

Economics Group

Special Commentary

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“Taylor-ing” Monetary Policy Amidst Uncertainty

Executive Summary

After seven years with the fed funds rate near zero, the Federal Open Market Committee (FOMC) voted for a 25 basis point increase at its most recent meeting. In this report, we revisit monetary policy rules to explore the risks of moving away from zero interest rate policy and inform our outlook for a cautious Fed in the initial stages of the tightening cycle before increasing rates in a more methodical, albeit still measured, pace. We studied a number of different monetary policy rules and find that the FOMC waited until even the most pessimistic of the rules considered were calling for a higher fed funds rate to proceed with the first rate hike. We point out that the asymmetric risks at the zero lower bound may explain the Fed’s caution, although this asymmetry dissipates as interest rates move away from zero. In addition, the different rules’ varying policy prescriptions highlight the challenge facing real-time policy and decision making.

We revisit monetary policy rules to explore the risks of moving away from zero interest rate policy.

Review: Taylor Rule Framework

The Taylor rule can be a convenient benchmark for monetary policy. We will utilize several variants to illustrate the uncertainty surrounding the amount of slack in the economy and the appropriate stance of monetary policy (see appendix for details on methodology). In a broad sense, the Taylor rule suggests that the funds rate should be set as a function of the deviation of inflation from its target and a measure of real economic slack (the difference in actual output from potential output in its original form).¹ While the literature surrounding monetary policy rules is extensive, our use is to simply illustrate the uncertainty involved in real-time policy making, the implications for this particular tightening cycle and the challenge for investors and decision makers in the current economic environment. In particular, we will investigate how different measures of economic slack included in a Taylor-type rule give conflicting policy prescriptions and the implicit uncertainty around these estimates.

Output Gap as a Measure of Slack

We begin by utilizing the output gap, or the deviation of real GDP from its potential level, as the measure of economic slack in a Taylor rule, and the implied policy rate is plotted in Figure 1. Data are readily available for inflation, the target rate of inflation and current output. These constitute three of the key inputs for the Taylor Rule. That said, potential output must be estimated, and estimates can vary widely across time, presenting a challenge to policymakers. As discussed by economists at the Federal Reserve Bank of San Francisco, the lower estimates of potential GDP following the financial crisis have had massive implications for monetary policy.² Downward revisions to potential GDP estimates by the Congressional Budget Office have created a vastly different picture for the appropriate stance of monetary policy than what its initial estimates suggested (Figure 1). Lower potential output implies less economic slack and, therefore, less leeway for accommodative monetary policy, ceteris paribus. In fact, looking at the most recent estimates suggests policy should be moving away from the zero lower bound, while estimates from before the recession and early in the recovery would imply the policy rate should still be

¹ Taylor, John (1993). “Discretion versus Policy Rules in Practice.” Carnegie-Rochester Conference Series on Public Policy 39.

² Elias, Early, Helen Irvin and Oscar Jorda (2014). “Monetary Policy When the Spyglass is Smudged.”

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firmly in negative territory. That said, how can we know if the current estimates are any more reliable than previous estimates that were subsequently revised? The short answer is there is really no good way to do so, and the enormous uncertainty around these estimates is challenging for policymakers. One of the difficulties in estimating potential GDP is the necessary estimates of labor productivity.³ Because monetary policy cannot directly impact the pace of productivity, it can be helpful to exclude the impact of productivity on estimates of the output gap by utilizing measures of labor market slack instead of the overall output gap in the Taylor rule. In our view, this reduces the uncertainty about the amount of economic slack, however, uncertainty remains for reasons which we will soon highlight.

Figure 1

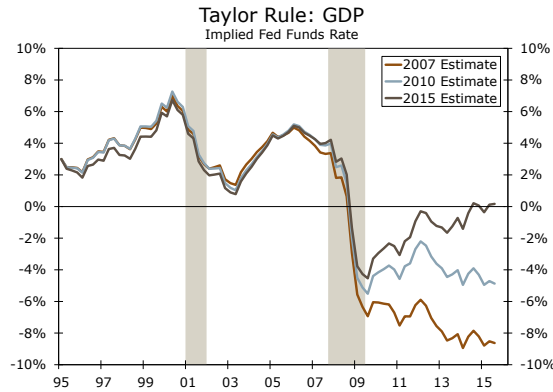
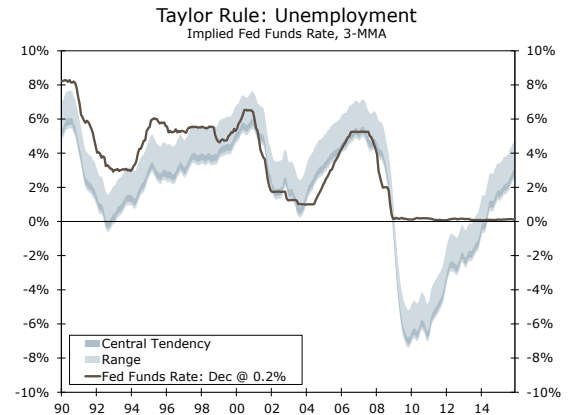


Figure 2



Source: Federal Reserve Board, U.S. Dept. of Labor & Commerce, CBO and Wells Fargo Securities, LLC
Labor Market Slack and Monetary Policy

The wide range of estimates for full employment by members of the FOMC leads to a similarly wide range for the implied funds rate, increasing the uncertainty.

The difference between the unemployment rate and the level of full employment can also be utilized as a measure of economic slack in the Taylor rule, the results of which are plotted above in Figure 2.⁴ Unfortunately, while many economists are more confident about the level of full employment compared to the level of potential output, there is still significant uncertainty involved in both estimates. Instead of using the CBO’s estimate of full employment, we will turn to the Federal Open Market Committee’s (FOMC) Summary of Economic Projections (SEP). Figure 2 plots the range of the implied funds rate from a Taylor rule based upon the most recent estimates from the SEP, including both the central tendency and the entire range of estimates. This exercise highlights the “cross-sectional” uncertainty in estimates of economic slack rather than the uncertainty across time, which we saw in the previous example. As you can see, the estimates utilizing this version of the Taylor rule differ markedly from those utilizing output and add to the already cloudy picture of how accommodative monetary policy “should” be. Moreover, the wide range of estimates for full employment by members of the FOMC leads to a similarly wide range for the implied funds rate, increasing the uncertainty.

Broader Measures of Labor Market Slack and Monetary Policy

Why might the output gap imply more slack in the economy than what is implied by the headline unemployment rate? Underemployment has been a key theme during this cycle, as many individuals were employed part time for economic reasons, or marginally attached to the labor force, following the worst recession in recent memory (Figure 3). These individuals are not captured in the traditional unemployment rate, leading to an overly optimistic picture of the health of the labor market. Therefore, when a “U-6 unemployment gap” is utilized instead of the traditional “U-3 unemployment gap” in a Taylor-type rule (Figure 4), the implied fed funds rate is

³ For further reading on potential GDP growth and the challenges in predicting potential output, see Silvia, John, Sarah House and Alex Mochring (2015). “Potential Growth: Slower Future,” available on our website.

⁴ We again refer interested readers to the appendix for a description of our methodology.

much lower and only recently moved into positive territory. As you can see in Figure 4, utilizing the U-6 Taylor rule is likely more reflective of the FOMC’s thinking and implies a funds rate near zero.

Figure 3

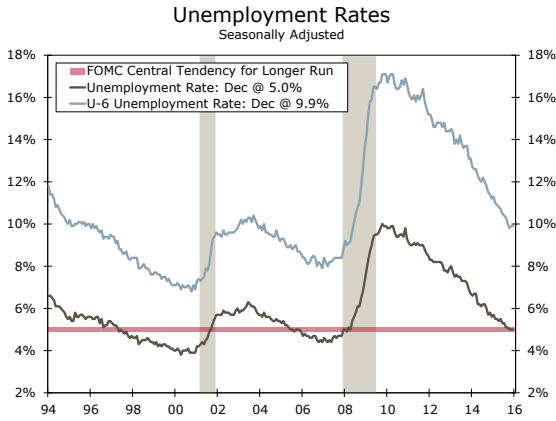
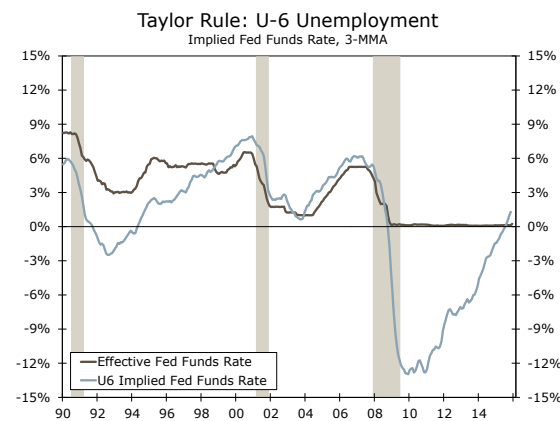


Figure 4



Source: U.S. Dept. of Labor & Commerce, Federal Reserve Board and Wells Fargo Securities, LLC

Implications for Decision Making in This Cycle

As we have illustrated, different variants of the Taylor rule are highly sensitive to the underlying assumptions. It is interesting to note that the Fed only began to move away from its zero interest rate policy once all three of the rules we studied had an implied fed funds rate above zero. In our opinion, waiting until even the most pessimistic of the three policy rules pointed to higher rates is indicative of a cautious Fed. This is a result of the uncertainty inherent in real-time policymaking as well as the asymmetric risks at the zero bound.

As Chair Yellen has previously outlined, the Fed can “respond more readily to upside surprises to inflation, economic growth and employment than to downside shocks.”⁵ Chair Yellen goes on to say “this asymmetry suggests that it is appropriate to be more cautious in raising our target for the federal funds rate than would be the case if short-term nominal interest rates were appreciable above zero.” It certainly appears that this is what the Fed is in fact doing, as it has taken extreme care in the first rate hike to be sure the economy has reached so-called “escape velocity.”

We expect continued caution, at least initially, on the part of the FOMC. That said, the further the funds rate moves from zero, the more symmetric the risks in policy become, as the Fed would then have room to be either more accommodative or restrictive, depending on the incoming data. Although members of the FOMC claim they are taking a balanced approach to policy, we believe this might not truly be the case until policy is sufficiently away from zero. If this hypothesis is true, and the Fed’s emphasis on flexibility seems to support this, a gradual beginning to the tightening cycle could be followed by a somewhat more rapid pace of rate hikes as the labor market continues to improve. However, low inflation should continue to give the Fed additional room for caution in the near term. We maintain that the Fed will tighten policy at a rate faster than what is currently discounted by the market, although not as fast as the FOMC’s latest projections in 2016. Moving into 2017, we see more methodical increases in line with the dot plot.

The Fed only began to move away from its zero interest rate policy once all three of the rules we studied had an implied fed funds rate above zero.

⁵ Yellen, Janet (2015). *Economic Outlook Before the Joint Economic Committee.*

Appendix

As mentioned earlier, we utilize a number of variants of the initially proposed Taylor rule for each exercise.⁶ We recognize there are many different specifications for each rule and do not take a stance on which is superior. Recall we simply utilize the various rules to demonstrate the inherent uncertainty in real-time policymaking. In all rules, we utilize the core PCE deflator as our measure of inflation.

GDP Output Gap

For the first exercise utilizing the output gap in the monetary policy rule, we use the same methodology as economists at the San Francisco Fed (from which our analysis draws heavily upon), whose Taylor rule is of the following form:⁷

$$(1) \quad i = 1.25 + 1.5 \times \text{Inflation} + \text{Output Gap}$$

The output gap is the percent deviation in actual real GDP from potential real GDP using the estimates from the CBO.

Traditional Unemployment Rate Gap

The second example contains the traditional U-3 unemployment rate in the Taylor rule, and we again follow the lead of Elias, Irvin and Jorda (2014) with the following rule:

$$(2) \quad i = 1.25 + 1.5 \times \text{Inflation} - 2 \times (\text{UR} - \text{Full Employment})$$

Instead of CBO estimates for full employment, we utilize the most recent FOMC projections.

U-6 Unemployment Rate Gap⁸

$$(3) \quad i = 1.25 + 1.5 \times \text{Inflation} - 2 \times (\text{U6} - \text{Full Employment})$$

Where the U6 in this rule is the U-6 unemployment rate and full employment is assumed to be 9 percent, which is consistent with the average value from 2003-2007 and near the point U-6 unemployment was at when the U-3 measure reached the current range of full-employment during the previous cycle.

Readers may note that we have not discussed estimates of the equilibrium or neutral real fed funds rate with respect to the Taylor rule. While this neutral rate is often used in Taylor-type rules, our omission is intentional for tractability. That said, including estimates of the neutral rate would add another level of uncertainty, which we will discuss further in a future report.

⁶ Taylor, John (1993). "Discretion versus Policy Rules in Practice."

⁷ Elias, Early, Helen Irvin and Oscar Jorda (2014). "Monetary Policy When the Spyglass is Smudged."

⁸ Bolser, Conyon, Mary C. Daly and Fernanda Nechio. (2014). "Mixed Signals: Labor Markets and Monetary Policy."

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