't something that was fully appreciated or accepted thirty years ago.

It's important to note that anchoring inflation expectations at the target level is symmetric. Very low inflation—or, worse, deflation—can be as problematic as high inflation, presenting challenges for policymakers and harming the economy.<sup>7</sup>

## Act II: The Present

As a result of the linkages between theory and experience, our three lessons became three principles. And they helped us achieve a quarter century of low and stable inflation and well-anchored expectations.

Then came the pandemic, which dealt the most dramatic shocks to the economy in generations. Severe imbalances between supply and demand, exacerbated by Russia's war in Ukraine, caused inflation to skyrocket in most countries across the globe. In 2022, inflation peaked at 7% in the United States, rose to 8% in Canada, and exceeded 10% in the euro area.

How did we, along with other central banks, address these spikes in inflation? In the United States, we stuck to our three key principles. First, the FOMC owned the responsibility for reining in inflation.<sup>8</sup> Achieving price stability and maximum employment is part of the FOMC's dual mandate, and we took strong, decisive actions to bring inflation down.

Second, we have been unequivocal and transparent in our commitment to achieving our 2% target on a sustained basis. This message has been emphasized over and over in the FOMC's postmeeting statements and policymaker communications.

Third, we have paid close attention to inflation expectations, and our actions and credibility built up over the preceding quarter century helped keep inflation expectations anchored.<sup>9</sup> Although mediumand especially short-term inflation expectations rose notably starting in 2021, they retraced those gains over 2022 and 2023.<sup>10</sup> Indeed, three-year-ahead expectations returned to prepandemic levels by late 2022, and short-term expectations did so in late 2023.

## Act III: The Future

What do the lessons of the past mean for the future of monetary policy? I believe they prove, once again, the importance of theory and experience.

Years of experience—and years of careful analysis—have taught us that, first and foremost, central banks must own the responsibility for maintaining low and stable inflation and have the independence of action to achieve that goal. Price stability is absolutely essential for economic prosperity, and it's crucial for achieving and sustaining maximum employment over the longer run.

Theory and experience have also shown the importance of transparency and clear communication, including setting an explicit, numerical longer-run inflation target, and of taking appropriate actions to support the achievement of that goal. These are critical in anchoring inflation expectations—which, in turn, help keep inflation at its target level.

The future is uncertain. But as we continue to move closer to our 2% longer-run inflation goal, I'm confident that we have the foundation of theory and experience to guide us in restoring price stability and to set the stage for sustained economic prosperity. We are committed to getting the job done.

### Notes

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- 4. Luis I. Jácome and Samuel Pienknagura, "Central Bank Independence and Inflation in Latin America—Through the Lens of History," International Monetary Fund Working Paper No. 2022/186 (September 2022); and D. Filiz Unsal and Chris Papageorgiou, "Monetary Policy Frameworks: An Index and New Evidence" (November 7, 2023), https://data.imf.org/api /document/download?key=74044185.
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- 6. John C. Williams, "Inflation Targeting and the Global Financial Crisis: Successes and Challenges," essay presentation to the South African Reserve Bank Conference on Fourteen Years of Inflation Targeting in South Africa and the Challenge of a Changing Mandate, Pretoria, South Africa (October 30-31, 2014). See also Athanasios Orphanides and John C. Williams, "Imperfect Knowledge, Inflation Expectations, and Monetary Policy," in The Inflation-Targeting Debate, ed. Ben S. Bernanke and Michael Woodford (Chicago: University of Chicago Press, 2004); Athanasios Orphanides and John C. Williams, "Inflation Scares and Forecast-Based Monetary Policy," Review of Economic Dynamics 8, no. 2 (April 2005): 498-527; and Athanasios Orphanides and John C. Williams, "Inflation Targeting under Imperfect Knowledge," Federal Reserve Bank of San Francisco Economic Review (2007): 1-23. There is a large amount of theoretical and empirical literature on the formation of expectations. See, for example, George W. Evans and Seppo Honkapohja, Learning and Expectations in Macroeconomics (Princeton, NJ: Princeton University Press, 2001); Ulrike Malmendier and Stefan Nagel, "Learning from Inflation Experiences," Quarterly Journal of Economics 131, no. 1 (February 2016): 53-87; and Michael Weber, Francesco D'Acunto, Yuriy Gorodnichenko, and Olivier Coiboin, "The Subjective Inflation Expectations of Households and Firms: Measurement, Determinants, and Implications," Journal of Economic Perspectives 36, no. 3 (Summer 2022): 157-84, and references therein.
- David Reifschneider and John C. Williams, "Three Lessons for Monetary Policy in a Low-Inflation Era," *Journal of Money, Credit and Banking* 32, no. 4 (November 2000): 936–66.

- 8. For example, see Jerome H. Powell, "Monetary Policy and Price Stability," remarks at Reassessing Constraints on the Economy and Policy, Federal Reserve Bank of Kansas City, Jackson Hole, WY (August 26, 2022).
- 9. John C. Williams, "A Steady Anchor in a Stormy Sea," remarks at SNB-FRB-BIS High-Level Conference on Global Risk, Uncertainty, and Volatility, Zurich, Switzerland (November 9, 2022).
- 10. Survey of Consumer Expectations, Federal Reserve Bank of New York, Center for Microeconomic Data (April 2024 survey).

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## GENERAL DISCUSSION

- JOHN TAYLOR: Okay, we have a lot of time for some good questions if anyone wants to raise their hand. If not, I guess I ... oh, there's Andy [Levin], then John [Cochrane].
- ANDREW LEVIN: First of all, many thanks to John [Cochrane] and John [Taylor] and Mike [Bordo]; it's been a really amazing conference today, and I'm looking forward to Ed Nelson's talk this evening. I'd just like to raise one question for President [Austan] Goolsbee. When Don Kohn was a leader at the Fed, one of his favorite sayings (which he repeated many times when I was a staffer there) was that "communication is a work in progress." So, when the dot plot was created in 2011, everyone involved in that initiative (including Charlie Plosser and Loretta Mester) viewed it as just a single step on a trajectory toward further improvements in communication. Over the past few decades, the FOMC [Federal Open Market Committee] had been producing economic projections under the assumption of appropriate policy, but didn't publish any information about what those assumptions were. Thus, the dot plot was simply an effort to inform the public about committee participants' assessments of appropriate policy.

Now it's great to hear about the ideas that you've mentioned about publishing a matrix and identifying alternative scenarios. Moreover, each participant could be asked to write down their own policy benchmark, which could be a variant of the Taylor rule or a nominal GDP-targeting rule or some other simple benchmark. Indeed, it's notable that the FOMC's previous framework renewal in 2019–20 was solely focused on adjusting the wording of the Statement on Longer-Run Goals and Policy Strategy. As you and your colleagues are looking ahead to the next framework renewal, is it feasible for you to consider that perhaps the Summary of Economic Projections may be the "lowhanging fruit" in terms of enhancing the Fed's communications? AUSTAN GOOLSBEE: Okay. Thank you for that. There's some interesting ideas, and there's a couple of questions in that. I wasn't thinking of the strategy review. And I was thinking more narrowly about communication.

It's worth—each of the things you're describing, like that participants would write down what rules they're following, what data they're watching—that's exactly in the spirit of what I think would be useful. I could see that, as compared to nothing, the SEP [Summary of Economic Projections] conveys a lot more information.

I will say, I have unease with making projections so far out one, two, three years—that people might come back, if you're putting names on them, and then they'll say, oh, you're the dummy who thought this was going to happen in 2026.

But all of those, I think, are worth thinking about. Because I do think there is a little bit of the element of low-hanging fruit. We're so close to being able to convey information that would really be about individual members' reaction functions. And the public could get a sense of if X happened, here's how they might react. TAYLOR: John, go up ahead.

JOHN COCHRANE: I'll address this to John Williams, but it's a larger question which anyone might take, because we've been talking about it all day. John said a 2% numerical target is great because it gives accountability. Yet the target was 2%; we hit 8%. Cumulatively, inflation is 15% or 20% over what it was supposed to be. You can correct me on the cumulative number. More than 8, because 8 was the one year. But that is a major miss, and I don't see any sign of accountability. Internally, I don't see at least a "What the hell went wrong? What are we going to going to do about it?" Externally, I don't see anyone holding the Fed accountable, including Congress, the administration, or the media.

GOOLSBEE: Never change, John. Never change.

COCHRANE: Other central banks are not having at least any sort of public inquiry about what went wrong either, or suffering any inquiries or repercussions. As you know, formal accountability was part of the initial inflation-targeting regimes.

"Accountable" usually means some repercussion for failing a task. Perhaps you define accountability in a different way than "The target is 2% and we expect to have to explain what went wrong if there is a major miss." If so, I'd love to hear it.

JOHN WILLIAMS: Yeah, well, first of all, other countries have been doing various legislature-mandated kinds of reviews and things like that. So that actually is happening in some places. And of course the Bank of England just had the Bernanke report themselves. I think accountability—obviously the chair testifies to Congress regularly and explains the decisions we make and where we've missed on our goal. I think the accountability is really about, we got hit by enormous shocks, we made our own decisions, which obviously added monetary stimulus during 2020 into 2021. And then the point of the accountability is, we're absolutely clear that 7%— PCE [personal consumption expenditures] inflation peaked at 7.1%, our target is based on PCE inflation—this is totally unacceptable, and we have to use the strongest measures we have to get the inflation back to 2% and act every single day towards that goal.

So there's no question that we missed our target by something like five percentage points in one year. And then we acted decisively, and so far have been helping—a lot of factors are bringing inflation down—but I think restrictive monetary policy is one of the reasons we've gone from 7% inflation to five to three, and now at 2.7 and ultimately get back to two.

I think the important thing on the accountability here is also to make sure that inflation expectations are well anchored, so that when you look at households—I'm talking about households, not just financial markets, and not just economists—they are expecting now because of the Fed's actions and, I think, our communications, they expect inflation will be over the next one, three, five years similar to the inflation they saw before the pandemic. I think that is a remarkable statement about the relationship between accountability, obviously the actions after the extraordinary period of the pandemic, and the war—which again, I agree with Yuriy's [Gorodnichenko] comments, it's not just the pandemic, there were a lot of huge shocks—to bring inflation down decisively, as quickly as we can, and get it on a sustained base back to 2%. So I think that's a part of accountability too, not just going back and saying, "Who's holding us accountable?"

I do think that one of the things that—we're not doing the framework review now—but to me, just speaking for myself, I think to fully understand what the lessons of the past four years are, we need to see how this plays out. If you asked me—or you, John, because we've talked over the years—two years ago, "What were the lessons of the pandemic and monetary policy?" we would've come up with some tentative answers. If you asked a year ago, if you asked in December of last year, you might've come up with a very different answer. If you asked today, I think you come with a different answer. What that teaches me is that we need to really learn what happened, how did monetary policy—fiscal policy, supply and demand shocks, shutting down economies, reopening them around the world—how did that affect inflation or economies, and what are the real lessons from that?

I think I've learned not to say what inning of the game we're in or what quarter we're in, but we still don't know the answer to these questions. I know that one of the themes is to show humility, but this is the one thing that we have to be humble about. We really don't know all the lessons from this, and I think it's important for all of us to take some time and get all the evidence, not just from the United States, but from the other advanced economies. And having worked closely through my role in the BIS [Bank for International Settlements] with the central banks around the world, learning from their experiences too. Because some of them moved aggressively early—as, Amir, you talked about—and some waited longer. Let's get all of that evidence before we really come to firm conclusions.

GOOLSBEE: In a way, if I could add one last thing. WILLIAMS: Sure.

GOOLSBEE: The thing about a 2% target is that I feel like it implicitly says, whose job is it to uphold accountability? And it's that the market and it's expectations that are the judge of accountability. The frustration in your voice is like, well, I saw that the inflation rate was way higher than 2%, so I want them to be punished. But it lays out that the market is the one to decide that.

And the market decided that the Fed did not do a bad job, that even as—if you think of Emi's graph—in the earlier periods, when headline inflation went up, expectations went up. The fact that the market did not expect that the inflation would last says, I think, you've got to cut a little slack too. I wasn't on the committee at that time, but I think you've got to cut it a little slack.

TAYLOR: Amir, you want to comment?

AMIR YARON: I'm not going to get into the Fed accountability issue here. I just want to actually follow what I think John is trying to say. I think this was a period with huge shocks. And it's one of the issues—now I'm talking with maybe the more academic hat—we've got to figure out. These seem to arrive more frequently perhaps than they used to. We've got to find a way to put these things into our models in a more salient way than just our usual, the way we usually treat them. And that could be one important tool to at least deal with these things as we go forward. CHRIS CROWE: Hi, Chris Crowe from Capula. I think that a lot of the arguments for central bank transparency are sort of unanswerable, but one paper that always gave me pause in this debate was Morris and Shin's work arguing that central bank communications become a kind of focal point for the market and lead to market participants putting too much weight on what the central bank says.

And now, working in financial markets and talking to colleagues who trade and listening to central banks speaking, I think that kind of argument seems quite relevant to me in my current role. It's sort of reminiscent of the joke complaining about the quality of the food, but also saying that the portions are so small: I think there's an element of that when markets listen to central bankers. So I was wondering if there's something that central banks can do to get the markets to maybe listen to them a little less?

GOOLSBEE: I was going to say, on the Morris and Shin paper, and there are a few papers, they're fun papers. I think they're quite important. The idea, in a way, is the market stops finding out information for itself, and it grows addicted and dependent on the central bank to give it the information. The only thing that I'll observe is, if you plot what the committee has been saying, and then you plot what the market implies, it's the opposite dynamic.

We've been very steady, and the market is like—if the SEP says the Fed anticipates three rate cuts for the year, then that must mean seven! And then Jay [Powell] has a press conference and they leap to "Well then, it must be down to one." And so that, in spirit, is the opposite of the implication of that theory, I guess I would say. WILLIAMS: Yeah, I'll get very geeky, nerdy on this. Lars Svensson had this brilliant counterargument, which was published in the *ER* [*Economic Review*] as well. And you know, Morris and Shin, if you can get in that model, that one particular model, if you can get better and better communication, that result is turned around. The more communication is better. But of course we all want for

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#### **Policy Panel**

the world to understand our reaction function for when whatever data comes out, the markets respond to that. And that's kind of the way a good central bank monetary policy would work.

And actually that is the way it happens most of the time. You get a strong employment report, you get a high CPI [consumer price index], the market adjusts to that. So I think that's what happens most of the time. Again, going back to this theme of the past few years, can you expect that to happen in a pandemic or afterwards with all the other things that are going around? Well, no, I think these are uncharted waters, and so I think that the forward guidance and more communication are helpful. But again, the hope is that in normal times, whatever that reaction function is, is kind of embedded in how markets respond. And I think that is true.

TAYLOR: Okay. You're up, Mike.

MICHAEL BORDO: My question is for Amir Yaron. When you were telling us yesterday and today what you did in early October 2023 to prevent a financial crisis and stabilize the Israeli economy after the Hamas attack, I was remembering what Vice Chairman Roger Ferguson told us what he did at the Fed after 9/11 when Alan Greenspan was trapped in Europe. My question is: How much preparation did you do? How did you do it? Was your experience sort of conditioned by the fact that Israel is virtually always in a war, and did you use scenario analysis? Did you do war games? It would be very nice to know about how you prepared. YARON: All right, you expect a lot of questions, not that one.

So, look, we have a large toolbox. And like many central banks and us, in particular, we always like to make sure we know what our toolbox is, expand it. Definitely, COVID also got us experience on the other side. But we never sold reserves, for example. And there's a lot of operational issues before this event.

So yeah, you want to have these tools around. You want to think about them. You do a lot of preparations. But then when the time comes, you do have to make the judgment call of Which one of these is the appropriate one? And how much of it is to use?

So as I mentioned, we announced we were going to use up to 30 billion. But in fact, we used only 8. So as I mentioned, the market thought—we tend to—there's a lot about transparency here. Sometimes I don't like it. But we tend to announce what our reserves are. That goes back to Stanley.

The beginning of every month, the market was waiting to see, How much did we actually utilize it? And the market thought we were intervening even more or selling more than we actually had to. And how you do all of that is also an issue.

But the bottom line: we've used 8. Once the market saw, we only used 8. Some of the issues in the north border got settled. And as I showed you, the exchange rate actually went down to a level that was even lower. It appreciated more than the starting point. And that had a periphery effect on a lot of things.

So to answer your question, it's a combination of preparation. It's a combination of prior experience. And then, when it comes, you can't be on autopilot.

JAMES BULLARD: Jim Bullard. So there's been a lot of talk about possible reforms to the SEP. So one way to look at the SEP is just that it's a sort of immature form of communication with the public that's interested in monetary policy. Why not just produce a quarterly monetary policy report like other central banks do? Shouldn't that be the international standard? If you produce a report, it can be many pages long; you can address peripheral issues and give a fulsome discussion of the state of the economy and the state of monetary policy. And then individual members can go out and refer to the monetary policy report and say how their views differ from what is presented in the report. So it seems like this might be a better way to go than to take the flawed and sort of fragmentary information that's given in the dot plot and start to color the dots different colors and put stripes in there, and stuff like that.

GOOLSBEE: Maybe, I guess I'd say. You were there, and John was around when they were coming up with the dot plot. And I know that if you go back and look at the transcripts, there also was discussion and debate about "Can we have a consensus forecast?" And they decided no.

And I can see why they would not be able to come up with a consensus forecast. It depends on what would be in your monetary policy report. If the monetary policy report would have to get a quite diverse committee to agree on a thing, I feel like we might spend a lot of time writing that report, and that could be spent doing otherwise.

So in spirit, your comment sounds right. People can explain how they think. That goes in my space of what to do.

WILLIAMS: Because I was there, a part of that, and there was an effort to try to figure out how to do that. We have nineteen participants on the FOMC. One of the things we all believe is that's a strength. It's a range of views, a range of backgrounds, different perspectives. And trying to find a way that conveys kind of a center of the committee, and at the same time the diverse views that change over time, is challenging. I think when you go to the consensus forecast and model, you are basically assigning the problem to everybody—let's all agree to something—rather than assigning the problem of "tell me what you really think." So I think it's a trade-off. I mean, I would love it if we could do all these things, but I think this is optimization under constraints. That's what economics is, and that's what policymaking is.

But I would also emphasize something that's important: that the SEP is not a decision of the committee. It represents the nineteen views. You're asked questions like "What's GDP going to be in 2026?"The committee is focused on the monetary policy decisions and how to communicate them. And that's a different thing than just coming into the room, talking to your economists, and saying, "Here's where I think inflation and unemployment and GDP and interest rates are most likely going to be." And I think, if anything, that there is probably too much attention on the SEP as a committee thing rather than the FOMC statement, and obviously the chair's press conference and our communication. TAYLOR: Amir.

- YARON: I'll just say, the international standard board that you—I mean, it's just infeasible for many central banks, just because there'll be three people. I mean, the minute—well, obviously, for the big central banks, where there's a large enough board, that's feasible.
- EMI NAKAMURA: Emi Nakamura. One of the challenges with banking regulation is that if you do a really great job in banking regulation and there are never any bank runs, then there's always this cost of the bank regulation and people can see it very clearly, and you try to tell them, well, if we hadn't done this bank regulation, there would've been terrible bank runs. Now to draw the analogy here, when you look back in time and you ask yourself with the benefit of hindsight, what would we have done? Suppose that you had, suppose in your mind you would've hit the 2% target. So that may have involved much larger interest rate increases and certainly would've had an impact on the stock market. Certainly if there'd been any change in employment growth, there would've been a question as to whether that was a consequence of the Fed's interest rate increases. And then I guess you may have said, well, had we not done it, inflation would've gone up to 8%. But it might've been a tough sell. Anyway, I'm curious to know how you think about that with the benefit of hindsight, how you think about that trade-off.
- WILLIAMS: Well, John just said we're out of time, Emi, so I don't know if we can do this.

TAYLOR: You've got one minute.

WILLIAMS: Darn. It didn't work.

You know, I get it. I understand your question. I'm going to give you an unsatisfactory answer. It's that, as a policymaker, that's not the problem that we do; the problem is what you knew at the time, what were the trade-offs you thought you were facing. Ex post, going back, clearly the risks of economic weakness in 2021 were much less than they actually were, because the economy responded much differently. So I think that, the way I tend to think about 2020 and 2021—especially, like I said, the first half of 2021 is that the uncertainty was just enormous. And you're basically doing—I'm a student of Tom Sargent as well—you're trying to defend against the really bad outcomes. That's what we were doing in March of 2020. What's the really bad outcome is if the Treasury market stops functioning; that's what's a really bad outcome.

So I think the trade-offs were really about the tail risks. The tail risks clearly, having lived through all of this, went from a severe economic downturn that lasted for a long time to very high inflation. And so we had to go from risk management on one side, to guard against one set of risks, to very strongly, decisively on the other. It's not really the Phillips curve or the sacrifice ratio, but more of, I'd say, managing those risks. And I was obviously a very strong supporter of switching monetary policy in that direction and moving very strongly given the risks of unanchoring inflation expectations.

TAYLOR: So we have to have a last question. John Gunn.

JOHN GUNN: Hi. John Gunn, retired from Dodge and Cox investment. Anyway, they're always great sessions, but I just have one quick question. The Bureau of Labor produces an inflation number that's never restated, and it is never restated because it's keyed to Social Security and all kinds of stuff. And so that number comes into your offices and you react and figure out what you're going to do. Do you ever investigate how that number is arrived at? GOOLSBEE: Yes, in the sense that we look at a lot of measures. That's the most important. It's the gold standard worldwide of price measurement.

GUNN: So you look at other inflation measures.

GOOLSBEE: Absolutely, all different kinds of price measures. And there has been an explosion of private sector measures. I was involved with one with Pete Klenow, who's here at Stanford. He and I got this online data with prices and quantities from Adobe for millions of online transactions, and Adobe now compiles an online inflation price index. And sometimes, it can look very different from the CPI. The New York Fed puts out a lot of data on various price measures, and we look at all of it.

GUNN: Great.

TAYLOR: Thank you so much. This is great.

# MILTON FRIEDMAN AND THE SECOND WAVE OF THE GREAT INFLATION

## INTRODUCTORY REMARKS

John B. Taylor

I am very pleased to introduce my good friend and monetary expert Edward Nelson, who has written much about the contribution of Milton Friedman. His lecture tonight is a sequel to the two-volume study *Milton Friedman and Economic Debate in the United States,* 1932–1972. The objective of his work is to provide an account of Milton Friedman's role in a succession of major economic debates from the start of 1973 through his death in November 2006.

As Ed will make clear in his discussion this evening, Milton Friedman did much to instill a rule-like approach to monetary policy. The title of Ed's talk is "Milton Friedman and the Second Wave of the Great Inflation, 1976–1980." There are many fascinating quotations and references to Friedman, his critics, and his followers. Thank you.

## **24** Milton Friedman and the Second Wave of the Great Inflation, 1976–1980

Edward Nelson

The discussion that follows draws on the author's book (a complete draft of which is available online), *Milton Friedman and Economic Debate in the United States, 1973–2006.*<sup>1</sup> The book, consisting of two volumes, is a continuation of my previous two-volume study, *Milton Friedman and Economic Debate in the United States, 1932–1972* (Nelson 2020a and 2020b; see figure 24.1). The focus of these books is on Milton Friedman's economic framework and how he applied it in his contributions to debates in research and public policy forums. It is an account written from the perspective of someone in Friedman's own research field of monetary analysis and macroeconomics.

The 2020 volumes consider the pre-monetarist years of Friedman's activity in economics, the changes in his thinking (and the impetus for those changes) that turned him into a monetarist, the details of his economic framework, and his engagement in research and policy debates during the first twenty-two years of the period (1951 onward) in which he was a monetarist. The book ends on the eve of the severe inflation breakout of early 1973. The continuation volume covers the period from 1973 to 2006.

The coverage of both the study covering 1932 to 1972 and that covering 1973 to 2006 spans Friedman's research contributions and

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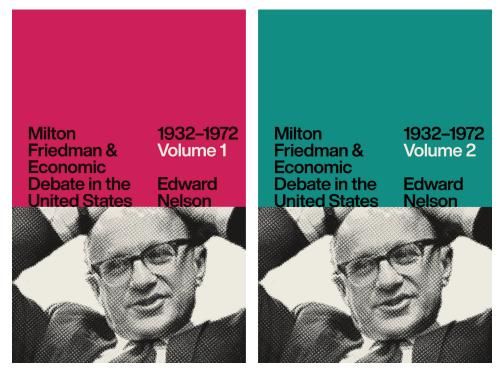


FIGURE 24.1. Edward Nelson, *Milton Friedman and Economic Debate in the United States*, 1932–1972 (2 vol.; University of Chicago Press, 2020).

his interventions in the public square—for example, his *Newsweek* columns and other op-eds, his many appearances on television and in other media, and his books coauthored with Rose Friedman. In the 1973–2006 study, this public policy activity absorbs an increased proportion of the coverage. This tilt in the coverage reflects Friedman's concentration in this period on public policy rather than research. In addition, in light of Friedman's move to California at the turn of 1976/1977, the continuation volumes predominantly concern Friedman's years at the Hoover Institution rather than at the University of Chicago.

In the present discussion, I will focus on a single item in Friedman's public policy activity—one that spanned the period

surrounding his move to California and the Hoover Institution. I consider his prediction and analysis of the second wave of the United States' Great Inflation. I define that second wave as the rise in the inflation rate from its trough of 4.8% (the December 1976 twelve-month rate)—a rise that culminated in double-digit inflation rates in 1979, 1980, and 1981.

The discussion of this episode will not primarily involve considering Friedman's research publications. His relevant statements on inflation appeared in nonresearch outlets. These statements are revealing, however, about the monetary framework *underlying* Friedman's research—including the body of work produced with Anna Schwartz. A look at this episode will also shed light on how his viewpoint contrasted with—but helped reshape—thinking in policy circles and the economics profession during the late 1970s, in the lead-up to the Volcker disinflation.

## The Second Wave of the Great Inflation

The United States had so-called twin peaks of inflation during the Great Inflation—with double-digit rates recorded in the mid-1970s and in the period starting in 1979 and continuing into the early 1980s. It is the second wave of the Great Inflation, which featured the second of the twin peaks, that will be the concern here.

Over the years, some skepticism has been expressed about the genuineness of the second peak. In particular, the fact that the Consumer Price Index (CPI) rate was pushed up by the second oil shock and by the statistical treatment at the time of mortgage costs has been used as a basis for doubting whether this second period had double-digit inflation that could be attributed to the creation of excess demand. But, although the peak of CPI inflation in 1980 was undoubtedly boosted by special factors, the Personal Consumption Expenditures (PCE) inflation rate also shows a double-digit rate. The GDP deflator inflation rate likewise reached

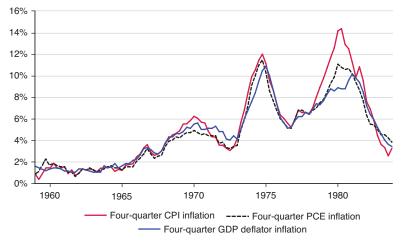


FIGURE 24.2. US inflation rates, 1960 Q1 to 1983 Q4. Source: FRED portal (Federal Reserve Bank of St. Louis).

double digits in the early 1980s (see figure 24.2). Furthermore, the notion that the second wave of the Great Inflation was at least as serious and insidious as the first wave is reinforced by considering the four-year average of a series considerably focused on at the time—the GNP deflator inflation rate (figure 24.3). This average shows a higher peak in the early 1980s than that in the mid-1970s.<sup>2</sup> So the case for viewing the second wave as having a severity comparable with the first, and as reflecting sustained forces put in place by aggregate demand policy, seems quite sound.

As background for the discussion of this second wave, table 24.1 gives the names and positions of several key personnel in US economic policymaking over this period.

## The Second Wave of the Great Inflation— Expected or Not?

In the mid-1970s, US Treasury bond pricing suggested that the mid-1970s inflation would not be repeated and that a further

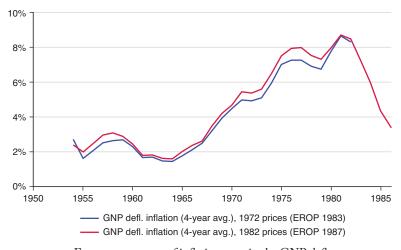


FIGURE 24.3. Four-year averages of inflation rates in the GNP deflator. Source: Council of Economic Advisers, *Economic Report of the President* (EROP), 1983 and 1987.

| Gerald R. Ford        | US president, 1974–1977                               |
|-----------------------|---|
| Jimmy Carter          | US president, 1977–1981                               |
| W. Michael Blumenthal | US Treasury secretary, 1977–1979                      |
| Charles Schultze      | Council of Economic Advisers (CEA) chair, 1977–1981   |
| Bert Lance            | Office of Management and Budget director, 1977        |
| Alice M. Rivlin       | Congressional Budget Office (CBO) director, 1975–1983 |
| Arthur F. Burns       | Federal Reserve chair, 1970–1978                      |
| G. William Miller     | Federal Reserve chair, 1978–1979;                     |
|                       | US Treasury secretary, 1979–1981                      |
| Paul A. Volcker       | Federal Open Market Committee vice chair, 1975–1979;  |
|                       | Federal Reserve chair, 1979–1987                      |

TABLE 24.1. Selected key figures in US government, 1976–1980.

decline in inflation to lower rates was likely. A *Business Week* article noted in early 1975, "It is highly unlikely that double-digit inflation will recur in this decade." And testifying in 1981 about US budget forecasts submitted at the end of 1977, a government official stated, "Nobody predicted the double-digit inflation that actually occurred in the 1979–80 timeframe. Those were not predicted to occur."<sup>3</sup> This

characterization neglected Milton Friedman's public interventions. A friend of his pointed this out to the *Wall Street Journal* at the end of the 1970s (Brunie 1979): "In your ongoing 'debate' about econometric models, it was particularly disturbing to read Michael Evans' comment . . . that no one correctly forecast inflation for 1978 and 1979. He's wrong, because Milton Friedman did."

Friedman made a sequence of predictions from 1976 to 1978, initially forecasting the turnaround in inflation, then indicating that inflation would reach double digits, and then suggesting a peak in the 10% to 13% range.<sup>4</sup> In the first half of December 1976, he stated that inflation would trough around February 1977. With respect to twelve-month CPI inflation, the actual trough was 4.8% in December 1976, as already indicated. Also in his December 1976 commentary, Friedman predicted a 7% to 9% average inflation rate over the February 1977 to mid-1979 period. On television in April 1977, he said: "I expect it's going to step up in the next year or two to 7% or 8%."Then, in the fall of 1977, in the wake of doubledigit M2 growth during 1976 having continued in 1977, he predicted in his Newsweek column and in public talks that there would be a return of double-digit inflation in 1979 or 1980. A Chicago Tribune report on one of these sets of remarks was titled "10% Inflation in 1980?" With regard to 1978 specifically, Friedman in a briefing to a financial firm in October 1977 stated that he saw 1978 inflation as being 7% to 10% (this was when US economists' consensus forecast was 6%).

In his *Newsweek* column of April 24, 1978, Friedman indicated that he saw February 1977 to October 1979 average inflation as being 7% to 10%. He went on to remark during a mid-1978 briefing, "It would be a miracle if inflation peaked below 10%, and 10 to 12% or 10 to 13% would be more likely." He assessed that peak as likely to occur in 1979 Q4. Like his other inflation predictions in the 1976-to-1978 period, this closely anticipated the actual outcomes, as the peak occurred in 1980 Q1.

## The Contrast with the Professional Consensus on Inflation and Stabilization Policy

In making these predictions, Friedman was again marking himself out from mainstream macroeconomic views. In fact, in the second half of the 1970s, Friedman's views on inflation—not just in their focus on monetary growth, but also more generally in their tracing the decade's inflation-to-aggregate-demand developments—were still encountering strong resistance, notwithstanding his recent Nobel Prize in economics in October 1976 and occasional generous remarks made about his influence, such as the statement made by the Federal Reserve Bank of San Francisco's president John Balles in January 1977: "Milton Friedman has altered the course of economic thinking."

In fact, resistance (in practical, policy-oriented discussions) to Friedman's views on inflation in fact went up over the years 1977 and 1978. In these years, he diverged from policymakers and many economists in the perspective that he took on the analysis and control of inflation.

The contrast between Friedman's views and the mainstream was brought out in discussions of stabilization policy during 1977. Across government agencies, there was a consensus that a very considerable resource slack existed. The director of the CBO, Alice Rivlin, suggested in January 1977: "With excess capacity and high unemployment continuing, demand pressures do not seem likely to lead to an acceleration of inflation.... [Aggregate demand] stimulus to get the rate of [real GNP] growth up to 5 or 6 percent would probably not add greatly to the problem of inflation."<sup>5</sup> Similarly in the new Carter administration, economic officials Bert Lance and Charles Schultze wrote in a joint statement in January 1977, "The overwhelming majority of 'serious macroeconomists' have called for expansionary economic policies," while Schultze remarked the following September, "Ample resources are available to permit further

expansion."<sup>6</sup> Among Federal Reserve governors, Chair Arthur Burns remarked in February and March 1977 that "there is now considerable slack in the economy" and "substantial amounts of idle capacity and manpower," while board member Charles Partee stated in October, "Sizable unused resources exist."

As of the first quarter of 1977, the reported US output gap estimate stood at about minus 9%. This severely overestimated slack, as the research of Athanasios Orphanides and his coauthors would document.<sup>7</sup> Also, slack was rapidly diminishing in 1977. Friedman did not present his own estimates of resource gaps, but he emphasized the fragility of outstanding estimates (notably that of the full-employment, or natural, rate of unemployment) and eschewed the usage of them in his own analysis of ongoing US economic developments.

In 1977, James Tobin criticized a Friedman *Newsweek* column on monetary policy being too loose, dated early October, with Tobin suggesting that the column's analysis implied an extreme view that there was now zero slack. Whether Friedman had that view or not, it ultimately became mainstream. The CBO now sees US output as crossing US potential GDP around 1977 Q3.

Though his prescriptions were consistent with an augmented Phillips curve framework, Friedman relied principally in his quantitative analysis on reduced-form linkages between nominal series (notably, monetary growth, nominal income growth, and inflation). This approach led him to believe in late 1976 that there was already considerable stimulus in the pipeline and that monetary policy settings should become less, not more, expansionary. In his December 6, 1976, *Newsweek* column, he offered this policy prescription: "Take it easy. Hold down government spending. Hold down the rate of monetary growth. Let the recovery proceed as it then would, at a moderate pace. As the recovery proceeds, reduce the rate of monetary growth still further, so that we can force down the rate of inflation gradually over a few years."



FIGURE 24.4. Aggregate rate of unemployment, January 1970 to December 1979. Source: FRED portal (Federal Reserve Bank of St. Louis).

This was not a widely shared prescription. In part, it reflected the fact that many other economists did not see the first-half 1970s experience as an instance of monetary policy generating high inflation-or even of expectational Phillips curve dynamics in action. Although it partially underlay his 1976 Nobel award, in many circles in the late 1970s the Friedman-Phelps story was seen as mainly useful in understanding the decade of the 1960s. The 1970s inflation was seen as different—as being overwhelmingly cost-push. Despite often being portrayed as a nuanced and modern way of looking at inflation, the cost-push perspective on inflation is, as Friedman often stressed, nothing new. It is also very mechanical: an approach in which the behavior of the aggregate inflation rate is traced, as though adding up items in a spreadsheet, to the behavior of particular cost and price categories-with these items in turn seen as having a life of their own, rather than as depending on the aggregate-demand/aggregatesupply balance.

According to this mind-set, the rise in inflation through 1976 was attributable mainly to autonomous forces, and the mid-decade rise in the unemployment rate (see figure 24.4) had little to do with

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the 1975 and 1976 disinflation. Alice Rivlin, for example, remarked in January 1977: "If we get double-digit inflation in the next year or so, it is much more likely to be from extraneous causes that have nothing to do with excess demand. We are not in an excess demand situation now. We have a great deal of unused capacity." She added: "The output gap and its attendant higher levels of unemployment and excess capacity explain relatively little of this reduction in inflation. The principal factors ... have been the ending of the effects of the one-time shocks which hit the economy in 1972–74."8 Likewise, in the Carter administration, Secretary of the Treasury Michael Blumenthal observed in January 1977: "Much of the acceleration of inflation during the first half of this decade was due to such outside shocks as the higher energy price imposed by the OPEC countries and severe weather."9 Arthur Burns, during his tenure through 1978, and his successor as Federal Reserve chair, G. William Miller, made many statements along the same lines.

## Who Was Most Responsible for the Second Wave?

As already indicated, ahead of the second wave of the Great Inflation, inflation troughed in the last full month of the Ford administration (December 1976). Furthermore, after its rise during 1977, inflation's further major surge in 1978 and 1979 largely occurred under Federal Reserve Chair Miller, who had been nominated by President Jimmy Carter. But, in contrast to accounts that associated the rise in inflation with the change in administration or in the Federal Reserve leadership, Friedman attributed the second wave of the Great Inflation overwhelmingly to actions taken by the Burns Federal Reserve, which had presided over the 1970s' second monetary explosion in 1976 and 1977—that is, renewed double-digit growth rates of M2. This rapid monetary growth had taken place in the context of real federal funds rates that, although less negative than had been the case in 1975, had been allowed

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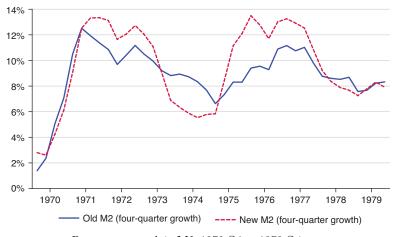


FIGURE 24.5. Percentage growth in M2, 1970 Q1 to 1979 Q4. Source: FRED portal (Federal Reserve Bank of St. Louis); Nelson (2024).

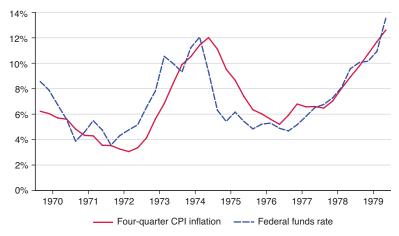


FIGURE 24.6. The federal funds rate and CPI inflation, 1970 Q1 to 1979 Q4. Source: FRED portal (Federal Reserve Bank of St. Louis).

to remain negative (and by a widening amount in 1977). See figures 24.5, 24.6, and 24.7.<sup>10</sup>

But although he viewed high inflation in 1978 and 1979 as having been locked in by the policies of the later Burns years, Friedman became critical of the Miller Federal Reserve. Like others, he

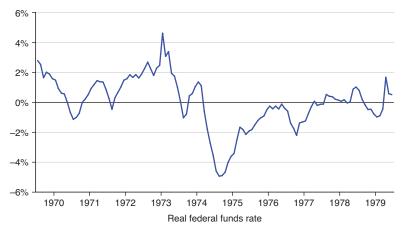


FIGURE 24.7. The real federal funds rate, January 1970 to December 1979. Source: Calculated using data in FRED portal (Federal Reserve Bank of St. Louis).

criticized its tightening of monetary policy (which certainly did occur) as being mostly too leisurely. Furthermore, as already suggested, Miller also had a cost-push outlook on inflation. For example, in January 1979 he wrote: "In sum, our arsenal of weapons against inflation is somewhat restricted."<sup>11</sup>

This outlook put Miller at odds with Friedman. The difference between them was not on the need to disinflate, but on the degree to which monetary policy tightening could deliver disinflation. Reflecting this difference, Miller in May 1978 reacted to a Friedman *Newsweek* commentary by observing: "In the last section of his article, Dr. Friedman asserts that 'We need a long-term program dedicated to eliminating inflation.' I agree wholeheartedly." The divergence with Friedman was brought out by Miller's next observation: "Monetary policy has a critical role to play, but it cannot alone bear the whole burden of combating inflation."

Friedman believed that it was the Federal Reserve, rather than the executive branch, that made the decisions that most mattered for the course of inflation. But Friedman was critical of the Carter administration on inflation, in good part because that administration

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articulated a nonmonetary, cost-push perspective. He believed that the administration, by advancing this perspective, hindered public appreciation of the demand-restriction steps that would be needed to produce disinflation.

Like Miller, the administration was explicit in viewing price stability as a desirable goal. This was reflected in Treasury secretary Blumenthal's remark early in his tenure: "Reduction in the rate of inflation is one of the goals of this administration."<sup>12</sup> When, over the subsequent years, the administration propounded a cost-push view of inflation, Friedman at times expressed incredulity, such as in April 1978 when he remarked: "Secretary Blumenthal knows as well as you and I do that inflation does not come from trade unions." On numerous occasions, however, the administration made clear that it indeed *did* view inflation in these and similar terms. For example, CEA chair Schultze observed in March 1978: "We can't wring this inflation out of the economy through measures which promote unemployment and economic slack. Such policies have only a limited impact on the kind of inflation from which we now suffer."<sup>13</sup>

Especially before 1979, the Carter administration diagnosed inflation in terms of special factors. These included rises in specific prices: those associated with US exchange rate depreciation (especially in 1978), weather (notably in 1977), rising world food prices (in 1978), and then food plus oil (in 1979). And, throughout these years, it put much emphasis on wage-push: pressures on prices associated with pay demands of US labor unions. The administration's nonmonetary outlook was reflected in its series of anti-inflation measures. These included a call in January 1977 by President Carter for prenotification of private sector price increases; an April 1977 Carter announcement of a set of specific measures designed to bring inflation to 4% by mid-1979; his attempts in February and April 1978 to revive the wage-price guidelines of the 1960s; and the October 1978 modification of these efforts—a package consisting of voluntary wage guidelines, voluntary price guidelines, and proposed

real wage insurance via a tax-based incomes policy (specifically, taxbased rewards for wage and price restraint). The president conveyed his outlook in April 1978 when he remarked: "Reducing the inflation rate will not be easy.... We will not solve inflation by increasing unemployment. We will not impose wage and price controls. We will work with measures that avoid both extremes."

And in the face of such endurance of cost-push views, Friedman reiterated his criticisms of them. He was a long-standing critic of wage-push ideas. He would sum up his position in April 1981: "To say that wages are a cause of inflation is somewhat like saying that wet streets are a cause of rain. Wage rises are a manifestation of inflation."<sup>14</sup>

In April 1978, Friedman observed: "President Carter's [anti-] inflationary package is like Hamlet without the Prince of Denmark.... Inflation is not caused by trade unions, business interests, consumers, or oil.... [It] has been around 1,000 years and, in all that period, only one medicine to cure inflation has been found: to hold down the rate of monetary growth and hold down governmental spending."

In a November 1978 television appearance, Friedman added: "The great confusion in this area is to confuse particular prices with prices in general. Why is it that people point to food prices as a cause of inflation, but I have seen nobody point to the sharp decline in the cost of computers, or handheld computers, or computing services? Has somebody been pointing to that as a cause of deflation?"

By this point, President Carter had made Alfred Kahn, known for his deregulation initiatives, the administration's "anti-inflation czar." Carter indicated that Kahn would be "my new partner in controlling inflation in this country." Friedman reacted by observing that Kahn had done a "remarkable job" on deregulation but that it was "sheer delusion" to see deregulation as key to disinflation. He feared that this was the direction in which the administration was going with the Kahn appointment. That fear was partially borne out by the president's remark in mid-1979: "The best anti-inflation medicine, in my opinion, is real competition under the American free enterprise system."

Friedman was also concerned that Kahn's new job would involve him in stifling market forces, as propounding the administration's incomes policy would, in effect, consist of trying to prevent US wages and prices from being market determined. This concern was consistent with an early news report on Kahn's views, which stated that if he was forced to choose, Kahn favored mandatory wage and price controls over a recession.

## The Tidal Year of 1979

In 1979, in drafting the book version of *Free to Choose*, Milton and Rose Friedman titled their final chapter "The Tide Is Turning."<sup>15</sup> This referred principally to public opinion on the role of government. But 1979 also proved to be a tidal year regarding views in policy circles in 1979 on the causes and control of inflation—with this change in views rapidly reflected in policy stance.

The *Economic Report of the President* for 1987 noted that the 1975–79 expansion "ended in a double crescendo of rising inflation and interest rates and falling economic activity."<sup>16</sup> As this process unfolded, Friedman wrote in August 1979: "The problem is not, as President Carter asserts, a lack of confidence. The problem is rather that the public is very confident that the government will produce inflation and will mismanage the economy. We do not need more confidence in bad policies. We need better policies."<sup>17</sup>

By the time Friedman was writing these words, major changes were afoot in policymaker thinking, as well as in the consensus perspective of the economics profession, regarding inflation. Far-reaching revisions in official estimates of the output gap at the start of the year, together with increasing recognition of a rising natural rate of unemployment, helped reconcile the decade's Great Inflation—including the ongoing second wave—with an excess-demand account. By 1982, Ben Bernanke, then at Stanford University, could refer to the "excess-supply bias of earlier estimates" and a "growing consensus that aggregate demand was overstimulated in the late 1970s."<sup>18</sup> In policymaking, Paul Volcker became Federal Reserve chair in July 1979 and viewed inflation as monetary in nature.

There were many divergences between Friedman's prescriptions and the monetary policy of the Volcker Federal Reserve. But a lasting break in officialdom occurred in 1979, reflected in Volcker's perspective and consistent with Friedman's position: monetary policy now had special responsibility for controlling inflation. This change would be clear in Volcker's observation in August 1983: "We have to be particularly sensitive to inflation: that is a monetary phenomenon; that's more directly in our bailiwick."19 And with regard to the second wave of the Great Inflation, Volcker-who had been vice chair of the Federal Open Market Committee in the second half of the 1970s-articulated a retrospective judgment that lined up with Friedman's. In an appearance in 1982 alongside Anna Schwartz at an event in New York City, Volcker gave a negative verdict on monetary policy in 1976 and 1977. He observed that in the United States, noninflationary economic expansion "went on in the early sixties: and [then] the Vietnam War came along and all the rest, but we did have a five-year period where that happened. It began to happen [again], in my judgment, in '75 and '76, coming out of the recession. And then, for a variety of reasons, we blew it."20

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### Notes

These remarks were also presented at a seminar at the Federal Reserve Board. The author is grateful to conference and seminar participants for comments.

- More details on the events, quotations, and data referred to below are provided in that book manuscript (Nelson 2024). In particular, the manuscript provides details on the interviews, speeches, and other outlets in which Friedman made key statements that the discussion below references.
- See also Dornbusch and Fischer (1984), 436. The GNP deflator inflation rates are obtained from the *Economic Report of the President* (EROP) for 1983 and 1987 (Council of Economic Advisers 1983 and 1987).
- From the testimony of September 24, 1981, given by Colonel Joseph G. Rutter, as published in Committee on Armed Services, US House of Representatives (1982), 562.
- 4. Unless otherwise indicated, the sources regarding the Friedman quotations and other attributions in the remainder of this section and in the next section can be found in Nelson (2024).

- 5. In Committee on the Budget, US House of Representatives (1977), 45.
- 6. In Committee on the Budget (1977), 255.
- 7. See, for example, Orphanides et al. (2000), Orphanides (2003), and Orphanides and Williams (2005).
- 8. In Committee on the Budget (1977), 43.
- 9. In Committee on the Budget (1977), 254.
- 10. In figure 24.7, the real federal funds rate is defined as the nominal funds rate minus twelve-month CPI inflation. Real interest rates computed using other methods also show negative values in the mid-1970s and notably in 1977 (see, especially, Clarida, Galí, and Gertler 2000, 168).
- 11. Quoted in López-Salido, Markowitz, and Nelson (2024), table 1. Unless otherwise indicated, the remaining quotations of Friedman, Miller, and others given in the rest of this section are sourced in Nelson (2024).
- 12. In Committee on the Budget (1977), 254.
- 13. See Associated Press (1978).
- 14. Friedman (1981), 13.
- 15. See Friedman and Friedman (1980), chapter 10.
- 16. See Council of Economic Advisers (1987), 30.
- 17. See Friedman (1979).
- 18. Bernanke (1982), 219.
- 19. Testimony of August 3, 1983, in Committee on Banking, Finance and Urban Affairs, US House of Representatives (1983), 246.
- 20. Volcker (1982), 21.

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## GENERAL DISCUSSION

- MICHAEL BORDO: Ed, that was really great, but there's one thing I wanted to ask you about. The St. Louis Fed was a monetarist reserve bank in those years, in contrast to the other banks and the Board. They promoted Milton Friedman's agenda from the early sixties. How much traction did the presidents in those years have at the debate at the FOMC [Federal Open Market Committee]? In a sense, you give the impression that the Fed was this monolithic institution, and they just got it wrong. But the St. Louis Reserve Bank was on the mark in predicting the Great Inflation. How do you reconcile that?
- EDWARD NELSON: Well, I discussed this a bit in the published volumes, as I have a section on the St. Louis Fed in volume 2. And I think there was a very important low-frequency influence on policymaking on the part of the St. Louis Fed, which in the Federal Reserve System was regarded as a resident critic of the consensus position. And so, it's perfectly consistent to say that there were voices in policy circles in the 1970s that were articulating to a much greater degree what we can now consider orthodox views of inflation but that those voices weren't underlaying the consensus.

Noting here, of course, that consensus is not the same as unanimity. There wasn't unanimity in the Federal Reserve System or in Federal Reserve policymaking circles on the validity of nonmonetary views of inflation, but belief in the validity of those views prevailed at the leadership level. And Paul Volcker was an interesting case of somebody who was at the leadership level who changed his view about inflation. But the St. Louis Fed certainly made a very useful contribution to the process in the 1960s and 1970s by keeping the ideas aired, keeping the critique

going. And your work with Ned Prescott emphasizes that the reserve banks have been a very vibrant source of ideas in the Federal Reserve System-and a leading indicator, sometimes, of trends in the Federal Reserve. And I'm happy to say that at the Federal Reserve, I've worked at both, at the St. Louis Fed and at the Board, so I have seen both sides of this nice arrangement. ROBERT KING: I wanted to ask you about one specific set of mechanisms. Arthur Burns in famous remarks was extremely skeptical about the ability of the central bank to affect inflation expectations. He basically viewed these as completely beyond the control of the central bank. By the time that Volcker came in, he was beginning to discuss how policy could affect expectations. [G. William] Miller, I don't know. I haven't read statements by Miller about expectations per se, but one vision then would be that the seventies were a period in which the central bank largely took expectations as given and chose policy. And the later period was one in which there was a move toward managing expectations. And if we think about the kind of model that Emi Nakamura was talking about earlier today, where you have a kind of a flat Phillips curve, if you're a central bank and you think expectations are beyond your control, and there are relative price shocks that are important, you might behave a lot like the way you're describing the Burns and Miller regimes.

NELSON: I agree that a flat Phillips curve, defined as a low-output-gap elasticity, gets you in the direction of having a lot of short-term looseness in the relationship between monetary policy actions and inflation. But there is still a contrast with the case of a zero elasticity, when there is no dependence at all of inflation on the output gap. And the nonmonetary view of inflation is essentially saying that the output-gap elasticity is zero. If you have a low, but positive, output-gap elasticity, you as a policymaker still ultimately control inflation through influencing aggregate demand, and ultimately you control inflation through monetary policy. But one thing I'll say about the issue that really dovetails well with what you're describing: the contrast in views between Burns and Volcker conforms well with the notion that Burns had a nonmonetary view of inflation in which inflation is basically an autonomous process. And expectations of inflation are, in that setting, likewise an autonomous process. And so, they as policymakers could happily concede or actively assert that inflation expectations were very important drivers of inflation and yet not see that in terms of a Phillips curve mechanism in which monetary policy ultimately steered inflation. Burns saw both inflation and inflation expectations as given from the point of view of monetary policy, whereas Volcker saw them both as endogenous with respect to monetary policy. And as you shift from one view to another, that's really going from a nonmonetary view of inflation to a monetary view of inflation.

One of the most egregious instances in which Burns obviously saw expectations of inflation as important, but was not really acknowledging monetary policy's effect on them, was when the Nixon wage-price controls were imposed in 1971, because Burns said, in effect, "Okay, these wage-price controls have lowered inflation expectations; therefore, we don't need to have nominal interest rates as high as they used to be in order to secure any given real interest rate." So that is really taking the expected-inflation term as an external variable to monetary policy. Having that perspective can lead to a worse monetary policy than you would have had if you hadn't acknowledged the importance of expectations at all.

BRIAN SACK: Hi, thanks. So this question I think dovetails with the last one. If you go back to the mid-seventies and you look at the "Greenbook," there's very little discussion of inflation expectations, and there are no measures of inflation expectations. By contrast, today there are, I think, on average forty-some references to inflation expectations in every FOMC meeting in the transcripts, and there are many measures of inflation expectations. So, I guess I was wondering, if Milton Friedman had the measures that we have today of inflation expectations, to what degree would that be a substitute for focusing on lagged nominal variables like M2 growth? It is a nominal variable, it's just forward-looking as opposed to lagging.

NELSON: Well, any answer's going to be speculative, but I think, Brian, one thing that is consistent with the notion that Friedman would be very receptive to looking at and analyzing inflation in those terms is that he wrote a little piece, I think in 1984, in the *JPE* [*Journal of Political Economy*]. The background was that he was frustrated at the fact that the US Treasury, after expressing interest in the early seventies under George Shultz in indexed securities markets, was sort of dragging its feet on indexed securities markets, and they'd been introduced in the UK by 1984. And Friedman in 1984 was saying that one advantage of an indexed bond market is that you'll have a self-contained measure of longterm inflation expectations coming from financial markets. And so that obviously was a very astute statement and underlies a lot of what people do today. And so, yes, I think that he would be receptive to that general direction of looking at things. Thank you.

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## About the Hoover Institution's Economic Policy Working Group

The Economic Policy Working Group brings together experts on economic and financial policy from the Hoover Institution and elsewhere to study key developments in the US and global economies, examine their interactions, and develop specific policy proposals.

For twenty-five years starting in the early 1980s, the US economy experienced an unprecedented economic boom. Economic expansions were stronger and longer than in the past. Recessions were shorter, shallower, and less frequent. GDP doubled, and household net worth increased by 250 percent in real terms. Forty-seven million jobs were created.

This quarter-century boom strengthened as its length increased. Productivity growth surged by one full percentage point per year in the United States, creating an additional \$9 trillion of goods and services that would never have existed. And the long boom went global, with emergingmarket countries from Asia to Latin America and Africa experiencing the enormous improvements in both economic growth and economic stability. Economic policies that place greater reliance on the principles of free markets, price stability, and flexibility have been the key to these successes.

Recently, however, several powerful new economic forces have begun to change the economic landscape, and these principles are being challenged, with far-reaching implications for US economic policy, both domestic and international. A financial crisis flared up in 2007 and turned into a severe panic in 2008, leading to the Great Recession. The economic expansion that followed that Great Recession lasted for more than a decade but ended severely as the forces of the coronavirus pandemic hit the US and world economy in 2020, leading to another recession. This episode and the slow economic growth during the ongoing recovery raise fundamental questions about the role of economic policy. How we interpret and react to these forces—and in particular whether proven policy principles prevail going forward—will determine whether strong economic growth and stability return and again continue to spread and improve more people's lives or whether the economy stalls and stagnates.

The Economic Policy Working Group organizes seminars and conferences, prepares policy papers and other publications, and serves as a resource for policymakers and interested members of the public.

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