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STILL FLYING BLIND AFTER ALL THESE YEARS: THE FEDERAL RESERVE'S CONTINUING EXPERIMENTS WITH UNOBSERVABLES

DIMITRI B. PAPADIMITRIOU and L. RANDALL WRAY

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Editor: Michael Stephens
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Preface

Significant increases in prices over this year have prompted concerns from many economists, journalists, and some policymakers about galloping inflation. Some are beginning to call for the Federal Reserve to act sooner rather than later. The Fed has been holding the line by keeping interest rates at existing low levels, declaring that the economy is still below potential. However, unless inflation cools, it will most likely change its stance and, once tapering ends, could start raising rates at the beginning of next year. The pandemic notwithstanding, current economic conditions remind us of similar circumstances from earlier periods when the Fed raised rates too early. Simply focusing on rising prices without taking account of the cause can lead, yet again, to the wrong policy response.

As the Levy Institute's last Strategic Analysis for the US economy showed, the economy was not anywhere near full employment and full capacity utilization before the pandemic hit (Papadimitriou, Nikiforos, and Zezza 2021), and the economy has not yet returned to pre-pandemic levels. Research from the St. Louis Fed showed the employment-to-population ratios of skilled labor (those who hold high school and bachelor's degrees) were at lower levels compared with December 2007 (the peak of the previous cycle). Moreover, measures of capacity utilization showed a significant level of slack. We believe the price increases partly reflect a "base effect" (comparing this year's prices with prices at the bottom of the pandemic's downturn after the economy experienced a large price deflation). As the economy recovers, therefore, prices will need to catch up to their pre-pandemic levels, seemingly showing a year-on-year rapid acceleration of inflation—which is misleading. In addition, the pandemic we are still enduring has caused significant disruption in global supply chains. There is no real chance of overheating and the emergence of a wage–price spiral unless demand continues to rise rapidly even after a full global recovery.

Many of those who are calling for the Fed to hike interest rates in response are not just misreading our current economic circumstances, they are relying on theoretical constructs that are little supported by the evidence—and indeed in some ways *cannot* be proven or disproven by evidence. In this policy brief, Senior Scholar L. Randall Wray and I argue that the prevailing approach to monetary policy and inflation is influenced by a set of concepts—such as an equilibrium (natural or neutral) rate of interest, potential growth, and inflation expectations—that are a poor guide to action. Since developing similar critiques in the mid-1990s, we have witnessed the Fed's own staff members come around to question some of these unobservable indicators. This is a welcome development, but in our view the critiques do not go far enough.

We explore two considerations that indicate the need for an alternative framework for monetary and fiscal policy. First, the Federal Reserve has much less control over spending (and therefore inflation) than is widely taken to be the case. Second, changes in the federal funds rate may in some cases have the *opposite* impacts of those commonly assumed. The upshot of these considerations is that the balance of responsibility between fiscal and monetary policy should be rethought. Just as fiscal policy should be elevated as the primary tool of macroeconomic management (rather than just in cases of the so-called "zero lower bound"), it is fiscal, regulatory, and other policy tools that should play a greater role in addressing inflation. Managing inflation should not be left entirely in the hands of central banks. In addition to doubts about the general potency of monetary policy, we underscore the fact that monetary policy is not well equipped for targeting particular regions or industries to address sources of inflationary concern—a deficiency that is particularly germane to our supply-side problems in this pandemic recovery.

As always, I welcome your comments.

Dimitri B. Papadimitriou, *President*

Introduction

In 1994, we examined the Federal Reserve's abandonment of monetary targets in favor of "omens of impending inflation" (Papadimitriou and Wray 1994). Here we are, a quarter of a century later, and the Fed is still fumbling around with unobservable indicators of inflation in its quest to target stable prices. It is about time to admit defeat, or plead guilty to insanity according to a definition commonly misattributed to Albert Einstein: doing the same thing over and over and expecting a different result.

In what follows, we look at two previous cases in which the Fed misread the data and raised rates too soon. We will also examine the evolution of the Fed's thought and practice over the past three decades, a period in which the Fed has increasingly turned to unobservable indicators that are supposed to predict inflation and unobservable tools that are supposed to fight inflation. We will show that our criticisms have also been raised by the Fed's own members and research staff. Moreover, we suggest that the Fed has far less control over inflation than is presumed, and, at worst, might have the whole inflation-fighting strategy backwards.

Flying Blind in the 1990s

Back in the early 1990s, the economy was trying to bounce back from our first "jobless recovery." Even with little evidence of inflation (running at 2.9 percent), high unemployment (8 million seeking work), and moderate wage growth, the Fed sought justification for raising interest rates. As we wrote in 1994, the Fed was "on a fruitless search to identify a monetary target that is both a reliable harbinger of inflation and can be influenced directly by the Fed" (Papadimitriou and Wray 1994, 8). Over the previous decade, the Fed had tried a number of monetary targets: reserve aggregates (both borrowed and nonborrowed), M1, and M2. Each was brought forward with great fanfare and then summarily dropped as it became uncorrelated with growth of prices and output.

We argued that public statements by the Fed showed that it had become rudderless when it was forced to abandon the simplistic monetarist view that the central bank could control money's growth rate and thereby hit inflation targets. Neither of these proved to be true: the Fed could not hit money targets, and money's growth did not equate to the inflation rate. Ironically, this was what Charles Goodhart (1975) had proposed as a law of policy: any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes. That is, trying to take advantage of a correlation between money's growth and inflation by targeting the money supply would lead to a breakdown of the correlation. And, indeed, all correlations between money aggregates and inflation did fall apart.

The Fed then proceeded to consider a wide variety of other potential targets, including P-star (a supposed long-term relation between prices and M2), price indexes, gold prices, real (ex ante) equilibrium interest rates, and expected inflation. We argued that even "if one were to accept that the Federal Reserve's sole goal should be to stabilize prices, there simply is nothing approaching a consensus among economists that any of these targets is reliably linked to changes of price levels" (Papadimitriou and Wray 1994, 10). We also argued that there was no general agreement among economists regarding "the causes or the costs of inflation; they have not reached a consensus that the costs of fighting inflation are substantially less than the benefits of stable prices" (11). In spite of the lack of consensus, then Chairman Greenspan proclaimed there "has emerged a growing consensus throughout the world that a monetary policy geared towards the pursuit of price stability over time is the central bank's most significant contribution to achieving maximal growth of a nation's well being" (18).

Jerry Jordan, then president of the Cleveland Fed, called for a consumer price index target: maintaining the index at plus or minus 3 percent of 155, forever! This would eliminate inflation expectations by fixing the purchasing power of the dollar. Board of Governor member Wayne Angell advocated a gold price target. Greenspan even used the rise of the price of gold as part of his justification for boosting interest rates in 1993—citing rising gold prices as an indication that inflation expectations were rising. However, in the early 1990s, Greenspan increasingly focused on an "equilibrium real interest rate" (nominal rate minus expected inflation) that appeared to be based on the Wicksellian notion of a "natural rate" that would produce an equilibrium with all markets clearing. He admitted that one could not estimate it "with a great deal of confidence," but one could be sure that estimates would be accurate "enough to be useful for monetary policy" (21). Further, he conceded that the real rate that matters is a long-term rate, and that the Fed's policy would only affect the short-term rate directly. Finally, he admitted that real rates are not observable but asserted they can be estimated using data on nominal rates and estimates of expected inflation.

Policy, then, would move the short-term nominal fed funds rate based on hunches regarding expected inflation to hit an unobservable short-term real rate in an effort to move the unobservable long-term real rate toward the natural long-term real rate consistent with general equilibrium. At that point, all markets can clear without pressure on prices.

The Fed, then, chose to raise rates in spite of lackluster recovery because Greenspan was convinced that inflation expectations had risen during 1993, lowering the unobservable real interest rate below the unobservable real natural rate—which could be taken as a harbinger of future rising inflation.

Greenspan faced a broad outcry from economists, financial markets, and policymakers, including Paul Samuelson, Henry Kaufman, Robert Brusca, and Henry Gonzalez, who objected that measures of inflation showed it was well-contained, that "real interest rates can be judgmentally inferred, but never objectively observed" (Soss 1993, 28), and that rather than tackling accelerating inflation, the "policies are certain to lead to continued stagnation, decline, and hardships for millions" (Gonzalez 1993, 31).

Interestingly, Greenspan and others like Governor LaWare expected the 1993 move to hike rates would bring down longer-term rates by lowering inflation expectations. However, over the course of 1994, longer rates actually rose—the opposite of what the Fed expected—but Greenspan dismissed this with the argument that they would eventually come down. Monetary policy operates with long lags, he asserted. Further, he rejected economic variables traditionally thought to predict forthcoming inflation—high levels of resource utilization, tight labor markets, rising capacity utilization, rising private borrowing, and even current inflation—as performing poorly in the past, or because their then-current values did not indicate imminent inflation. Greenspan's February 22, 1994 testimony was devoted to the role that inflation expectations play in causing inflation, and his determination to use them "as a direct guide to policy" (Greenspan 1994, 14). He laid out a "clear lesson" learned since WWII:

> Lower inflation and inflation expectations reduce uncertainty in economic planning and diminish risk premiums for capital investment. . . . [The] reduced inflation expectations of recent years have been accompanied by lower bond and mortgage interest rates, slower actual inflation, falling trend unemployment, and faster trend productivity growth. . . . [The] implication is clear: when it comes to inflation expectations, the nearer zero, the better. It follows that price stability, with inflation expectations essentially negligible, should be a long-run goal of macroeconomic policy. We will be at price stability when households and businesses need not factor expectations of changes in the average level of prices into their decisions. How these expectations form is not always easy to discern, and they can for periods of time appear to be at variance with underlying forces. (13)

He insisted that one could not necessarily divine whether monetary policy was fighting inflation merely by examining its tightness because easy policy could be evidence that the fight against inflation was already successful: "The test of successful monetary policy in such a business cycle phase is our ability to limit the upward movement of long-term rates from what it would otherwise have been with less effective policy" (14). If policy lowers long-term rates relative to where they might have been, it is successfully fighting inflation. The only test of monetary policy's effectiveness is inflation itself.

Not only does the Fed use unobservables as intermediate targets, it must compare policy's effect on actual long-term rates against the unobservable long-term rates that might have existed in the absence of policy. This is about as deep into Alice's rabbit hole as we might fall, yet we are ultimately and eventually saved by the jolt of actual inflation rates: if inflation is on target, the Fed has done its job.

We concluded our 1994 policy brief with the view that the Fed's policy had become largely unhinged since its abandonment of practical monetarism—which had at least provided an observable policy instrument, the money supply:

> The Fed has moved to tighten policy this year while citing a variety of arguments to justify its actions. However, recent statements have suggested that Fed policy is based on hunches rather than on any specific indicators. According to Governor LaWare, "I get a feel for what I think is going on based on the information—not only the anecdotal information in the press and the statistical information assembled and compiled by the staff here, but also from the general tone of the markets. I'm probably least sensitive to the money figures because I don't know what they mean anymore"

(Bradsher 1994). Noted monetarist Jordan admits "In the last 30 years, economists have uncovered little additional information about how monetary policy works, except for the finding that expectations of future policy are vitally important in the process" (Jordan 1993). David Jones, a longtime Fed watcher, says that "policy has become more intuitive over the last year" (Bradsher 1994). Bradsher reports that "Fed officials in effect rely on educated hunches of what they should do, rather than following the dictates of computer models or a couple of key indicators" (Bradsher 1994). And, finally, Governor Lindsey's statement summarizes the problem faced by the Federal Reserve: "I came on believing what I had been taught—and taught as a professor—which was M2. I don't think I can use it anymore" (Bradsher 1994). Papadimitriou and Wray (1994, 49)

In short, we said, the Fed is flying blind.

Should Monetary Policy Be Used to Fight Supply-Side Sources of Inflation?

In a 1996 follow-up, we argued that while inflation had remained moderate, the Fed did not necessarily deserve credit (Papadimitriou and Wray 1996). We acknowledged what many other critics had noticed: that the Fed appeared to choose whatever target happened to point in the "right" direction to justify its moves. But we more fundamentally questioned the view that the Fed ought to be focused on fighting inflation. We looked in detail at the components of the basket of goods and services that go into determining the Consumer Price Index (CPI). That index would ideally reflect market-caused price increases, and if we are to use monetary policy to tackle those, the contributors to measured CPI inflation ought to be under the Fed's control. We argued that the CPI (at least) fails in both respects. Historically, since 1970 the drivers of high US inflation have largely been the prices of food, oil, and components that do not have market-determined prices.[1] The food and oil commodities that drive domestic inflation have prices that are determined internationally—in large measure, prices that are administered by OPEC or huge international conglomerates. The other large contributor is the imputed price of "shelter services," and in particular what is called "owner's equivalent rent"—how much one would have to pay to rent housing equivalent to the home that was owned by the occupant.

We explained why that is a poor proxy for "market pressures" in housing that might be subject to Fed policy influence, and, indeed, argued that tightening up monetary policy might increase the imputed price—inadvertently causing measured inflation to rise. This would perversely lead to further tightening and more measured inflation. We will not repeat the full analysis here, but we believed using monetary policy as the main weapon against the kind of inflation the US experienced is misguided. We do not believe that our complaints made a quarter century ago have been adequately addressed; indeed, as we will argue below, if anything the view that monetary policy alone should be held responsible for inflation fighting has only grown stronger.

At the same time, evidence has accumulated over the past quarter century that the high inflation of the 1970s and 1980s has been purged from the rich countries. Over the past dozen years, the main problem has been disinflation and inflation rates below even the Fed's target. Ironically, even with trillions of dollars of unconventional policy, the Fed as well as the world's other most powerful central banks were unable to increase inflation rates to the desired level. This cast some doubt on central bankers' claims that they deserved the credit for the relatively lower inflation rates experienced after the episode we examined in our 1994 and 1996 policy briefs.

In the next section we will examine how economic theory came to adopt views similar to those expressed by the Fed in the early-to-mid-1990s. In the final section we will address why doubts are growing about this approach to theory and policy, and will suggest an emerging, alternative framework for monetary and fiscal policy.

The Fed and the Rise of the New Monetary Consensus

As discussed, the Fed moved to raise interest rates in 1994 in the midst of the jobless recovery—a move that we considered to be premature. We were not alone. In addition, the Fed was caught in a bit of a scandal because some in Congress were considering that it had leaked information about its thinking to market participants. Chairman Gonzalez called Chairman Greenspan to task and asked if the Fed kept recordings of its FOMC (Federal Open Market Committee) meetings—presumably because he wanted to see what was being said behind closed doors to shed light on why the Fed was raising rates. Greenspan told a

half-truth—denying the existence of tapes (the Fed did record the meetings, but then transcribed them and reused the tapes). After a bit of reflection within the Fed, a decision was made to be more transparent. Two changes were made: henceforth, the Fed would immediately and publicly announce its interest rate targets,[2] and it would publish transcripts of the meetings with a five-year lag. In addition, the Fed gradually adopted procedures to telegraph its policy changes far in advance. Over the next few decades the Fed's perceived role became one of guiding expectations, which required much greater openness.

The situation faced in 2004 was similar to that of 1994: the economy was in another jobless recovery and the Fed had kept interest rates low for an extended period of time. However, yet again, the Fed began to worry about rising inflation pressures and began to raise rates—again, with critics arguing the hikes were premature. By this time, much of the academic profession had adopted the New Monetary Consensus (NMC) to macroeconomics. We will not go into the details of the theory here, but the important point is that it is based on the view that the economy can move above or below a full market-clearing equilibrium in the short run—called a "demand gap." A positive demand gap means the economy is overheated; a negative demand gap means it is operating below capacity. Other than random shocks, the main disturbance preventing general equilibrium is a deviation of the real interest rate from the natural interest rate. The policy solution is to adjust the nominal fed funds rate to move the real rate to the natural rate. Both adaptive and rational expectations come into play as inflation expectations that determine the real rate are both forward looking and backward looking. Instead of using money supply as a policy tool, the Fed follows a Taylor rule in setting the fed funds rate target. To the extent that it can align inflation expectations with its own ultimate inflation target, the Fed is able to get actual inflation in its target range (typically close to a measured 2 percent rate). As Greenspan had argued back in 1994, central bank success at achieving this is the key to ensuring stable economic growth at a sustainable pace.

Given the similarity to the 1994 episode, and with the transcripts from that period available, Wray (2004b) looked for the discussion surrounding that 1994 rate hike to shed light on the 2004 rate hike (the transcripts from which would not be released for five more years). Wray (2004b) argued that the Fed's discussions from 1994 revealed that its policy formation was based on six key principles:

1. Transparency
2. Gradualism
3. Activism
4. Low inflation as the only official goal
5. Surreptitious targeting of distributional variables
6. Neutral rate as the policy instrument to achieve these goals

All except perhaps the fifth one are consistent with what became the NMC. Let us just briefly recount each principle. Transparency, as discussed, was spurred by the Gonzalez episode and it fit well with the NMC's view that inflation expectations are an important economic variable. Over the years this came to be interpreted as the requirement that the Fed "anchor" long-term inflation expectations to its low inflation target (again, around 2 percent).[3]

Gradualism was promoted by Greenspan's replacement, Ben Bernanke; however, Greenspan had already moved in that direction after his 1987 rate hike caused a Wall Street sell-off. Instead of sharp movements of the interest rate target, the Fed would engage in a long series of very small changes—say, 25 to 50 basis points each. This would allow markets to adjust. When combined with transparency, the Fed would first signal that in coming months it would begin to tighten (or loosen); when it finally did make a change, market participants would expect the Fed to continue moves in the same direction for many months to come. Given that the guideline was generally that it takes as many as 400 basis points to apply or remove sufficient pressure to move inflation in the desired direction, the opening salvo would create the expectation that policy would continue to tighten or loosen for a year or more.

Activism meant that the Fed would "nip it in the bud," by moving much earlier than it had in the past. It would not wait to see "the whites of their eyes" before shooting down inflation. Indeed, an active Fed would raise rates before inflation appears—and doing so would indicate to markets that the Fed was doing its job. That would keep inflation expectations low, and since in this view inflation is largely determined by such expectations (see below), the active policy would prevent both inflation and inflation expectations from rising.

The NMC and Greenspan both reject the notion of a simple Phillips curve trade-off. To some extent, Greenspan's objections proved very useful, as he had resisted calls to tighten policy during the Clinton-era "new economy" boom. He argued that the economy could grow much faster because productivity growth was higher due to the "new economy" innovations, and that the

unemployment rate could fall much more than what advocates of the NAIRU (nonaccelerating inflation rate of unemployment) had claimed, without causing inflation. This, however, poses a bit of a conundrum for monetary policy: traditionally, the Fed would use low unemployment rates as an indication of overheating, and thus an early warning sign for inflation. The NMC, however, posits strong equilibrating forces that would be reinforced by stable inflation expectations. In this view, the Fed should downgrade unemployment as an indicator and in any event abandon the notion of a trade-off. Rather, if anything, low inflation promotes growth and full employment. There is no natural conflict between inflation and full employment.

The Taylor rule and the NMC in general have nothing to say about distribution variables—the central bank is supposed to pursue low inflation. However, the transcripts made clear that the Fed discussed asset prices (not directly included in inflation measures) and considered "pricking" asset price bubbles. Further, it showed a bias against labor and wage-led inflation but was relatively unconcerned with profits-led inflation. The justification is that if profits boom, that would promote investment and increase capacity, removing price pressures—so profits-led inflation is seen as self-limiting. Wage-led inflation, however, is not believed to increase capacity; in a worst-case scenario, it would push up prices and cause a wage–price spiral. In any event, based on evidence from the transcripts, the Fed does consider distributional variables. As Wray (2004b) argued, the Fed likes to be seen as "above the fray," but it recognizes its policies impact distribution. The bias against rising wages can be seen as an implicit bias favoring capital over labor.

The neutral rate is the modern version of the natural rate: it is the interest rate consistent with elimination of the demand gap. The Fed admitted that the neutral rate varies across countries and through time and, thus, cannot be known with certainty. Still, the Fed asserted that it would recognize the neutral rate once it was achieved. At that point, there would be no demand gap, and both actual inflation and expected inflation would be aligned with the Fed's ultimate inflation goal. This is consistent with the Taylor rule. However, as we will discuss, according to the underlying theory it is the long-term real interest rate that matters for economic decision-making, but the Taylor rule's policy rate is a short-term rate (i.e., the fed funds rate).

The 2004 policy briefs (Wray 2004a, 2004b) challenged the (again) premature rate hikes of the time, both because there was little evidence of potential overheating and because the policymaking framework was flawed. Greenspan (1993, 10–11) claimed the equilibrium "real" interest rate "would keep the economy at its production potential over time" but admitted it cannot be estimated "with a great deal of confidence." We showed in 1996 that if the Fed had followed such a policy in the past, it would have implemented the wrong policy more than half the time because the (calculated)[4] real rate did not predict subsequent economic performance (Papadimitriou and Wray 1996). As we summarized the Fed's state of thinking after the rate hike in 1994:

> By the mid-1990s, various Fed officials agreed with Governor Lawrence Lindsey when he said, "We look at a whole raft of variables—we ignore nothing and we focus on nothing." President Jerry Jordan mused that the Fed couldn't even know with certainty what its policy stance was: "In a world where we do not have monetary aggregates to guide us as to the thrust of monetary policy actions, we are kind of groping around just trying to characterize where the stance is" (FOMC 1994, March 22, p. 52). The general tone of policy formation was likened to reading tea leaves." Wray (2004b, 11)

After the Fed's rate hike in 2004, the justification had changed—from reading tea leaves to a focus on the neutral rate:

> When questioned about the neutral rate, Chairman Greenspan responded: "You can tell whether you're below or above, but until you're there, you're not quite sure you are there. And we know at this stage, at one and a quarter percent federal funds rate, that we are below neutral. When we arrive at neutral, we will know it." Federal Reserve Bank of Kansas City President Thomas Hoenig echoed the chairman, arguing "We are still a long way from a neutral rate as we proceed through the course of the rest of this year," leaving little doubt that additional rate hikes are forthcoming. While economists outside the Fed are willing to put a number on the neutral rate—rates of 3.5 to 5.0 have been quoted in the press—the Fed prefers to remain circumspect, just as it did with its ill-fated real rate target, simply defining it as the interest rate that neither provokes inflation nor slows down the economy. Wray (2004b, 12)

Like a hopelessly lost driver, the Fed seemed to simply say "trust us, we'll know it when we get to our destination." Wray (2004b) emphasized the similarity between the neutral rate and both Wicksell's notion of a natural interest rate and the Phillips curve NAIRU—the first is a real interest rate that is consistent with general equilibrium and the second is an unemployment rate that is consistent with stable inflation. In both cases, neither theory nor observation can tell us what is the correct rate. How can we tell if the Fed has reached the destination? There will be no demand gap and inflation expectations as well as inflation itself will converge to the Fed's preferred inflation rate. Not only is the Fed following clues left by unobservables, there is no way to refute the Fed's theory and method on the basis of policy outcomes. While we may never arrive at the magical point of bliss, the Fed is always leading us on the journey to it. Trust the Fed.

Critiques of the New Monetary Consensus

We are not alone in our doubts about the NMC's usefulness as a guide to policymaking. In recent years, there have been a number of acknowledgments by Fed officials stating that some measured variables (inflation) are based on unobservables—i.e., the natural rate of unemployment and the level of potential GDP (Mester 2018)—along with some trenchant critiques, even some from researchers within the Fed. For example, Jeremy Rudd has just authored a research paper in the Federal Reserve Board's Finance and Economics Discussion Series that is brutal in its criticism of the belief that inflation expectations drive actual inflation. His paper begins by listing mainstream ideas that "'everyone knows' to be true, but that are actually arrant nonsense" (Rudd 2021, 1). The first three of these "nonsense" ideas form the basis of neoclassical economics (essentially all varieties): use of aggregate production functions, belief that flexible prices lead to full market clearing, and downward sloping market demand curves. We could just stop there and celebrate, as all of these have long been rejected by most heterodox approaches to economics. However, Rudd goes on to tackle what he sees as a fourth "truism": that inflation expectations should play an important role in theory and policymaking, and that inflation expectations are a—perhaps *the*—determinant of actual inflation. He argues:

> using inflation expectations to explain observed inflation dynamics is unnecessary and unsound: unnecessary because an alternative explanation exists that is equally if not more plausible, and unsound because invoking an expectations channel has no compelling theoretical or empirical basis and could potentially result in serious policy errors. Rudd (2021, 1–2)

Briefly, he posits that it is simpler and more reasonable to argue that actual inflation determines expectations of inflation. Or, as we would put it: expectations converge to reality. Those who try to maintain that it works the other way around generally refer to collective bargaining by workers: when workers expect higher inflation, they negotiate new contracts at higher wages, which then get passed along to consumers in the form of higher prices. While there could be some historical examples of this, Rudd argues it does not fit the US case in recent years, where only a tiny fraction of the labor force is unionized, and even those that are unionized find themselves in a weak bargaining position due to global competition with low-wage workers abroad. In the world we actually live in, workers struggle to get wage increases *after* inflation has eroded purchasing power (at best, wages play catch-up). In any event, inflation has been at such a low level for the past three decades that it is no longer a big concern in wage demands.[5] While Rudd believes that unit labor costs are a major determinant of price inflation, those costs are not driven by inflation expectations either. Further, the costs (hence, prices of inputs) that matter to a firm are its own costs—not the aggregate price level. Since competition is largely local, there is little need for a firm to focus on either aggregate prices or national inflation expectations. What matters is the firm's own costs and how the firm reacts to those when they rise.

Rudd raises another important objection to the Fed's use of inflation expectations in its approach: the theoretical basis is weak. We do not want to go through the long history of the developments from Milton Friedman's expectations-augmented Phillips curve, through the modifications by Robert Lucas, and finally to the development of the NMC that provides the basis for policymaking rooted in the Taylor rule. The point is that those theories concerned the formation of short-term expectations of inflation and unforeseen policy surprises. Real impacts of monetary policy occur due to mistakes of short-term inflation expectations. In the long run, the Phillips curve is vertical and expected inflation equals actual inflation, while unemployment is at the natural level—implying no demand gap. It is only in the short run that expectations deviate from actual outcomes.

However, the Fed's focus is on anchoring long-term expectations, which, according to theory, ought to coincide with actual inflation anyway, no matter what the Fed might do. In other words, expectations are irrelevant—they do not determine anything in the long run, where only real variables matter. Finally, Rudd argues that what little evidence we have on transmission of expectations to inflation shows that it is limited to long-run inflation expectations, not short-term expectations. This is not consistent with the theory underlying the approaches from which the NMC is derived.

Rudd concludes that rather than trying to anchor inflation expectations, the Fed ought to try to keep inflation off people's radar screens. Talking about inflation all the time is probably not a good strategy! He also opposed the Fed's dozen-year campaign to get trend inflation up to their 2 percent target. He argues that trend inflation had shifted down, and long-term inflation expectations followed that trend. Simply showing that actual inflation is influenced by past inflation experience or that expected inflation fell along with trend inflation does not demonstrate that expectations caused the downward trends. He also worries about the use of an unobservable—inflation expectations—for policymaking, likening it to the earlier use of a natural rate of unemployment (or a NAIRU), which is another unobservable. These are all points we made long ago.

An earlier paper by former Fed Governor Daniel Tarullo (2017, 2) also criticized the Fed for its attachment to "problematic concepts and hard-to-estimate variables." While the dual mandate provides a basis for evaluating how well the Fed is performing (low unemployment and stable inflation), the Fed must set its interest rate policy with a forward-looking economic forecast and a view as to how its policy might improve the outcome. He worries that the outcome might depend on unobservables and some of those depend on the relation of two series for which the data is unobservable—in a sense, doubly unobservable—increasing uncertainty about outcomes.

He lists the unobservables important for policy as potential GDP growth, the natural rate of unemployment, and the neutral interest rate—warning these are concepts, not data. While we can look backward at some variables that are supposed to affect these unobservables, for policymaking that does no good, as we must look forward. The fourth critical unobservable is the inflation rate to which the economy might converge, but this is finessed because everyone presumes it will be 2 percent. Looking at the Fed's long-range forecasts for important economic variables, he finds they have come down considerably over the years: the long-range forecast for unemployment fell by about one percentage point; GDP growth forecasts also fell by about a percentage point; and the interest rate forecast fell by 60 percent. Further, the past correlations of GDP growth and unemployment with inflation have fallen apart. All of this has increased uncertainty and should make policymakers more cautious.

Tarullo was particularly critical of overreliance on inflation expectations, noting they are "arguably a unique" kind of unobservable. While we do have surveys of the inflation expectations of professional economists, consumers, and financial market traders, ironically we do not have surveys of nonfinancial businesses—which actually have the power to set prices. The others do not. Businesses say they set their price based on what the market will bear, not according to inflation expectations. Maybe we ought to listen to them, rather than paying attention to the inflation expectations of professional economists, who have little influence over actual inflation outcomes (they are an extremely small proportion of the population).

Like Rudd, Tarullo argues that the Fed does not have a good handle on the mechanism through which expectations are supposed to affect actual inflation. The Fed presumes—without a well-grounded theory—that it can affect expectations, which will then determine inflation. It takes credit for "well anchored inflation expectations" that result in low expectations—the Fed's focus on fighting inflation was successful because inflation was low. However, in the post–Global Financial Crisis (GFC) world, the Fed failed to reach its inflation target nine years in a row. Maybe they were too successful! But why, one might ask, is policy asymmetric? It is a plausible conclusion that the Fed's actions have little to do with inflation outcomes.

Tarullo recommends paying more attention to observables: actual inflation and economic factors that might be related to it. He suggests that the Fed pay less attention to unobservables like the natural rate of unemployment, the demand gap, and the natural interest rate. Nor should the Fed adopt rules—such as the Taylor rule—that require knowledge of both the natural (or neutral) interest rate and the demand gap. The structure of the economic world is continually changing and renders policy-by-rule too inflexible. This does not just apply to Friedman's money growth rule, but also to Taylor's interest rate rule.

These brutal critiques coming from within the temple should be taken more seriously.

Is Monetary Policy the Best Way to Tackle Inflation?

Nearly 30 years after we proclaimed that the Fed was flying blind, monetary policy remains in a state of disarray, rudderless, trying to divine inspiration from unobservables. Over these past three decades, the economy has experienced the dot-com bubble and collapse, the housing and commodities market bubbles and collapse, and the COVID pandemic collapse. Each has required bigger interventions to get on the road to recovery. Recovery from each has been sluggish, and at least initially jobless. To put it simply, the trend since the early 1990s can be characterized as one of secular stagnation punctuated by growth led by bubbles in the financial sector. Over this period, the Fed has focused on inflation and inflation has indeed moderated. Meanwhile, life for most Americans has not improved and inequality has boomed, while life has been very, very good for the top few percent. The Fed takes credit for the low inflation while the rest—stagnant wages, rising consumer debt, loss of good jobs (pay, pensions, and job security), deteriorating infrastructure, and recognition of an impending climate catastrophe—is apparently collateral damage.

To be clear, we do not blame the Fed for all this. It is not the Fed's fault that we have increasingly downgraded fiscal policy over the past half-century. To some extent, that forced the Fed to take on more responsibility for economic performance. When we crashed into the GFC, the Obama administration was able to amass just $800 billion in a weak fiscal response. The rest was left up to the Fed—which responded with $29 trillion in lending and spending to rescue the global financial system (Felkerson 2011), plus trillions more of unconventional monetary policy (mostly buying securities) that was supposed to somehow help Main Street. That left us with nearly permanent low interest rates, which probably helped refuel financial markets. Positive impacts on Main Street were few and far between. It is not the Fed's fault that we asked it to shoulder almost all the burden.

Aside from the smoke and mirrors of unobservable inflation expectations, the Fed really only has one policy tool of any consequence to impact inflation: setting the fed funds rate. At the height of the GFC, the Fed quickly dropped that to zero, then tried to add some new smoke and mirrors called quantitative easing to get a bit more goose out of the zero interest rate policy (ZIRP). It is questionable whether the trillions of dollars of reserves the Fed put into the banking system had any economic impact. It did, however, increase the focus on the Fed: "Look at everything we are doing to help!" That the Fed continued to miss its self-proclaimed most important target—inflation—was mostly overlooked. Except for a few hyperinflation worriers, the trillions the Fed pumped into banks did not raise inflation expectations, which remained rooted in the reality that inflation as we once knew it had been banished.

It is time to reflect on the possibility that most economists have had it wrong all along. Beyond the four widely held myths addressed by Rudd, let us entertain the thought that the Fed and monetary policy are not only largely impotent, but that whatever impact they might have on the economy is precisely the reverse of what is believed. What if "tight" monetary policy is inflationary and "easy" policy helps to fight inflation? Low interest rates help to keep inflation low; high rates add inflationary pressure. Paul Volcker's high rates helped fuel inflation; Bernanke's low rates helped fuel disinflation.

Bear with us.

If you gathered a group of one hundred economists together and asked them what would happen to inflation if oil prices quadrupled, one hundred of them would agree that inflation would rise. If you asked what would happen if wages doubled, a large majority would agree that prices would rise, fueling inflation. If you asked them what would happen if commercial (and residential) rents rose, another majority would agree that would be inflationary. What if prices of the important crops (wheat, rice, soybeans) rose? Inflation. We all agree: rising costs of inputs to the production process will be passed on in the form of higher prices. What if we quadruple the interest rate? Well, inflation ... falls, of course! When input prices rise, that is inflationary—except for the costs of borrowing money. That view, though common, should be counterintuitive, and is probably wrong—at least as an unconditional statement.

The theory is that as interest rates rise, borrowers decide to borrow and spend less. The empirical evidence for this is surprisingly weak, for the most part. Empirical estimates of the elasticity of spending with respect to the interest rate generally show it does not matter much—with the exception of purchases of residential real estate. Low rates probably boost asset markets (including housing), but that does not feed directly into inflation. As we discussed in detail in our 1996 brief, housing enters the CPI largely through imputed rentals, which do not necessarily track housing prices—indeed, they can move in the opposite direction. Rising asset prices can produce a wealth effect, boosting consumption, but the marginal propensity to spend out of wealth is relatively small.

Careful study by Steven Fazzari (1993) has shown that for most types of firms, the interest rate is not an important determinant of investment spending, which is considered to be the classical transmission mechanism of monetary policy. In theory, raising rates should reduce investment and thus aggregate demand through the investment spending multiplier—in theory, but not in practice, for the simple reason that what matters is expected profits. When optimism is high, a few percentage points higher borrowing costs do not change the net returns much. The interest rate–investment link is weak, and in the past few decades investment spending has not been a driver of the cycle anyway.

On the other hand, interest is a significant cost of doing business. To the extent that firms want to cover costs, they pass higher interest costs along to consumers and purchases of intermediate goods by raising prices. The impact should be quite similar to that of a wage hike or an OPEC-led oil price increase. Interestingly, the Carter administration made the argument that then Fed Chair Volcker's huge interest rate hikes were fueling inflation. As argued in a draft paper by David Freund and David Stein (forthcoming):

> the Carter Administration had recognized that the main driver of inflation was fuel costs, followed by Volcker's interest rate increases (which were themselves established in the interest of halting inflation). "Very large advances in energy prices and in the costs of home purchase and finance were dominant factors in the 13 percent rise in the consumer price index (CPI) during 1979," the Council of Economic Advisors noted in the 1980 Economic Report of the President. Food costs had also been a consistent source of inflation throughout the decade. The subsequent year's Economic Report of the President again affirmed this analysis. "[H]alf of the CPI is accounted for by energy, food, and home purchase and finance," Schultze and his colleagues wrote. So, Volcker's high interest rate policy, which was designed to curtail inflation, was a driving component of it. Rates went so high that, according to the 1980 CEA report, they hit "levels well above usury limits in many States."

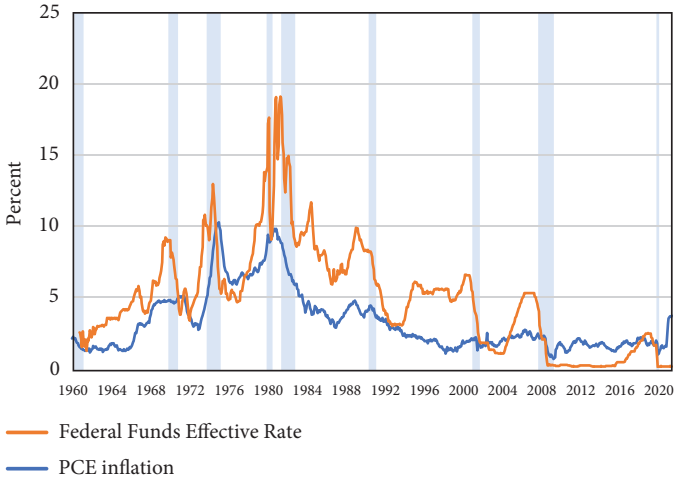
It is not controversial to argue that the Fed raises rates when it thinks the economy is becoming overheated—this is called "taking away the punchbowl before the party gets out of hand." As Figure 1 shows, the Fed's rate hikes were impeccably timed: they raised rates going into recessions, and lowered them coming out.

Inflation generally rises before a recession (especially at the end of the 1970s—not so much thereafter) and falls over the course of the recession. This means that rate hikes and inflation are positively correlated, and unemployment rises with a lag (over the course of the recession, and even continues to rise after the end of the recession). Note, however, that we have had relatively stable inflation since the 1990s, with significant movement of the fed funds rate. While the Fed continues to raise rates going into a recession, and lower them coming out, inflation has not shown strong procyclical trends since the early 1990s.

The unemployment rate has remained strongly anticyclical (unemployment goes down when the economy grows quickly) even as inflation has not remained strongly procyclical. Recovery of employment takes longer, and the cyclical recovery tends to be longer as compared to the earlier period. Recoveries have not generated inflation in recent years. In addition, while the fed funds rate was typically far above the inflation rate before 2000, it has typically been well under the inflation rate since then. If the Carter administration was correct in its belief that high interest rates added to inflation pressure, the low fed fund rates of the past three decades might have helped to keep inflation down.

If one did not know whether the Fed was targeting inflation or unemployment, the data displayed in Figure 1 and Figure 2

Figure 1 Inflation and the Federal Funds Rate, 1960–2021



Source: FRED

might lead one to believe that fed funds rates are most focused on unemployment—raising rates when unemployment falls. But this simply might be because the unemployment rate falls in the expansion, reaching a bottom just before recession, which coincides with the typical rate hike.

In summary, the simple correlation of interest rates and inflation rates shows that they tend to move together. There are three obvious and competing explanations. First, if the Fed raises rates in response to actual inflation pressure, then there will be a positive correlation. Second, if the Fisher effect[6] is operative, as inflation rises, lenders raise nominal rates to preserve a real return on loans—so, again, the correlation will be positive. The third explanation relies on reverse causation: high interest rates mean high costs, increasing the incentive to raise prices. The first two are widely believed; the third is wildly heretical.

The Fisher effect would imply that negative inflation-adjusted interest rates would be an anomaly—it is considered irrational to lend at a nominal rate that is not sufficiently higher than expected inflation. In practice, we cannot test this because—again—we do not observe the expected inflation.[7] However, we can measure ex post to see if the nominal rate less actual inflation is positive—and we find that negative real ex post interest rates have been quite common, particularly in the period before Volcker. The Fisher effect does poorly by this test.

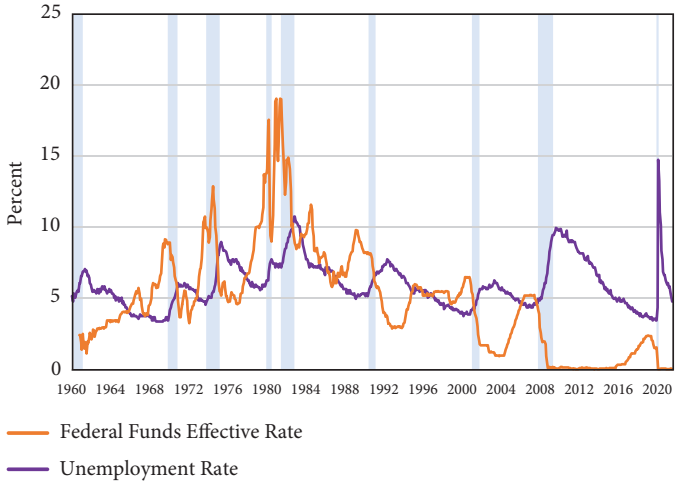
There is not much doubt that the Fed raises rates as inflation rises and lowers them as inflation falls. In the current Fed view, as it raises rates, markets expect inflation to fall, and so it falls. As discussed, the sooner the Fed raises rates, the more convinced markets are that the Fed is doing its job effectively, so inflation expectations and actual inflation fall. If the Fed lowers rates when inflation is too low, the market will expect higher inflation and so inflation will rise. However, while the empirical record may be consistent with the first example, it has not been consistent with the second. Near-zero rates after the GFC did not increase actual inflation.

Interestingly, Rudd shows that households, especially, have been more reluctant to lower their inflation expectations since the days of Volcker: they always expect inflation to be about a percentage point above what professional forecasters expect and what actual inflation turns out to be. However, the near-continual ZIRP policy over the past dozen years did not cause households to raise their expectations at all, nor did professionals raise theirs. They held their expectations essentially constant over the whole period (again, with households expecting inflation to be a point higher, and the others expecting inflation to be slightly higher than actual).

The third possibility is simpler and consistent with both the high inflation and the low inflation periods: perhaps the Fed's high interest rate policy in high inflation periods helps to keep inflation up, while its low interest rate policy in low inflation periods helps to keep inflation down. This does not mean that monetary policy's reverse causation is the only explanation—or even the main explanation—for the correlation. Perhaps interest rate policy is just a festering boil on the inflation elephant's derrière—a concern but not the main driver of the elephant's rampage. When inflation finally runs out of steam (in recent years, a financial bubble busts and causes a downturn, while in the Volcker experiment, oil and commodity prices stabilized; in either case, price pressures settle), the Fed lowers interest rates as the inflation rate comes down. The lower rates take more steam out of the economy—as we explain next.

An analysis by Tauheed and Wray (2006) uses a system dynamics model with plausible parameters to show that higher interest rates could stimulate spending through an interest income channel. If the private sector's debt ratio is small, and given low estimates of the interest rate elasticity of private spending, a higher rate will not reduce private spending significantly through an interest rate channel. However, if the national government's debt-to-GDP ratio is high, rate hikes increase

Figure 2 Unemployment and the Federal Funds Rate, 1960–2021



Source: FRED

government spending on interest. This increases private sector income, and with a high estimated propensity to consume out of income, this can stimulate the economy. Rate reductions have the opposite effect. Together with the effect of higher interest rates on business costs discussed above, this interest income channel could increase pressure on inflation when the Fed raises rates. These results are conditional on the size of the government debt ratio, the propensity to spend out of interest income received on government debt, and the interest elasticity of private spending. The private debt ratio also matters because higher interest rates increase debt burdens (most of the interest paid by private debtors will be received as interest income in the private sector, but there may be an asymmetric effect on debtors and creditors such that the net effect of raising interest rates on private debt is disinflationary), potentially triggering a financial crisis (as Volcker's policy did, and as the Fed's rate hikes after 2004 did).

Toward a Better Mix of Fiscal and Monetary Policy

In conclusion, control over the fed funds rate probably gives the Fed less control over spending and inflation than typically presumed, and it might not even move spending in the direction desired. In any event, the experience of the past two decades has raised the possibility that the Fed's policy is less potent than previously believed. At the very least, we need to consider putting more responsibility on fiscal policy for maintaining aggregate demand with reasonably constrained inflation and high employment. Fiscal policy has more tools—including the conventional tools of spending and taxing.

Congress also has tools that go beyond usual fiscal policy. It has used trade policy, regulations, wage and price controls, subsidies, and even rationing to fight past inflation. It can also release commodity buffer stocks (as President Biden has done in the case of oil) to reduce price pressures. Further, fiscal policy can be targeted in a way that monetary policy cannot: the Fed can raise or lower the fed funds rate, but it is difficult to use that to focus the impact on a region of the country or a particular kind of activity. Fiscal policy also can be used directly to promote building capacity to relieve price pressure. While the Fed can use nonconventional monetary policy to direct credit to particular groups (buying mortgage-backed securities to support home lending, buying municipal bonds to support local government), this presents two kinds of problems. The first is the "you can lead a horse to water, but you cannot make her drink" sort of problem: the Fed still needs willing lenders and borrowers, both of which are hard to find in a slump. The second is that the Fed is a chosen body of experts that does not face reelection, not a democratic body representing the interests of the electorate. To the degree that we are going to use targeted policy, we are picking winners and losers, and that job is better left to our elected representatives.

The current dilemma in which we find ourselves brings into sharp focus the danger of relying on monetary policy to deal with inflation. The global pandemic severely disrupted global supply chains. What began as a supply-side shock morphed into a demand-side problem as incomes fell because people could not go to work, and many service-sector firms (especially) had to shut their doors. Complicated supply chains plus just-in-time production led to shortages of key components so that even with huge spending by the fiscal authorities to replace lost income from work, recovery of production has been constrained. As a result, prices are rising more rapidly than they have for years. So far, the Fed has been remarkably and admirably patient, insisting that the causes of the price hikes will fade away. However, these "transitory" conditions are stretching into many months and pressure is building on the Fed to "do something" before inflation expectations become unanchored.[8]

Yet, raising rates now would be the wrong response, especially if one believes that the interest elasticity of spending is high. Fighting the combination of slow growth and high inflation with higher interest rates would not help to restore the supply side of the economy. The correct response would be to increase spending on the supply side to relieve shortages—which will require finance. Raising rates would raise the cost of finance. If the conventional views of interest rate effects are correct, it would be bad policy to raise rates when the supply side is struggling.

In any case, ramping up capacity in key areas is something fiscal policy is better equipped to do. For example, one of the bottlenecks has been insufficient capacity at the nation's docks for unloading container ships. We need to quickly restore and increase capacity—requiring both private and public spending. This is also the right time to begin to build alternatives to fossil fuels (shortages of which are driving up prices) and alternatives to stretched supply chains that were always vulnerable to disruption due to weather, earthquakes, and war. It is certainly true

that all of this transition will take time—but the time to start is now. And if monetary policy is to play any role, low rates would be more conducive to capacity building.

We are reminded of the misguided response to the oil price shocks of the early and late 1970s. These sparked high inflation in both cases, along with high unemployment—what was called stagflation. And in both cases the policy response was austerity—precisely the wrong response, as it increased unemployment sharply. The correct response then, and now, is to become more energy efficient and to promote alternative energy sources. Not only would that have avoided prolonged stagnation in the 1970s, it would also have reduced reliance on oil—an energy source that comes from regions of the world that are politically unstable and that was recognized even at the time as environmentally damaging. Today we realize that we have no choice: we must stop using fossil fuels. But the point we are making here is that austerity policy is not the right choice when inflation is coming from problems on the supply side.

The nation's GDP has not yet recovered to its pre-pandemic peak, which indicates that our problem today is not one of a general excess of demand—we have unused capacity in the form of unemployed labor and capital. It makes no sense to tackle inflation through a policy that is designed to reduce demand across the board. We need a targeted response, and as discussed, monetary policy is not appropriate for that task. The problem is very complex—it is still not safe to fully reopen the economy, and in any event, the US relies on imports of essential components, so full recovery of our economy will require either global recovery or developing domestic sources. Raising rates to produce a domestic downturn is not helpful.

Further, even if we believed that the problem is too much demand, the solution would be for fiscal policy to tighten—since it is the pandemic's fiscal response that has been sustaining demand in the face of huge supply-side headwinds. We are not calling for this, even though we would have preferred a more targeted fiscal response to the pandemic. The best approach now is to do what we can to support the supply side of the economy—which includes getting people back to work safely.

Conclusion

We are asked to believe that the Fed can and does control inflation by anchoring long-term inflation expectations. Further, we are asked to believe that this is a proper role for the Fed and that low inflation should be a high priority—if not the highest. To some extent, this is even mandated by Congress, although the Fed is left to its own devices in choosing its policy tools as well as its target inflation rate.

The low inflation rates of the past quarter century are taken as evidence that the Fed has successfully achieved its goal—albeit perhaps a bit too well over the past decade, as inflation has been persistently below target. We have argued that this claim cannot be proven or disproven by the evidence. We are reminded of the dog that stands at the window and barks as a jogger on the street gets closer to her house. The dog continues until the jogger passes by and reaches a distance considered to be safe. The dog is sure she has prevented a burglary. Proud of herself, she decides to begin barking earlier and longer, at any jogger in sight, then at kids playing in the yard across the street, at approaching and retreating cars, and at squirrels climbing trees, protecting the house from any possible invasion. The more she barks, the more effective she is. To do an even better job, she barks at the unseen threats, the unobservable burglars. That the house is never burglarized is proof that the barking works.

We think it is time to put to rest policy that is overly focused on unobservables. If the Fed is going to be tasked with fighting inflation, it ought to include those variables that are both observable and can be shown to be linked to inflation. This is similar to the conclusion reached by two Fed insiders—Rudd and Tarullo. It might also be time to reexamine our reliance on the Fed as the primary inflation fighter. The Fed cannot do much about supply-side driven inflation—which, arguably, was our problem in both of the high inflation periods in the 1970s as well as the problem we face now in recovery from the pandemic. And, we think, it is also time to question the link between the fed funds rate and inflation. Indeed, we suspect that part of the reason the Fed and the NMC have highlighted an unobservable is because the evidence for the interest rate–inflation link is not strong, and may even run in the wrong direction.

We do believe the Fed plays an important role in the economy, and it should focus on those matters over which it can have significant influence. The Fed has demonstrated its ability to come to the rescue when we need a lender of last resort. The Fed keeps our payments system functioning even when severe financial crisis hits. Both are worthy accomplishments. The Fed is the Treasury's bank and ensures government checks do not bounce and that interest on Treasury bonds gets paid in a timely manner. The Fed also plays a role in regulation and supervision

of financial institutions—there its record may not be so stellar. For example, the Fed was given broad authority to regulate mortgage lending, and its performance was not very good during the run-up to the GFC. This is an area in which greater focus by the Fed might be called for.

Economists and the Fed should put less emphasis on ephemeral expectations—particularly for policy purposes. We would also like them to consider the joint possibility that monetary policy has little impact on real world inflation, and that the high inflation we experienced 40 years ago is unlikely to return in the near future. Further, more focus should be placed on price pressures that come from the supply side—outside of major wars, the demand side is not the main culprit. Finally, fiscal policy might be better suited to inflation fighting, whether it comes from the demand side or the supply side.

Notes

1. As will be discussed, another driver of inflation is borrowing costs—the Fed's policy of raising interest rates to fight inflation can add fuel to the inflation fire.
2. Previously, the Fed issued carefully coded releases near the end of each meeting, announcing, for example, the decision to "increase slightly the degree of pressure on reserve positions." This left it to markets to try to figure out what the new fed funds target rate would be. See Wray (2004b).
3. Below, we will see that the focus on long-term expectations actually conflicts with the underlying theoretical model in which demand gaps are instead related to short-term inflation expectations.
4. See the paper for details on how the ex post real rate was calculated.
5. We understand that the recent rise of inflation in the recovery from the pandemic may change this—a topic we address below.
6. This is the theory that the nominal interest rate equals some real interest rate plus expected inflation. It is based on the notion that a lender needs a "real return" that compensates for rising prices.
7. As the St. Louis Fed notes, "One such method of measuring inflation expectations is to compare how Treasury markets price two types of bonds: 'normal' bonds—with a constant nominal interest rate—and 'inflation-indexed' bonds—with a yield that includes realized inflation. One can tease out inflation expectations by subtracting the real bond yield from the nominal yield. This is the so-called break-even inflation ..." (FRED 2021). However, as Rudd (2021) notes, we need the inflation expectations of those who can actually influence price- and wage-setting to assess whether expectations influence actual inflation. It is not clear that buyers of "TIPS"—inflation-indexed bonds—have that power. Further, as the Fed argues, "these expected inflation rates fan out at particular times, typically downward. And, every time, the shorter maturities seem to have the strongest reactions. This is simple arithmetic. For example, a 10-year expectation also contains the 5-year expectation; and, as long as expectations average out in the long run, the shorter-term expectation will be more variable" (FRED 2021). This is probably why Tarullo discounts "overuse" of expectations that seem to always presume inflation will converge to 2 percent in the long run.
8. Indeed, Chairman Powell recently announced (see Smialek and Rappeport 2021) that the Fed will be placing a greater weight on inflation concerns going forward (and that it plans to retire the use of the term "transitory").

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About the Authors

DIMITI B. PAPADIMITRIOU'S research includes financial structure reform, fiscal and monetary policy, community development banking, employment policy, and distribution of income, wealth, and well-being. He heads the Levy Institute's macroeconomic modeling team studying and simulating the U.S. and world economies. In addition, he has authored or coauthored many articles in academic journals and Levy Institute publications relating to Federal Reserve policy, fiscal policy, financial structure and stability, employment growth, and Social Security reform. In 2008, he was instrumental in the republication of Hyman P. Minsky's seminal *Stabilizing an Unstable Economy* and *John Maynard Keynes* by McGraw-Hill.

Papadimitriou is president of the Levy Institute, and Jerome Levy Professor of Economics at Bard College. He served as Minister of Economy and Development for the Hellenic Republic from 2016 to 2018. He has testified on a number of occasions in hearings of Senate and House of Representatives Committees of the U.S. Congress, was vice-chairman of the Trade Deficit Review Commission of the U.S. Congress, and was a member of the Competitiveness Policy Council's Subcouncil on Capital Allocation. He was a distinguished scholar at the Shanghai Academy of Social Sciences (PRC) in fall 2002. Papadimitriou has edited and contributed to 13 books published by Palgrave Macmillan, Edward Elgar, and McGraw-Hill, and is a member of the editorial boards of the Journal of Economic Analysis, Challenge, and the Bulletin of Political Economy.

Papadimitriou is a graduate of Columbia University and received a Ph.D. in economics from the New School for Social Research.

Senior Scholar L. RANDALL WRAY is a professor of economics at Bard College. His current research focuses on providing a critique of orthodox monetary theory and policy, and the development of an alternative approach. He also publishes extensively in the areas of full employment policy and, more generally, fiscal policy. Wray's most recent book is *A Great Leap Forward* (Academic Press, 2020).

Wray is the author of *Money and Credit in Capitalist Economies: The Endogenous Money Approach* (Edward Elgar, 1990), *Understanding Modern Money: The Key to Full Employment and Price Stability* (Edward Elgar, 1998), *The Rise and Fall of Money Manager Capitalism: Minsky's Half Century from World War Two to the Great Recession* (with É. Tymoigne; Routledge, 2013), *Modern Money Theory: A Primer on Macroeconomics for Sovereign Monetary Systems* (Palgrave Macmillan, 2012; 2nd rev. ed., 2015), *Why Minsky Matters: An Introduction to the Work of a Maverick Economist* (Princeton University Press, 2016), and *Macroeconomics* (with W. Mitchell and M. Watts; Red Globe Press, 2019). He is also coeditor of, and a contributor to, *Money, Financial Instability, and Stabilization Policy* (Edward Elgar, 2006) and *Keynes for the 21st Century: The Continuing Relevance of The General Theory* (Palgrave Macmillan, 2008).

Wray taught at the University of Missouri–Kansas City from 1999 to 2016 and at the University of Denver from 1987 to 1999, and has been a visiting professor at the Universities of Paris and Rome (La Sapienza). He holds a BA from the University of the Pacific and an MA and a Ph.D. from Washington University, where he was a student of Minsky. He has recently completed a Fulbright Specialist Grant at the Tallinn University of Technology in Estonia.