

# **The Optimal Reentry to a Monetary Policy Strategy<sup>1</sup>**

John B. Taylor

Department of Economics and Hoover Institution

Stanford University

April 10, 2021

The purpose of this paper is to examine the ways to return to a rules-based monetary policy in the United States. It starts with a review of key policy developments in the past five years leading up to the present monetary policy situation. It then sets the stage for current and future monetary policy decisions.

For several years, starting around 2017, the Federal Reserve had begun to move back to a more rules-based monetary policy that had worked well in the United States in the 1980s, 1990s, and in other years, and also at other central banks. Many papers were written at the Fed and elsewhere reflecting this revival and showing the benefits of rules-based policies. In 2017 the Fed began to report on rules-based policy in its Monetary Policy Report and favorable comments about rules-based policy were made by many policy makers. The evidence is that the move was beneficial and was reflected in an improvement in economic performance.

That move was interrupted in the first quarter of 2020 when COVID-19 hit the American economy and many other economies around the world. The Fed took a number of actions to deal with the effects of a health crisis on the economy, including a rapid reduction in the federal funds rate, large-scale purchases of Treasury and mortgage backed securities causing a large expansion

---

<sup>1</sup> Prepared for presentation at the Seminar in Applied Economics, The Graduate Center, City University of New York on April 13. I thank David Papell and Ruxandra Prodan for helpful comments and calculations and participants in the Economic Policy Working Group at the Hoover Institution.

of the Fed's balance sheet, and a sharp increase in the growth rate of the monetary aggregates. By most accounts these actions were special and were not consistent with rules-based policies. The Fed also stopped reporting on rules-based policy in its Monetary Policy Report.

Later in 2020 the Fed completed a review of its monetary policy and reported on possible changes in policy. By early 2021 the Fed began to put rules back in its Monetary Policy Report and the new rules reflected some of these changes. But these changes have not yet affected actual monetary policy decisions and there is evidence that a gap has been created between the rules-based policy and the actions of the Fed. The paper concludes with suggestions of how to narrow this gap and thereby create an optimal reentry to a monetary policy strategy.

### **1. Revival of Research on Monetary Policy Rules**

Monetary policy rules were the subject of much research in the 1970's through the early 2000s. For the next several years there was a lull in policy rule research and applications, but in the years from 2017 to early 2020 there was a big pickup, and plenty of evidence can be cited for this revival.<sup>2</sup> Examples are found at the annual monetary policy conference at Stanford held in May 2019, the Federal Reserve Review conference in Chicago in June 2019, and the Macro Model Comparison Conference in Frankfurt also in June 2019. There are many takeaways, but that there was a revival of research on monetary policy rules is quite evident.

At Stanford in May 2019, for example, Mertens and Williams (2020) evaluated different policy rules for the interest rate with a new Keynesian model. Mertens and Williams considered three types of monetary policy rules: (1) a standard inflation-targeting interest rate rule in which

---

<sup>2</sup> Due to publication lags, the publication dates cited below may not be the same as the presentation dates.

the Fed reduces its response to higher inflation and output, in order to bias the economy toward higher interest rates and inflation and thereby reduce the probability of hitting the lower bound; (2) a rule in which the average inflation target is higher than with standard inflation targeting, though the strength of responses to deviations is unchanged; and (3) price-level targeting rules, in which the Fed allows substantial inflation after a low-inflation episode, until the price level recovers to its target, and vice versa.

Cochrane, Taylor and Wieland (2020) evaluated rules with seven different models. These rules include the Taylor rule, a “balanced-approach” rule, a difference rule that responds to growth rather than levels of inflation and unemployment, and two rules that take particular account of periods with near-zero federal funds rates by implementing a forward-guidance promise to make up for zero bound periods with looser subsequent policy. The paper evaluated these monetary policy rules in seven well-known macroeconomic models—a small New Keynesian model, a small Old Keynesian model, a larger policy-oriented model, and four other models from the Macro Model Data Base. The robustness across models was an essential part of the evaluation process.

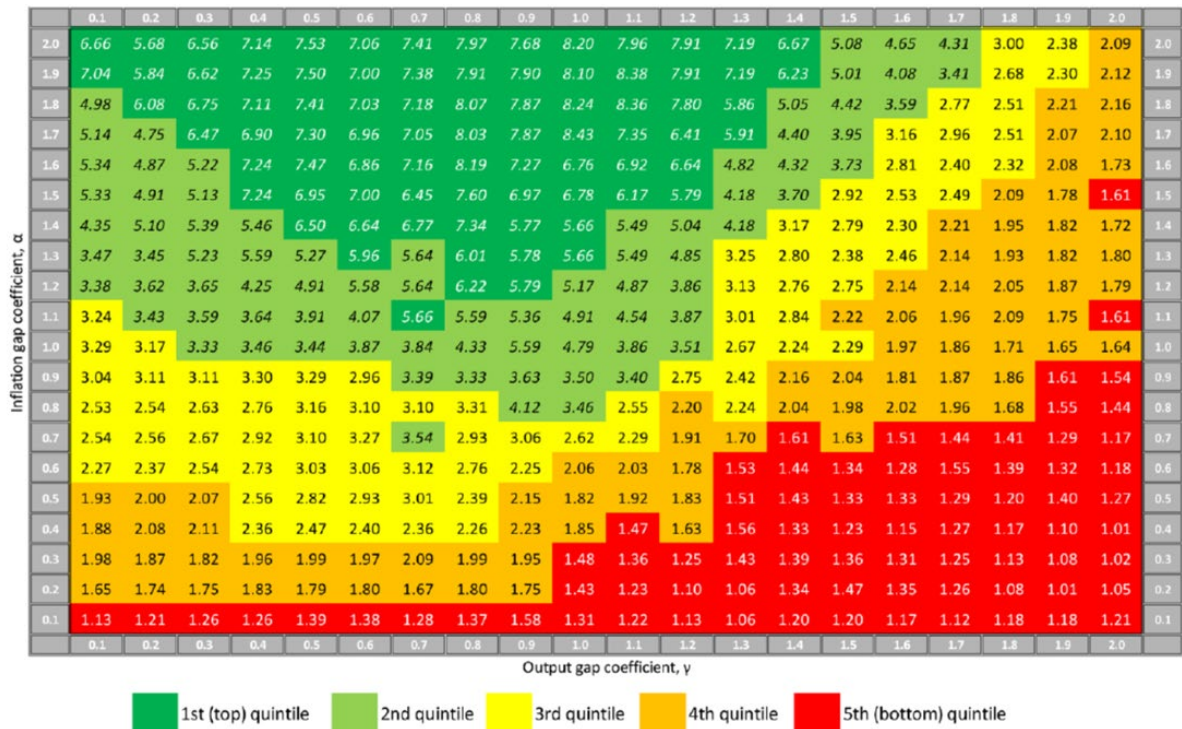
At the conference at the Federal Reserve Bank of Chicago, Sims and Wu (2019) evaluated different monetary policy rules with a new structural model, and Eberly, Stock and Wright (2019) evaluated monetary policy rules using the FRB/US model.

In Frankfurt, Andreas Beyer (2019), Gregor Boehl (2019) and many others evaluated interest rate rules in specific models. These included interest rate rules as well as rules for purchases of assets and corresponding expansion of the central bank’s balance sheet.

Of particular note of the papers presented is the research by Nikolsko-Rzhevskyy, Papell and Prodan (2021) which compared policy rules and discretion historically using new

econometric techniques. Their paper considered a specific policy rule for the interest rate and measured discretion as a deviation of the actual interest rate from that rule. They did calculations for 400 rules and found that the average loss in high deviation periods was greater than the average loss in low deviation periods. They also noted that “inflation-gap-tilting” rules result in better performance. The matrix in Figure 1 below from their paper summarizes their results.

**Figure 1. Discretion to Rules Loss Ratio.** Source: Nikolsko-Rzhevskyy, Alex, David H. Papell and Ruzandra Prodan (2021), “Policy Rules and Economic Performance,” *Journal of Macroeconomics*



The evidence goes beyond these conferences. Some researchers, including Belognia and Ireland (2019), have looked at other instruments such as the money supply, but most others continued to look at interest rate instruments. Bernanke, Kiley and Roberts (2019) examined ten different monetary policy rules for the instruments using the Federal Reserve Board/United States (FRB/US) model. The ten interest rate rules are shown in Figure 2.

**Figure 2. Policy Rules Studied by Bernanke, Kiley and Roberts (2019)**

$$\begin{aligned}
 i_t^{Tay} &= r^* + \pi_t + 0.5(\pi_t - \pi^*) + \hat{y}_t \quad \leftarrow \text{Taylor rule} \\
 i_t^{iTay} &= \rho i_{t-1} + (1 - \rho)[r^* + \pi_t + 0.5(\pi_t - \pi^*) + \hat{y}_t] \\
 i_t^{FPLT} &= r^* + \pi_t + 0.5(\pi_t - \pi^*) + \hat{y}_t + P_t \\
 i_t^{iFPLT} &= \rho i_{t-1} + (1 - \rho)[r^* + \pi_t + 0.5(\pi_t - \pi^*) + \hat{y}_t + P_t] \\
 i_t^{iTPLT} &= \rho i_{t-1} + (1 - \rho)[r^* + \pi_t + 0.5(\pi_t - \pi^*) + \hat{y}_t + \alpha TP_t] \\
 &\quad \boxed{TP_t = \sum_{j=t1}^m (\pi_j - \pi^*)} \\
 i_t &= \max\{0, i_t^{Tay} - \sum_{j=t1}^{t-1} (i_j - i_j^{Tay})\} \quad \leftarrow \text{Reifschneider-Williams} \\
 i_t^{KR} &= i_{t-1}^{KR} + \alpha[(\pi_t - \pi^*) + \hat{y}_t]
 \end{aligned}$$

Plus 3 TPLT rules, which are like  $i_t^{Tay}$  except for an ELB threshold

In 2017 a new section on monetary policy rules for the instruments appeared in the Fed’s Monetary Policy Report with five different policy rules presented and compared with actual policy. This section appeared regularly through the February 2020 report. Figure 3 shows the rules from the 2019 Report.

**Figure 3. Monetary Policy Rules Studied in the 2019 Monetary Policy Report**

<i>Monetary Policy Report (2019)</i>	
Taylor (1993) rule	$R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$
Balanced-approach rule	$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$
Taylor (1993) rule, adjusted	$R_t^{T93adj} = \text{maximum}\{R_t^{T93} - Z_t, 0\}$
Price-level rule	$R_t^{PL} = \text{maximum}\{r_t^{LR} + \pi_t + (u_t^{LR} - u_t) + 0.5(PLgap_t), 0\}$
First-difference rule	$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$
NOTE: $R_t^{T93}$ , $R_t^{BA}$ , $R_t^{T93adj}$ , $R_t^{PL}$ , and $R_t^{FD}$ represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, adjusted Taylor (1993), price-level, and first-difference rules, respectively.	

What explains this revival? One explanation is simply a revealed preference for such research on the part of monetary policy officials and others interested in monetary policy

making. At the Chicago Fed conference, Cecchetti & Schoenholtz (2019) found “The most frequently mentioned topic is the desirability of having a clear understanding of policymakers’ reaction function.” And there were statements by central bank leaders: including Raghu Rajan, former governor of the Reserve Bank of India, “what we need are monetary rules,” Mario Draghi, then President of the European Central Bank: “we would all clearly benefit from...improving communication over our reaction functions...” and Jay Powell Chair of the Federal Reserve Board “I find these rule prescriptions helpful”

Another explanation for the revival was the desire to figure out how to deal with the effective or zero lower bound on the interest rate. There was genuine concern at the Fed about the lower bound in the case of a need for substantial easing. How else can one evaluate alternative proposals for “lower for longer” policy, such as the Reifschneider-Williams (2000) proposal, than with a rule? This is a huge motivation behind the work presented by Lilley and Rogoff (2020) at the Hoover Institution monetary conference.

Another possible explanation was the disappointment with monetary policy leading to the great recession and especially the deviation from rules in the 2003-2005 “too low for too long” period. Yet another explanation was the recognition that rules are needed to evaluate quantitative easing proposals. At the Chicago conference, for example, Brian Sack said “‘Talking more about the policy rules...is appropriate’ to guide future bond purchase programs and improve their impact.” Perhaps concern about the proposed Policy Rules Legislation in Congress in 2017-18 led the Fed to talk more openly about policy rules in the Monetary Policy Report.

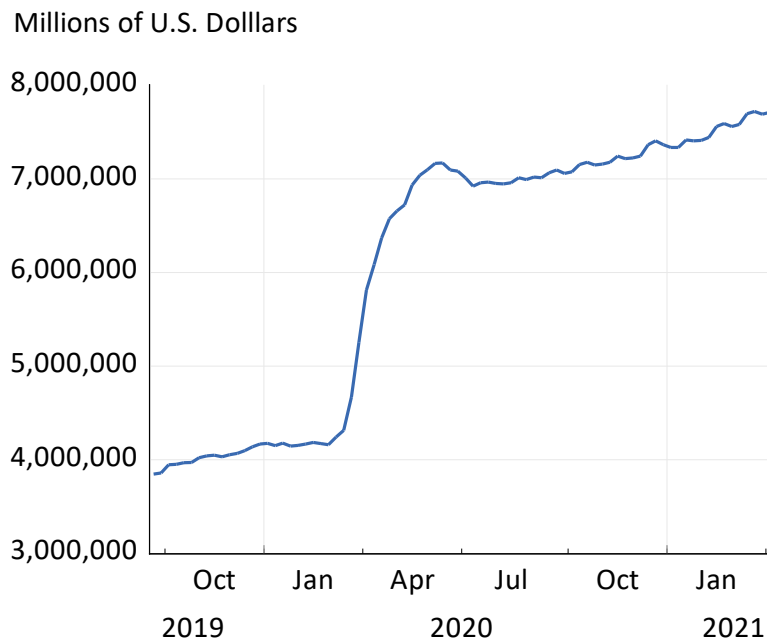
## 2. Retreat from Policy Rules

The pandemic that started in the first quarter of 2020 with COVID-19 was a jolt to the American economy and to many other economies. It interrupted around the world the revival of rules-based policies as many central banks, including the Fed, took special actions to deal with the effects of a health crisis on the economy.

These actions included a rapid reduction in the target for the federal funds rate from 1.75 percent to .25 percent during the weeks of March 2020. It also included large-scale purchases of Treasury and mortgage backed securities causing a large expansion of the Fed's balance sheet as shown in Figure 4. Total assets at the Fed rose from \$3.8 trillion before the pandemic to \$7.7 trillion and are still rising as the Fed continues to buy assets. Both M1 and M2 measures of the money supply grew rapidly.

**Figure 4. Total Assets. Federal Reserve System**

Source: FRED, Federal Reserve Bank of St. Louis. Wednesday Levels



By many accounts these actions were discretionary and were not consistent with rules-based policies. Perhaps reflecting these special actions, the Fed also stopped reporting on rules-based policy in its Monetary Policy Report in the July 2020 issue of the Report.

### **3. Review of Monetary Policy**

While these changes were underway, many of the world's central banks began to formally review their monetary policy strategies in light of COVID-19 and the experience leading up to the pandemic.<sup>3</sup>

One of the first to complete this review was the Fed, which decided to move to a new “flexible form of average inflation targeting,” as Fed Chair Jerome Powell described it at the annual Jackson Hole monetary policy conference in August 2020. European Central Bank President Christine Lagarde explained at the annual *ECB and Its Watchers* conference in September 2020 that the ECB was in the middle of its own “monetary policy strategy review.” And at the Bank of Japan Governor Haruhiko Kuroda was involved in an ongoing discussion with the new government of Prime Minister Yoshihide Suga about how to deal with the pandemic and whether a new monetary policy strategy is in order.

In fact, it looked like there was a move underway to reform the entire international monetary system, with each country or region following a strategy similar to the Fed, though attuned to its own circumstances. But it did not turn out that way. “At the very least,” argued Otmar Issing, a former chief economist and former member of the ECB Board who was largely

---

<sup>3</sup> This section draws from Taylor (2020)



responsible for charting the original course of ECB policymaking, “other central banks should not blindly follow the Fed’s new strategy.”

Others criticized the Fed’s new approach to average inflation targeting. In early September 2020, Robert Heller, a former Federal Reserve governor, argued in a letter to the *Wall Street Journal* that the Fed should “not target an average inflation rate of 2%.” Then, at a virtual conference convened by Stanford University’s Hoover Institution, Charles I. Plosser, a former president of the Federal Reserve Bank of Philadelphia, and Mickey D. Levy of Berenberg Capital Markets criticized the Fed for not being specific about the timespan over which average inflation will be measured. Is it one year or several years?

Chair Powell acknowledged this lack of specificity at the Jackson Hole conference in August saying that “we are not tying ourselves to a particular mathematical formula that defines the average.” He added that, “Our decisions about appropriate monetary policy ... will not be dictated by any formula.” Then, in a press release the same day, the Fed’s Board of Governors explained that policy decisions would be based on “assessments of the shortfalls of employment from its maximum level” rather than by “deviations from its maximum level,” as had been previously stated.

But whether the focus is on “deviations” or “shortfalls,” this new approach added unnecessary uncertainty, if shortfalls were not defined. Moreover, there was no mention of how monetary policy will be used to generate higher inflation to make up for periods when inflation is less than 2%.

In adopting this “flexible” approach, the Fed seems to shift away from the more strategic, rules-based policy that it had been pursuing since 2017. As mentioned, the Monetary Policy Report dropped material on monetary policy rules in contrast to the previous six reports which

had featured a whole section in which different rules were presented and compared with actual policy.

It is understandable that Issing and others would be reluctant to go along with the Fed's apparently less strategic, and more discretionary approach, especially when there were alternatives that other central banks could pursue. Rather than casting about for something new or simply different from the Fed, they looked for a rules-based policy path that the Fed itself was on before the pandemic struck.

When it was first developed, the Taylor rule was based on an average inflation rate. But, unlike the vague definition that the Fed adopted, the Taylor rule defined the "average" as "the rate of inflation over the previous four quarters." In other words, the Fed could still switch to an average-inflation approach with a specific time period and be far more specific than it has decided to be.

Moreover, the formal policy rules previously listed in the Monetary Policy Report had variables to account for factors other than the inflation rate, such as the unemployment rate or the gap between real and potential GDP. These variables could be included in any new strategy without neglecting the inflation target, as could policy rules to deal with asset purchases and their eventual unwinding. Developing such an approach would not be difficult to do, especially if other central banks also chose to go in this direction.

#### **4. Reentry of Rules in the Fed's Monetary Policy Report**

The Federal Reserve's latest Monetary Policy Report, which was released on February 19, 2021, again had a whole section on monetary policy rules. That policy rules reentered the Report was a welcome development. It re-initiated a helpful reporting approach that began in the

July 2017 Monetary Policy Report when Janet Yellen was Fed chair. The approach continued under Chair Jay Powell in 2018, 2019 and early 2020, but it was dropped in July 2020.

Five rules were discussed in the February 2021 Monetary Policy Report on pages 45 through 48. To quote the Report, these include “the well-known Taylor (1993) rule, the ‘balanced approach’ rule, the ‘adjusted Taylor (1993)’ rule, and the ‘first difference’ rule. In addition to these rules,” and this is very important, there is a new “‘balanced approach (shortfalls) rule,’ which represents one simple way to illustrate the Committee’s focus on shortfalls from maximum employment.” I will come back to that new rule below.

Figure 5 shows the five rules from the February 2021 Report: There were also five rules in the earlier Reports (see Figure 3), but note that one was left out, and a new one—the Balanced-approach (shortfalls) rule—was added in. As stated in the document, this modified simple rule “would not call for increasing the policy rate as employment moves higher and unemployment drops below its estimated longer-run level. This modified rule aims to illustrate, in a simple way, the Committee’s focus on shortfalls of employment from assessments of its maximum level.”

**Figure 5. Five Policy Rules in the February 2021 Monetary Policy Report**

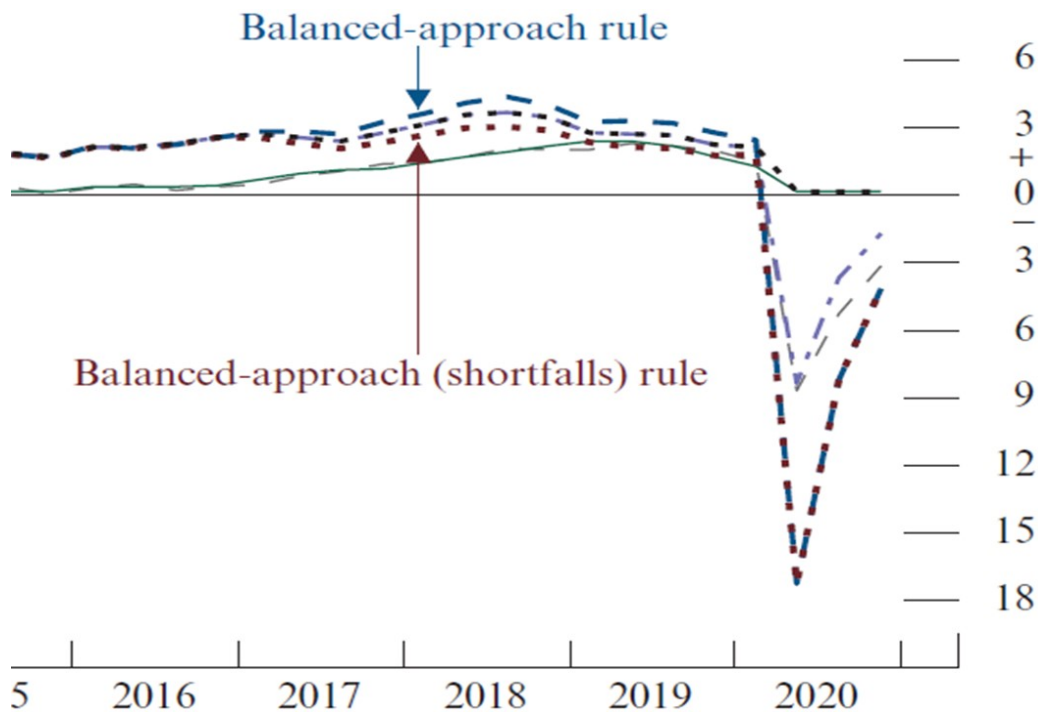
A. Monetary policy rules

Taylor (1993) rule	$R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$
Balanced-approach rule	$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$
Balanced-approach (shortfalls) rule	$R_t^{BAS} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2\min\{(u_t^{LR} - u_t), 0\}$
Adjusted Taylor (1993) rule	$R_t^{T93adj} = \max\{R_t^{T93} - Z_t, \text{ELB}\}$
First-difference rule	$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$

NOTE:  $R_t^{T93}$ ,  $R_t^{BA}$ ,  $R_t^{BAS}$ ,  $R_t^{T93adj}$ , and  $R_t^{FD}$  represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, balanced-approach (shortfalls), adjusted Taylor (1993), and first-difference rules, respectively.

How different would this shortfalls rule be compared with the regular balanced-approach rule? There is a helpful graph in the Report which answers this question. I have magnified a portion of that graph in Figure 6 below so it is easier to see.

**Figure 6. Comparison of the Balanced Approach Rule: With and Without Shortfalls**



Notice that the balanced-approach (shortfalls) rule is below the balanced-approach rule in 2017 through the start of the pandemic in 2020. This is the period when the actual unemployment rate in the United States is lower than the estimate of the long-run unemployment rate. Thus the shortfalls rule does not increase the interest rate as does the balanced approach rule without the shortfall. The rule in between these two in the graphs is the Taylor rule. The shortfalls and the non-shortfalls rule then move together during the start of the pandemic as the

unemployment rate rises well above the long run rate. The adjusted Taylor rule stays above zero, but then stays low for longer than the Taylor rule.

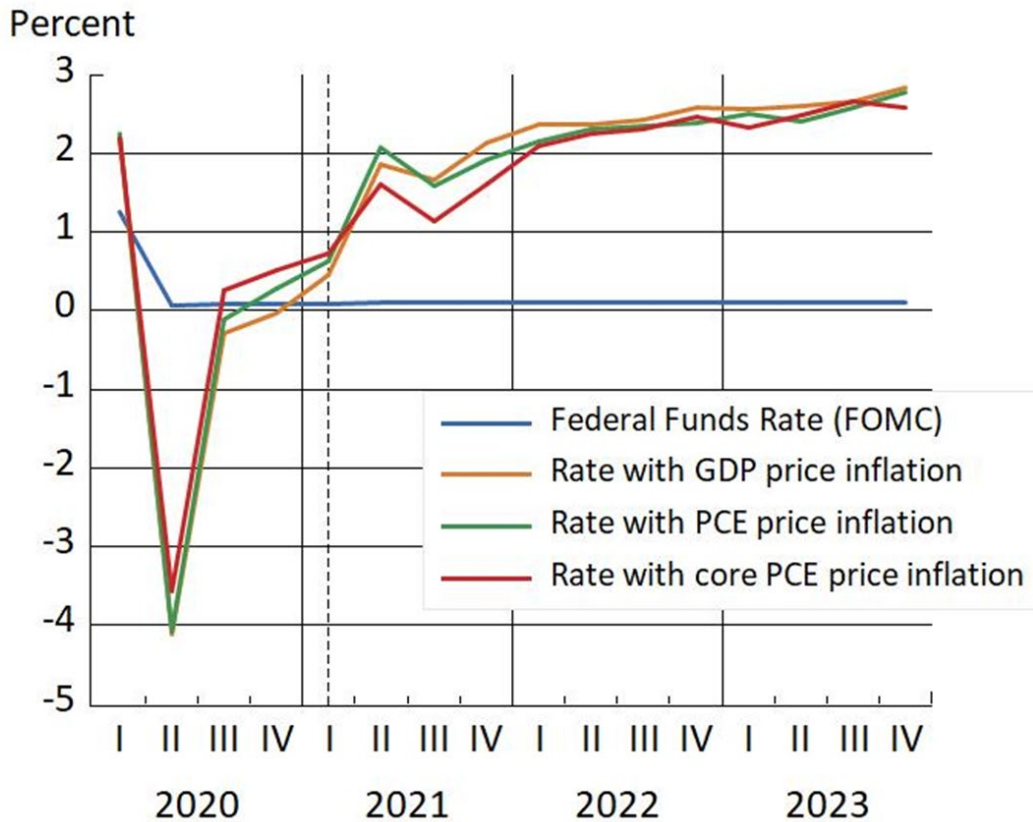
The important contribution of this new discussion is that one now has an explicit way to think about the Fed's new "shortfalls from maximum employment" approach. One can see if the new rule performs better than the balanced approach or the modified Taylor rule, for example, by simulating models. A huge amount of research can now take place both outside as well as inside the Fed.

While this is an excellent start, more could be done as explained below. It is a bit disappointing, for example, that, as the Report says, the aims "of having inflation average 2 percent over time to ensure that longer term inflation expectations remain well anchored, are not incorporated in the simple rules analyzed in this discussion."

## **5. Reentry to a Monetary Strategy**

It is good that rules are put back in the Fed's Monetary Policy Report, but it would be more helpful if the Fed incorporated some of these rules or strategy ideas into its actual decisions. Apparently this has not yet happened, as a comparison of the interest rate path and policy rules for the interest rate in Figure 7 below suggests. The blue line in Figure 7 gives the FOMC's projection of the federal funds rate for the quarters from 2020Q1 to 2023Q4 and three different rules-based paths for the federal funds rate through 2023. This FOMC projection is the "value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year," as stated in Table 1 of the Fed's Summary of Economic Projections.

**Figure 7. FOMC Projection of Federal Funds Rate and Monetary Policy Rules with Three Inflation Rates**



The other three lines in Figure 7 show the federal funds rates from three policy rules using the same parameters as those in the Taylor rule which is discussed in the February 2021 Monetary Policy Report. The so-called equilibrium interest rate has been reduced from 2 percent to 1 percent in the calculations in Figure 7. Such a reduction has been suggested at the Fed, but may be larger or smaller than assumed here. The three policy rules use the four-quarter inflation rates of the GDP price index, the PCE price index, or the core PCE price index, based on the February 2021 Congressional Budget Office (CBO) projections. They use the same percentage

deviation of real GDP and from potential GDP as in the CBO report. Many other economic forecasters have inflation and real GDP forecasts close to those of CBO.

Even with this smaller equilibrium real interest rate (1 percent rather than 2 percent in the original Taylor rule), the FOMC's path for the federal funds rate is well below any of these policy rules. There is a difference in the first quarter of 2021, and the difference grows over time. Consider for simplicity the average of the interest rates for the three different inflation rates in the final quarter of each year. If we average the three values, we get 1.9 percent in 2021Q4, 2.5 percent in 2022Q4 and 2.7 percent in 2023Q4.

There has been little mention of why the discrepancy exists between the Fed's actual decisions reported here and the rules. Does this mean that the Fed will actually keep the rate this low under these circumstances regarding real GDP and inflation? Will it then raise the rate sharply in 2023 or 2024?

### *An Optimal Reentry?*

The Taylor rule parameters, even with the full percentage point lower real equilibrium real interest rate, may not adequately reflect the results of the Fed's review and the new flexible average inflation rate concept. To consider these alternatives and thereby come closer to the new "flexible form of average inflation targeting" policy of the Fed, consider the formulation of policy rules as put forth in a recent paper by David Papell and Ruxandra Prodan (2021).

In their recent paper, Papell and Prodan (2021) consider a *Taylor rule with shortfalls* and a *balanced approach rule with shortfalls* as introduced in the Monetary Policy Report and described by Powell. In both cases they consider the unemployment rate relative to the long run level rather than the GDP gap variable emphasized in Figure 7, though that is not a key

difference. For the Taylor (*shortfalls*) rule and the balanced approach (*shortfalls*) rule, they replace the difference between the unemployment rate in the long run and the actual unemployment rate with the *minimum* of that difference and 0. In other words, the focus is on the shortfall of unemployment from the long run value rather than the deviation. Thus, if the unemployment rate is 3.5 percent and the long run level is 4.0 percent, the interest rate is not raised as it would be in the rules without shortfalls. That is, *zero is the minimum of .5 percent (=4.0-3.5) and zero*. This is as in the balanced approach (shortfalls) rule in the Monetary Policy Report shown in Figure 5 and illustrated in Figure 6.

Papell and Prodan (2021) observe, however, that this adjustment does not fully reflect the changes in policy strategy made by the FOMC. They therefore also consider another important adjustment which results in the Taylor (*consistent*) rule and the balanced approach (*consistent*) rule. This second adjustment defines the unemployment rate consistent with maximum employment be 3.5 percent rather than 4.0 percent and also assumes an inflation rate which is *moderately* above the target inflation rate. For example, if the target inflation rate is 2 percent, then they use a moderate inflation rate of 2.2 percent, using a numerical example of Clarida (2021). This means that the Fed would not adjust the interest rate simply because the inflation rate was 2.0 or 2.1 percent; rather it would watch for inflation going above 2.2 percent.

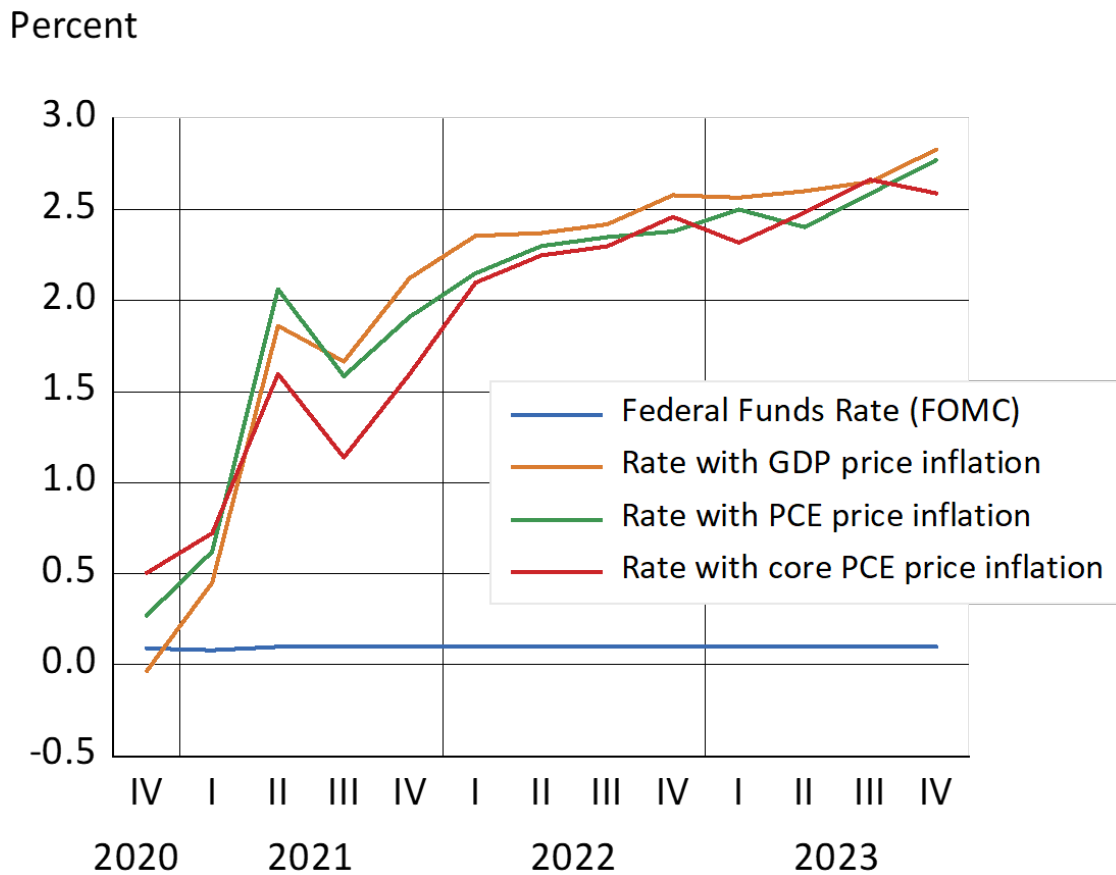
Papell and Prodan (2021) consider the behavior of the shortfalls and the consistent rules over recent history using the actual historical values of the unemployment rate, the inflation rate and the federal funds rate. Here we look at the behavior of the rules going into the future using forecasts of unemployment and inflation and comparing with the FOMCs stated path for the interest rate. We look at the period from the fourth quarter of 2020 through the fourth quarter of



2023. It is also assumed that the equilibrium real interest rate is .5 percent rather than 1 percent which reduces the interest rate relative of Figure 8.

For comparison we begin in Figure 8 using the same sample period by simply cutting off the recession quarters, the first three quarters of 2020, which appeared in Figure 7.

**Figure 8. Policy Rules with Different Inflation Rates and The Federal Funds Rate: 2020Q4 to 2023Q4**  
 Source: See Figure 7.



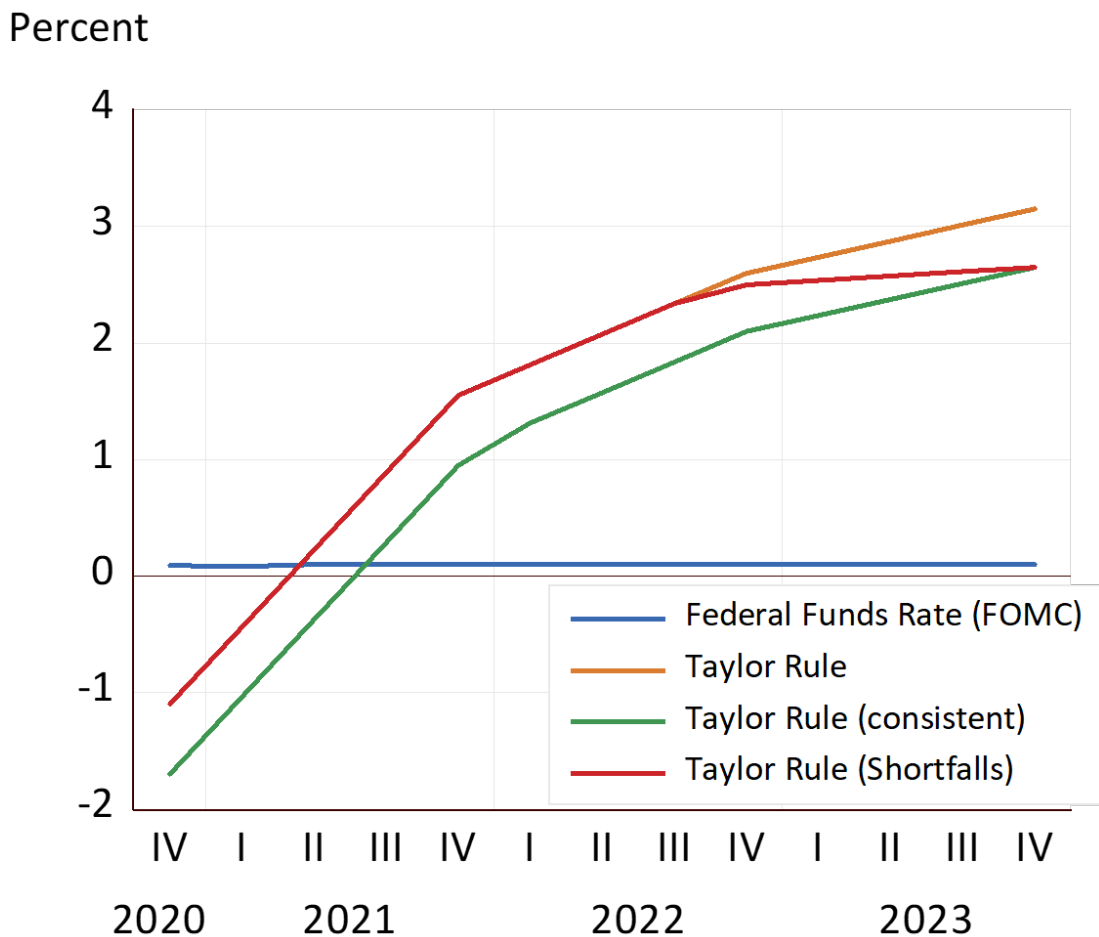
Next we consider in Figure 9 the three Taylor rules, including the regular, shortfalls, and consistent rules, along with the FOMC path for the federal funds rate. Recall that we use a lower equilibrium real interest rate of .5 percent in these rules rather than 1 percent as in Figures 7 and

8. Note that all three interest rates from the rules rise as the inflation rate is forecast to rise and the unemployment rate to fall. The balanced approach and the balanced approach (shortfalls) rule are the same through the third quarter of 2022.

Looking out into the period later in 2021 as well as in 2022 and 2023, the results are not much different from Figure 8. By the fourth quarter of 2021, a sizable gap of 1.4 percent for the average of the three rules compared with the FOMC path emerges. That gap rises to 2.4 percent in the fourth quarter of 2022 and 2.8 percent in the fourth quarter of 2023. These are very close to the 2.7 percent for the results in Figure 8.

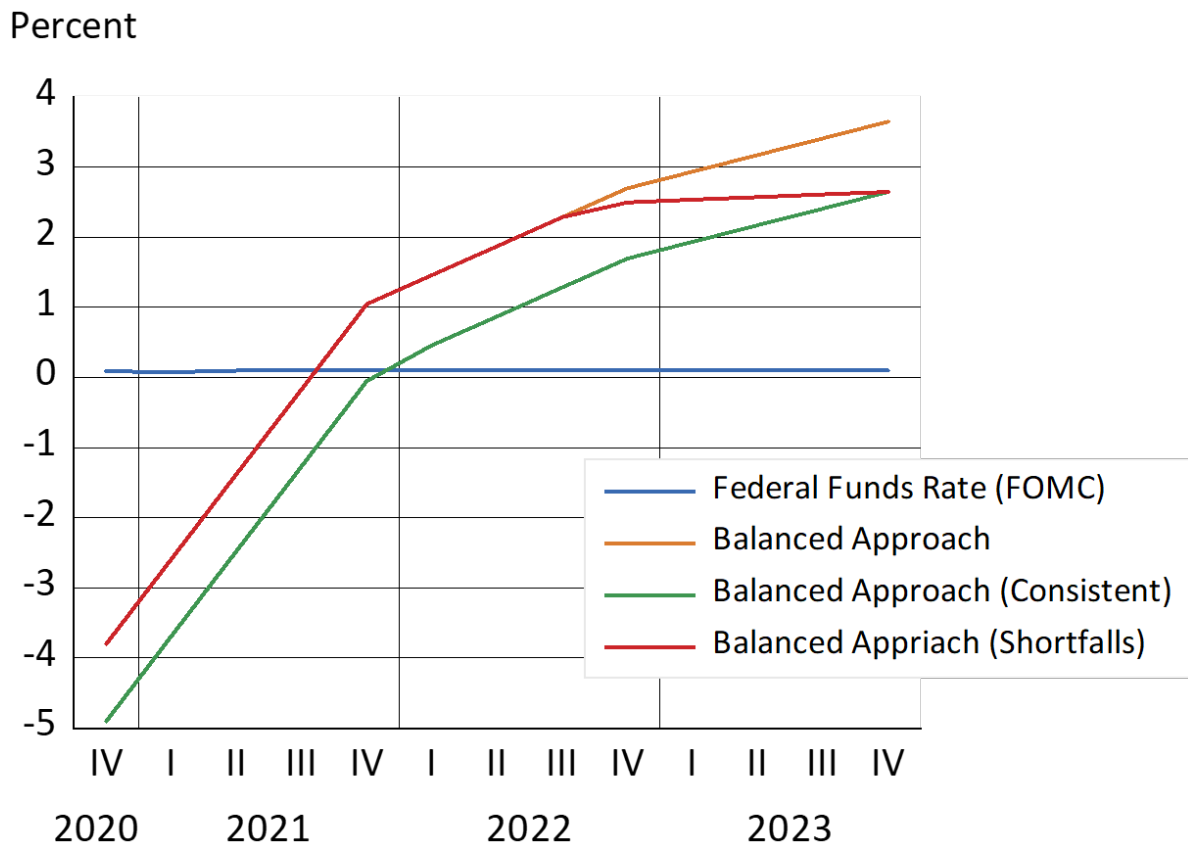
**Figure 9. Three Taylor Rules (standard, shortfalls, consistent) and the Federal Funds Rate: 2020Q4 to 2023Q4**

Source: Based on monetary policy rules reported in Papell and Prodan (2021) as calculated by Ruxandra Prodan.



Finally, we consider the balanced approach (regular, consistent and shortfalls) rule in Figure 10. There is little difference in the later years with the average difference between the rule and federal funds rate being 3 percent in 2023Q4, compared with 2.8 percent and 2.7 percent with the Taylor rules. But the balanced approach rules rise faster. Thus it indicates that the policy rate could be held low through the fourth quarter of 2021. But even in this case, an adjustment is then warranted.

**Figure 10. Three Balanced Approach Rules & the Federal Funds Rate: 2020Q4 to 2023Q4**  
 Source: Based on monetary policy rules reported in Papell and Prodan (2021) as calculated by Ruxandra Prodan.



To summarize, the analysis of optimal reentry in this section takes into account the shortfalls of unemployment rather than deviations and focusses on the average inflation rate by looking at moderate inflation rates slightly higher than the long run target inflation rate. Nevertheless, the results are similar to what was found by looking at the regular Taylor rule. The results can be usefully summarized by looking at the *average* gap in percentage points between the FOMC interest rate and the settings of the *three* rules with modifications (regular, shortfalls, and consistent) from Figure 9 and 10 or the *three* rules with different inflation rates (GDP, PCE and core PCE) in Figure 8. For three quarters the results are given here.

	Taylor Rule with Modification	Balanced Approach Rule with Modifications	Taylor Rule with Differing Inflation
2021Q4	1.4	0.7	1.9
2022Q4	2.4	2.3	2.5
2023Q4	2.8	3.0	2.7

## 6. Conclusion

This paper has examined the reasons to return to a rules-based monetary policy in the United States and has outlined a method to do so. By reviewing the past five years leading up to the present monetary situation, it provides the background needed for analyzing current and future monetary policy decisions.

The results indicate that the Fed should now engage in a strategy or rule in which people and markets understand that it would raise the policy interest rate if economic growth increases and inflation rises as they are now forecast to do. It would of course be a contingency plan as all

rules and strategies should be. By having clearly stated a shortfalls policy rule in its February 2021 Monetary Policy Report, the Fed has prepared for such a strategy in practice. Explaining how its policy rule or strategy would be consistent with its flexible average inflation targeting statements would further clarify the Fed's monetary policy and facilitate the market adjustment when it takes place. It would remove uncertainty and remaining inconsistencies.

## 7. References

- Belongia, Michael T. and Peter Ireland (2020), “A Reconsideration of Money Growth Rules,” Boston College Working Papers in Economics No. 976
- Bernanke, Ben S., Michael T. Kiley (2019), John M. Roberts “Monetary Policy Strategies for a Low-Rate Environment,” *American Economic Association Papers and Proceedings*, Vol. 109, May, pp. 421-26
- Beyer, Andreas (2019), “Financial Stability and Monetary Policy—An Augmented Taylor Rule for the Euro Area,” European Central Bank, Presented at the Third Research Conference of the Macroeconomic Modeling and Model Comparisons Network (MMCN), Frankfurt, June 13-14
- Board of Governors of the Federal Reserve System (2017b, 2018a, 2018b, 2019a, 2019b, 2020a, 2021a) *Monetary Policy Reports*, Washington, DC: Board of Governors.
- Boehl, Gregor (2019), “A Structural Investigation of Quantitative Easing,” Presented at the Third Research Conference of the Macroeconomic Modeling and Model Comparisons Network (MMCN), Frankfurt, June 13-14.
- Cecchetti, Stephen G. and Schoenholtz, Kermit (2019), “Improving U.S. Monetary Policy Communications,” August, CEPR Discussion Paper No. DP13915.
- Clarida, Richard (2021), “The Federal Reserve’s New Framework: Context and Consequences,” paper presented at the Economic Policy Working Group, Hoover Institution, January 13  
<https://www.federalreserve.gov/newsevents/speech/files/clarida20210113a.pdf>
- Cochrane, John H., John B. Taylor, Volcker Wieland (2020), “Evaluating Rules in the Fed's Report and Measuring Discretion,” in *Strategies for Monetary Policy*, John Cochrane and John Taylor (Eds.), Hoover Institution Press, 2020  
[https://www.hoover.org/sites/default/files/research/docs/chapter\\_5.pdf](https://www.hoover.org/sites/default/files/research/docs/chapter_5.pdf)
- Eberly, Janice C., James H. Stock, Jonathan H. Wright (2019), “The Federal Reserve’s Current Framework for Monetary Policy: A Review and Assessment,” May 24. Prepared for the Conference on Monetary Policy Strategy, Tools, and Communication Practices, Federal Reserve Bank of Chicago. [file:///C:/Users/johntaylor/Downloads/review-current-framework-eberly-stock-wright-pdf%20\(2\).pdf](file:///C:/Users/johntaylor/Downloads/review-current-framework-eberly-stock-wright-pdf%20(2).pdf)
- Lilley, Andrew and Kenneth Rogoff (2020), “The Case for Implementing Effective Negative Interest Rate Policy,” in *Strategies for Monetary Policy*, John Cochrane and John Taylor (Eds.), Hoover Institution Press, 2020
- Mertens, Thomas M. and John C. Williams (2020) “Tying Down the Anchor: Monetary Policy Rules and the Lower Bound on Interest Rates,” in *Strategies for Monetary Policy*, John Cochrane and John Taylor (Eds.), Hoover Institution Press, pp. 103-154
- Nikolsko-Rzhevskyy, Alex, David H, Papell, and Ruxandra Prodan (2014), “Deviations from Rules-Based Policy and Their Effects.” *Journal of Economic Dynamics and Control* 49 (December): 4–17.

Nikolsko-Rzhevskyy, Alex, David H. Papell and Ruzandra Prodan (2021), “Policy Rules and Economic Performance,” *Journal of Macroeconomics*, volume 68

[https://www.sciencedirect.com/science/article/abs/pii/S0164070421000045?dgcid=rss\\_sd\\_all](https://www.sciencedirect.com/science/article/abs/pii/S0164070421000045?dgcid=rss_sd_all)

Papell, David (2020), “Discussion of Evaluating Rules in the Fed’s Report and Measuring Discretion” in *Strategies for Monetary Policy*, John Cochrane and John Taylor (Eds.), Hoover Institution Press, 2020

Papell, David H. and Ruxandra Prodan (2021), “Policy Rules Consistent with the FOMC’s Longer-Run Goals and Monetary Policy Strategy,” University of Houston

[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3715234](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3715234)

Reifschneider, David L and John C. Williams (2000), “Three lessons for monetary policy in a low-inflation era,” *Journal of Money, Credit and Banking*, pp. 936–966.

Sims, Eric R. & Jing Cynthia Wu (2019) “Evaluating Central Banks' Tool Kit: Past, Present, and Future,” presented at the Conference on Monetary Policy Strategy, Tools, and Communication Practices [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3416343](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3416343)

Taylor, John B. (2020) “Who’s Afraid of Rules-Based Monetary Policy?” *Project Syndicate* October 12. [https://web.stanford.edu/~johntayl/2020\\_pdfs/Who\\_s\\_Afraid\\_of\\_Rules-Based\\_Monetary\\_Policy-Project\\_Syndicate-10-16-20.pdf](https://web.stanford.edu/~johntayl/2020_pdfs/Who_s_Afraid_of_Rules-Based_Monetary_Policy-Project_Syndicate-10-16-20.pdf)

Teryoshin, Yevgeniy (2017). “Historical Performance of Rule-Like Monetary Policy.” Working Paper No. 17-005, Stanford Institute for Economic Policy Research, February.

<https://siepr.stanford.edu/research/publications/historical-performance-rule-monetary-policy>