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Make-up Strategies for Monetary Policy

How the Federal Reserve is addressing the challenge of the long-term decline in interest rates.

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The views expressed in this article are not necessarily those of the Federal Reserve.

The Federal Reserve has long fought recessions by wielding one of the most powerful tools in monetary policy: cuts to short-term interest rates. These aggressive interest rate cuts have stabilized output during recessions and inflation after recessions, so that inflation has averaged around 2 percent. This is why Board of Governors Vice Chair Richard Clarida argued earlier this year that the Federal Reserve has successfully pursued its dual mandate of price stability and maximum employment.[1]

But because interest rates have trended down over the past few recessions, policy has less scope to fight future recessions by cutting interest rates.

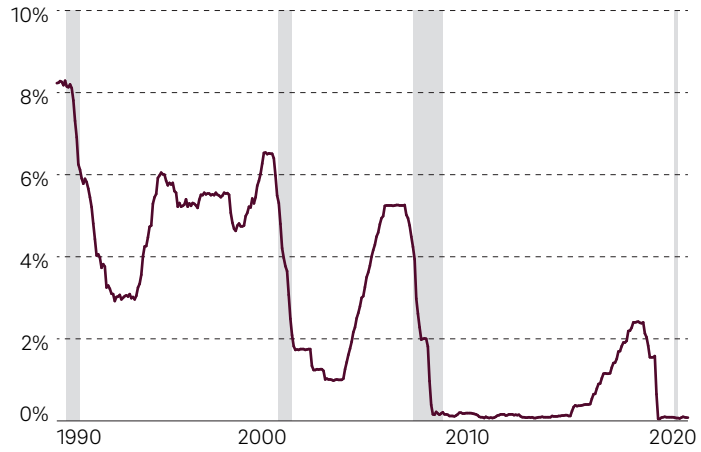
Within three years of the onset of the 1990 recession, the Federal Reserve cut the short-term interest rate (what it calls the federal funds rate target) from 8.25 to 3.0 percent. Within three years of the onset of the 2001 recession, it cut its target rate from 5.5 to 1.0 percent. And within three years of the onset of the 2007 recession, it cut it again from 4.25 to 0.25

FIGURE 1

The Federal Funds Effective Rate Has Trended Lower

When the rate is low, the Fed finds it harder to fight recessions.

Federal Funds Effective Rate, percent, not seasonally adjusted, 1990–2020



Source: Board of Governors of the Federal Reserve System (U.S.), Federal Funds Effective Rate [FEDFUNDS], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/FEDFUNDS.

Note: Shaded bands represent recessions as defined by National Bureau of Economic Research.

percent—hitting the effective lower bound (ELB) on interest rates, or the point at which legal and practical considerations rule out further interest rate cuts (Figure 1).

Since the last crisis, the long-term decline in interest rates has continued, posing a challenge for policymakers: Among members of the Federal Reserve's Federal Open Market Committee (FOMC), which sets these rates, the median expectation is that the Federal Funds Rate will average 2.5 percent over the long term, compared with 4.2 percent in early 2012, leaving the FOMC even less room to cut interest rates when the next recession hits.[2] Indeed, at the onset of the COVID-19 pandemic, the target rate was a mere 1.75 percent, allowing for only a small cut in short-term rates before hitting the ELB. Because the ELB and the long-run decline in interest rates have left little room to cut short-term interest rates, the FOMC might no longer be able to effectively cushion drops in inflation and output during downturns.[3]

The problem of the inability to lower interest rates is compounded by what Federal Reserve economists Thomas M. Mertens and John C. Williams have dubbed the deflationary bias: When average interest rates were high enough, policymakers could raise inflation toward its 2 percent target through rate cuts in downturns and dampen inflation through rate hikes in expansions. Because of the ELB and the long-run decline in interest rates, the FOMC cannot stimulate inflation in downturns as much as before. If policymakers do not change how they set interest rates during expansions, inflation should thus decline in the long run because inflation would hold steady during upswings but decline during downturns, pulling down the overall average. This deflationary bias would go against the stated 2 percent inflation target. What's more, the deflationary bias would also exacerbate the challenges posed by the ELB. Rather than let that happen, the FOMC has decided to adopt policies that make up for past inflation shortfalls during expansions.[4]

In this article, I discuss how these make-up strategies differ from the Fed's previous monetary strategy, I describe different possible make-up strategies, I use a simple New Keynesian model to identify the advantages of make-up strategies, and I discuss possible disadvantages of these strategies. I conclude by discussing how the make-up strategies may guide the FOMC's decisions.[5]

What's New About Make-up Strategies

Congress has assigned three specific goals to the Federal Reserve: maximum employment, price stability, and moderate long-term interest rates. But Congress left open which strategy the Federal Reserve should use to accomplish these goals.

Until recently, outside observers have characterized U.S. monetary policy as reacting to two current economic conditions:[6] economic activity's deviations from its potential, and year-over-year inflation's deviations from its 2 percent target.[7]

But the FOMC now also monitors a third economic condition: deviations of past inflation from 2 percent. As the FOMC wrote in its August 2020 statement on long-run goals: "... 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." In other words, if inflation has been too low, the FOMC will now aim to make up for this shortfall.

Types of Make-up Strategies

Different make-up strategies are distinguished by what they're making up for. Since the Federal Reserve has the target of price stability and maximum employment, making up for misses of one or both objectives is a natural approach. Indeed, Federal Reserve economists David Reifschneider and John C. Williams proposed a make-up strategy that would, indirectly, respond to a summary measure of misses on both targets.[8] But because the FOMC decided to make up for past inflation only, I focus on inflation-based make-up strategies.

Make-up strategies differ not only in their target measure, but also along two other dimensions.

First, is the strategy symmetric or asymmetric? Under a symmetric strategy, monetary policy responds equally to past excesses and past shortfalls of inflation. However, downturns tend to be abrupt whereas upswings tend to be gradual, so policymakers usually face asymmetric challenges that require an asymmetric strategy. This is especially true when interest rates are low (as they are now) because interest rates have a lower bound but no upper bound. Consequently, it is more important for the FOMC to respond to inflation shortfalls rather than misses of inflation in both directions.[9]

*See **Missing the Goal of Stable Prices**.* →

Second, is the strategy permanent or temporary? Under a permanent make-up strategy, policymakers always correct for past misses (regardless of whether the strategy is symmetric or asymmetric). Make-up strategies are only successful if firms and households adjust their decisions in accordance with them. Because they would be observing a permanent policy regime

at all times, households and firms would likely understand the consequences of inflation misses for monetary policy and act accordingly.

Under a temporary make-up strategy, in contrast, policymakers only correct for past misses in special circumstances—for example, when the ELB constrains monetary policy. It may take households and firms some time to understand this policy and behave accordingly. But a temporary make-up strategy gives policymakers flexibility when the ELB does not constrain policy. And such a strategy may be easier to communicate to the public because it allows policymakers to focus only on current conditions in normal times.

Advantages of Make-up Strategies

According to standard analyses, monetary policy reacts only to current economic conditions.[10] But policy can actually improve current outcomes by looking backward—as long as households or firms understand how policy works. Consequently, by promising to make up for past misses, policymakers can improve current outcomes and limit the size of these misses.[11] A standard model of business cycle fluctuations explains why.

The simplest (yet widely used) model for understanding monetary policy is the workhorse New Keynesian model.[12] The model describes the interaction of households, firms, and the policymakers setting interest rates. Household and firm behavior gives rise to the model's two key relationships. Both relationships describe the interplay between current and future economic activity and inflation in the model.

The so-called Phillips curve relates current inflation to current economic activity and expected future inflation. It summarizes firm behavior and household labor supply. Firms in the model hire workers from households to produce consumption goods and have market power to set prices for these goods. Since large price changes are costly for these firms, they prefer to adjust prices gradually in every period, partly in anticipation of future inflation. And because firms require more workers when they expand production, they need to bid up wages when economic activity rises relative to its potential level.[13] Consequently, current inflation rises with current economic activity and expected inflation.[14]

The second relationship between economic activity and inflation reflects households' consumption-savings decisions. Households demand more consumption goods today when the return on savings is lower—that is, when the real interest rate is lower. The real interest rate is the difference between the nominal interest rate set by policymakers and expected inflation—because future inflation erodes the value of nominal (current dollar denominated) savings. Households also demand more consumption today if they feel wealthier, that is, when they expect to consume more in the future.

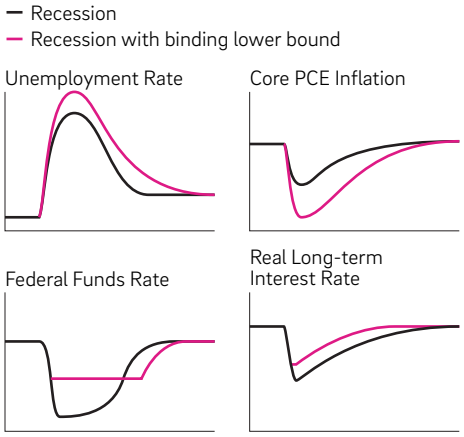
To see the advantages of make-up strategies in this model, it is useful to first analyze the challenges that the lower bound on nominal interest rates poses for monetary policy. In this model, the ELB clearly worsens severe downturns. Interest rates may hit the ELB, for example, if a persistent downward shock to demand causes a severe downturn. The drop in demand persistently lowers employment. Via the Phillips curve, this persistently pulls inflation down as wages drop and firms lower prices. The persistent drop in inflation in turn lowers demand even further by raising real interest rates[15]—unless the central bank offsets the drop in inflation by reducing nominal interest rates even more to stimulate households' demand. But the central bank's ability to do so is limited by the ELB. The ELB may thus prevent the central bank from

FIGURE 2

A Recession's Vicious Cycle

The Effective Lower Bound Can Amplify a Recession
Because the ELB may limit the size of interest rate cuts, households and firms face higher real interest rates, both because nominal rates are higher and future inflation is lower. This lowers demand and employment, reinforcing the initial recession.

Because the fall in inflation and the rise in the unemployment rate are bigger, the federal funds rate remains low longer than it does in the absence of the lower bound.



Missing the Goal of Stable Prices

There is an additional, technical question: How do we measure misses on the goal of stable prices? Should we measure past misses as the difference between the change in the price level relative to some benchmark, also known as price-level targeting (PLT)? Or as the average inflation rate over a number of years? And if it's the latter, how many years? Mechanically, the change in the price level over several years is just the sum of the annual inflation rates. It thus makes intuitive sense that, as Sveriges Riksbank economists Marianne Nessén and David Vestin showed in a 2005 article, the economic effect of PLT is very similar to the effect of average inflation targeting over a sufficiently long horizon. There may thus be little difference between the two strategies over the long term. Regardless, both are temporary, asymmetric make-up strategies when applied after recessions with a binding ELB on interest rates.[23]

In measuring average inflation, policymakers may also want to look ahead. One example of such a forward-looking measure of inflation was given by Vice Chair Clarida last year. Clarida said that he, personally, would opt for lower interest rates not only if past inflation averaged less than the 2 percent target, but also if expectations of future inflation were below the target.

effectively fighting a recession with its tool of short-term interest rate cuts. The result is a vicious cycle of low demand pulling inflation down, which further lowers demand (Figure 2).[16]

In this vicious cycle, the negative demand shock, made worse by the ELB, keeps inflation and employment below policymakers' targets. What's more, if policymakers do not offset during expansions the extra drop in inflation caused by the ELB, the deflationary bias described by Mertens and Williams arises. Once firms and households update their inflation expectations in light of this bias, their changed behavior will keep the economy closer to the ELB as the lower inflation expectations force policymakers to raise interest rates by less during expansions or to accept demand shortfalls.

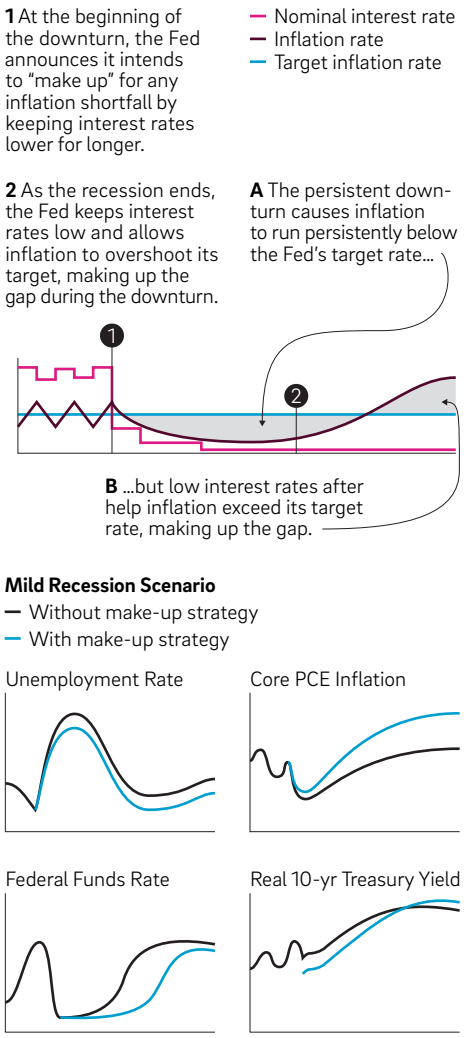
In contrast, make-up strategies induce a virtuous cycle. When policymakers say that, once a recession ends, they will make up for misses by keeping interest rates lower than they otherwise would, thus letting inflation rise above their target, they can reduce the size of those misses in the first place. Here's why: If households expect lower interest rates in the future, they will expect to consume more in the future, too. And because households prefer to smooth their consumption over time, that leads them to consume more today. What's more, the promise of higher future inflation leads firms to limit their price cuts today, since they want to reduce the need for future price changes. Thus, households and firms act to reduce the initial shock to the economy during a recession, and the drop in demand and the resulting drop in inflation are both mitigated. The smaller inflation shortfall in turn boosts demand even further. It's a virtuous cycle, triggered by the central bank's promise to let future inflation overshoot its target so it can make up for current shortfalls (Figure 3).

This is admittedly a simple model of how households act. Perhaps households aren't so sophisticated in the complex real world. But even in a more detailed and realistic model of the U.S. economy, Federal Reserve economists James Hebden and his colleagues found that households acted in much the same way. They analyzed make-up strategies in the FRB-US model, a large-scale model employed by the Federal Reserve Board of Governors. When they ran the model, they made a more realistic assumption: that only financial markets trust policymakers to make up for inflation shortfalls. They found that financial markets passed on those expected lower short-term interest rates by cutting long-term interest rates, such as mortgage rates and rates on car loans, right away. This fall in long-term interest rates again stimulates demand, just like in the simpler model discussed above.

So even when policymakers are only making up for inflation shortfalls, their credible and well-understood promise to make up for current inflation shortfalls can lead to a virtuous cycle that reduces current shortfalls in other economic activity, such as employment.

FIGURE 3

A Make-up Strategy's Virtuous Cycle



Source: Figure 1 in Arias et al. (2020).

Disadvantages of Make-up Strategies

However, economic models suggest that there are challenges for policymakers who wish to pursue makeup strategies.

Within the simple New Keynesian model we've been discussing, a rapid drop in demand after a prolonged boom with above-average inflation can pose a problem. If the make-up strategy is symmetric, the promise to make up for past excess inflation would constrain monetary policy when policymakers need to act quickly. To make up for excessively high past inflation, policymakers would have implicitly promised higher interest rates than warranted by current conditions. Policymakers would then have to either break their promise to make up for past excesses or delay their response to the unfolding downturn. However, an asymmetric make-up strategy that only makes up for inflation shortfalls would prevent this problem.

But even an asymmetric make-up strategy can cause problems. Sometimes, the economy faces a cost-pull shock, which may lower inflation while raising demand above potential output, yielding a positive output gap. During a cost-pull shock, blindly following an inflation-based make-up strategy would lead the central bank to commit to making up for

the inflation shortfall, stimulating demand further and possibly overheating the economy.[17] In this example, the makeup strategy still prompts mistakes by policymakers—even though the asymmetry of the strategy would still allow it to effectively address the opposite problem of a cost-push shock that raises inflation and lowers demand.[18]

What's more, the virtuous cycle induced by make-up strategies may not be very strong in reality. Federal Reserve economists Marco Del Negro, Marc Giannoni, and Christina Patterson show that when some consumers are able to trade in financial markets only with a delay, it diminishes the effect of news about future inflation. This weakens the virtuous cycle induced by adopting make-up strategies.[19]

The same problem may arise from realistic models of how households form expectations. For example, it has been argued by Columbia University economist Michael Woodford that agents have limited planning horizons. Even sophisticated computer programs designed to play games such as chess only plan a certain number of steps ahead, and individuals and firms may be expected to suffer from a similar limitation. This limits the current economic effects of expectations about the distant future. Similarly, Harvard University economist Xavier Gabaix has argued that households' rationality is bounded (that is, they choose adequate rather than optimal solutions to their problems), so they discount—that is, downplay—news about future inflation.

Even within the model we've been discussing, the virtuous cycle is weakened when inflation is unresponsive to current output or employment—what economists call a flat Phillips curve. When inflation barely responds to economic activity, policy is less potent. Policymakers can do little to stimulate inflation by stimulating current demand, but must instead patiently wait for policy changes to work their way through inflation expectations.[20]

Make-up strategies may pose additional challenges. Policymakers may find it difficult to explain to the public why they are tolerating inflation in excess of their stated target.[21] Also, persistently low interest rates may cause financial instability by encouraging excessive risk taking and debt accumulation in the economy.[22]

Practical Implications

The FOMC has not adopted make-up strategies unconditionally. Rather, as its statement on longer-run objectives implies, it has adopted an asymmetric make-up strategy only for inflation shortfalls.

In November 2020, Vice Chair Clarida summarized the new strategy as "temporary price-level targeting (TPLT, at the ELB) that reverts to flexible inflation targeting." Since the strategy is triggered only by a severe downturn, the asymmetry avoids the disadvantages of a symmetric rule. And triggering the make-up strategy only at the ELB safeguards against the challenges of the cost-pull scenario discussed above: Interest rates are unlikely to be constrained by the ELB when cost-pull shocks cause employment to overshoot and inflation to undershoot the Fed's targets.

Although policymakers can avoid some of these disadvantages, the fact that a make-up strategy is temporary might make it less effective. Households, firms, and financial markets may not have enough time to understand the implication of this new strategy. This drawback may, however, appear less of a concern now that the FOMC has been forced to use the make-up strategy right away. But in the (fortunate) case that the economy could escape the ELB soon and stay away from it for some time, it may diminish the make-up strategy's effectiveness during the next crisis.

What does this strategy mean for the practice of monetary policy? Although policymakers do not strictly follow any one monetary policy rule—allowing them to use their judgment when addressing specific economic challenges—rules can provide useful benchmarks. As Vice Chair Clarida explained in his speeches, he personally feels that a rule that characterizes monetary policy as a function of only current economic conditions, and that allows for gradual adjustment in interest rates, is a useful benchmark, even when the Federal Reserve is pursuing a make-up strategy. The make-up strategy injects more inertia, or persistence, into the currently low interest rates, with rates rising more slowly than otherwise, and this allows inflation to average 2 percent during a certain window of time. Vice Chair Clarida's interpretation thus suggests that the adoption of this temporary and asymmetric make-up strategy represents an evolution of policymaking, not a revolution overturning past practices. EI

Notes

1 See Clarida (2021).

2 See https://www.federalreserve.gov/monetarypolicy/fomc_historical_year.htm for links to historical FOMC materials, including the December 2020 and January 2021 Summaries of Economic Projections (SEPs). In addition to the decline in the SEP interest rate forecast, Del Negro et al. (2017) provide detailed evidence of the decline in interest rates. They attribute the decline to lower risk and liquidity premiums and slower economic growth.

3 This is overly simplistic in that it focuses only on so-called "conventional" monetary policy. See Caldara et al. (2020) for a discussion of "unconventional" monetary policy, such as asset purchases and guidance about future interest rates ("forward guidance"). Although unconventional policies mitigate the challenge posed by the secular (that is, long term and persistent) decline in interest rates, they are unlikely to fully offset them.

4 Although several measures of inflation have risen to around 4 percent in 2021, as Governor Randall Quarles summarized in his 2021 speech, forecasts see inflation falling back near 2 percent within a year.

5 This article builds on my work with Jonas Arias and three economists at the Board of Governors (Arias et al., 2020), which in turn summarizes a large academic literature.

6 See Taylor (1993) and Clarida et al. (2000) for studies that characterize monetary policy as reacting to current inflation and output gaps. These characterizations of policy sometimes include past interest rates but not past shortfalls. Past interest rates reflect the desire of policymakers to avoid wild swings in inflation. Besides reacting to these gaps, interest rates are typically also thought of as centered around the so-called natural rate of interest that ensures that actual economic activity equals, on average, its potential, which is defined by technology and labor supply. See Williams (2003).

7 There are multiple inflation rates and measures of economic activity. In its "Statement on Longer Run Goals and Monetary Policy Strategy," the FOMC stated that its measure of inflation is the annual change in the price index for personal consumption expenditures. Although there is no single measure for maximum employment, observers often use gross domestic product (GDP). This is because GDP growth is closely associated with falling unemployment, a statistical relationship known as Okun's Law.

8 See Reifschneider and Williams (2000).

9 A study I co-wrote described a concrete example of the benefits of an asymmetric make-up strategy. We considered what might happen following a period of above-average inflation. A rule based on symmetric average inflation targeting would call for inertia in short-term interest rates. This inertia would delay interest rate cuts that would combat a recession. See Arias et al. (2020).

10 See Taylor (1993) and Clarida et al. (2000) for early references and Galí, chapter 3 (2015) for a textbook treatment.

11 More radically, policymakers could commit to history-dependent policy paths. In models of the economy, this commitment can be very powerful—see Galí, chapter 5 (2015). Although useful, it may be impractical because it requires current policymakers to commit not just themselves but also future policymakers to future actions.

12 The workhorse New Keynesian model can be summarized by two equations describing the behavior of firms and households, and one equation describing monetary policy. See Galí, chapter 3 (2015).

13 That is, when the so-called output gap rises. The output gap is the difference between the actual and the potential levels of economic activity. The potential level of economic activity reflects production technology and how readily households supply labor.

14 Cost-push shocks are the exception to this rule. A negative cost-push shock, perhaps better called a cost-pull shock, pulls costs down, lowering inflation even as output rises.

15 Saving in dollar-denominated bonds is less worthwhile when inflation is expected to erode the value of these dollar savings.

16 The vicious cycle has an extra feedback loop: If firms expect low inflation to persist, they are motivated to lower prices today so as to avoid needing to lower prices in the near future.

17 In the simple New Keynesian model, overheating the economy means that the economy is producing more than it can produce efficiently, and employment thus becomes too high. In reality, an overly high level of employment may not be a direct source of concern to policymakers, but it can be seen as a stand-in for concerns about financial stability stemming from keeping interest rates too low.

18 The global supply chain problems encountered in the economic recovery from COVID-19 are an example of such a cost-push shock.

19 In standard macroeconomic models, households are modeled as family dynasties that live forever. These family dynasties then react immediately even to future real interest rates by adjusting their consumption and savings decisions. In such a model economy, a rise in expected inflation pushes all households toward more present-day consumption in anticipation of the diminished compound real return on their savings. In the model that Del Negro et al. (2012) use, however, households are expected to live finite lives—and households do not take the decisions of the cohorts that come after them into account. The inability of these still unborn cohorts to adjust their decisions weakens the effect of expectations—and more so the further in the future, because yet-to-be-born cohorts become more important farther in the future.

20 Hebden and his coauthors review these challenges and conclude that, in practice, they are likely to weaken but not overturn the argument in favor of make-up strategies.

21 In fall of 2021, policymakers faced this situation. Governor Randal Quarles's 2021 speech addressed the fact that the observed inflation of more than 4 percent could not be considered a moderate overshoot of the target, but it could be tolerated because it was not expected to last and employment was still lagging.

22 See, for example, Becker and Ivashina (2013) and Haltom (2013) and the references therein.

23 PLT is temporary because it is triggered only while interest rates are at the ELB. It is asymmetric because it only makes up for the price-level shortfall. Bernanke et al. (2019) refer to this as temporary price-level targeting (TPLT).

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