Is the Fed Following a "Modernized" Version of the Taylor Rule? Part 1

Academic research on monetary policy rules is voluminous. One of the most famous rules was published in 1993 by John Taylor, a well-known academic economist from Stanford University. The eponymous Taylor rule, and its many variants, is followed widely by financial market participants, economists, and those in monetary policymaking circles.[1] In its basic form, the Taylor rule states that the monetary authority (e.g., the Federal Reserve) should set its policy rate in the following manner:

$$i_t = r^* + \pi_t + \alpha(y_t - y^*) + \beta(\pi_t - \pi^*),$$

where i_t is the nominal federal funds interest rate; r^* is the equilibrium real interest rate; π_t is the current inflation rate, measured from a year earlier; y_t is real gross domestic product (GDP) and y^* is real potential GDP, the difference between the two being the output gap; and π^* is the Fed's inflation target, which is currently 2 percent for the personal consumption expenditures price index.[2]

Three key principles are embedded in the Taylor rule. First, the Fed should raise its federal funds target rate proportionally more when inflation increases. This is known as the Taylor principle. Second, the interest rate should be adjusted in response to the output gap, a measure of "slack" in the economy. This is known as the Phillips relationship, whereby inflation decreases (increases) if real GDP decreases (increases) relative to real potential GDP. In Taylor's original specification, the coefficients on the output and inflation gaps, α and β, respectively, were each 0.5. Third, Taylor stipulated that the equilibrium real interest rate, r^*, should be fixed over time at 2 percent. Although Taylor believes that r^* should remain

invariant over time, other policymakers have instead adopted the position that r^* is time varying and depends importantly on the underlying growth rate of the economy and other factors, such as the demand for risk-free Treasury securities (i.e., "safe assets").[3]

Current FOMC Federal Funds Target Rate, the 1993 Taylor Rule Using Current Data, and Two Inflation Scenarios
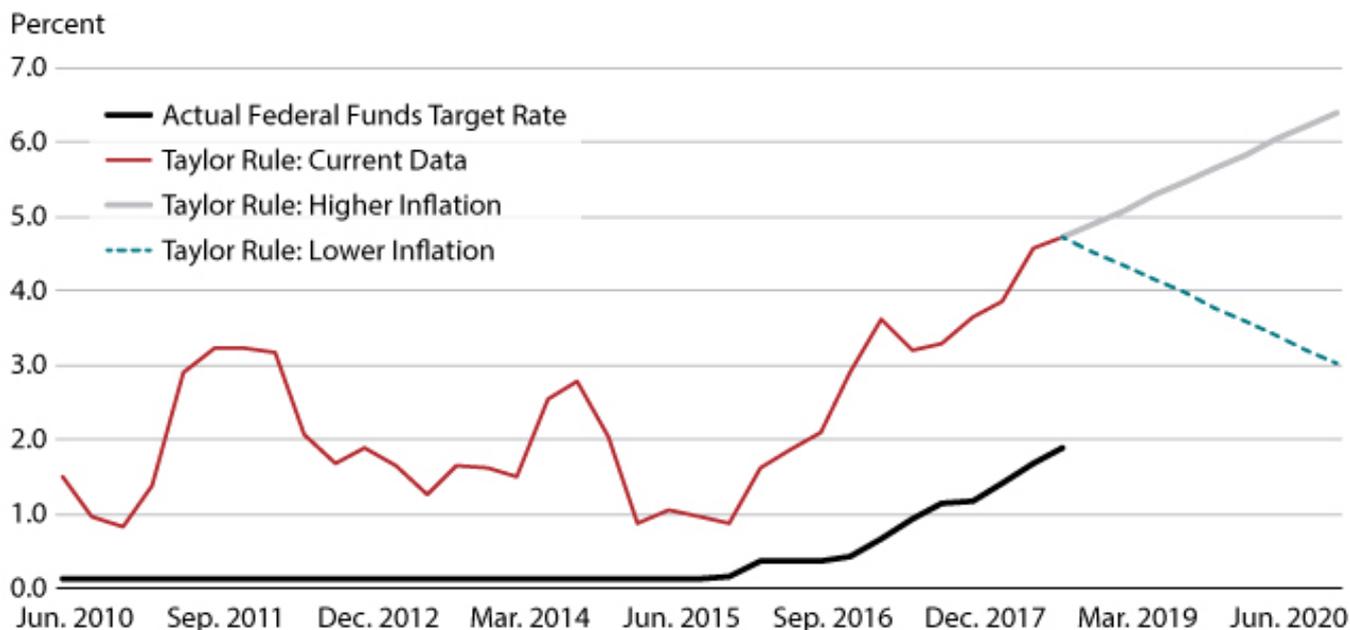
SOURCE: Federal Reserve, Haver Analytics, and author's calculations.

To illustrate the Taylor principle noted above, the figure shows how the Taylor rule would evolve under higher- and lower-inflation scenarios between now and the end of 2020. In the former, inflation would increase by 12.5 basis points per quarter (0.5 percentage points per year) from the third quarter of 2018 to the fourth quarter of 2020. In the latter, inflation would slow by 12.5 basis points per quarter. Each scenario assumes that the output gap remains constant at the value that prevailed in the third quarter of 2018. As expected, under the higher-inflation scenario, the rule indicates that the Federal Open Market Committee should continue to raise its target rate. It indicates the opposite if inflation were to slow— again, under the assumption of an unchanged output gap.

Interestingly, the figure also shows that during the current expansion, the

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actual federal funds target rate has been consistently below the rate suggested by the Taylor rule. Using actual data through the third quarter of 2018, the actual federal funds target rate is 1.88 percent, while the rule indicates that the rate should be about 4.75 percent.[4]

The large discrepancy between the actual federal funds target rate and the rate indicated by the Taylor rule using current data suggests that the Federal Open Market Committee may be following a different version of the Taylor rule. In a recent speech, Federal Reserve Bank of St. Louis President James Bullard presented an alternative—"modernized"—version of the Taylor rule. Part 2 of this *Economic Synopses* essay will assess whether the actual federal funds target rate more closely hews to the version described by Bullard.

Notes

[1] See the edited volume by Koenig, Leeson, and Kahn (2012).

[2] The output gap uses the measure of real potential GDP calculated by the Congressional Budget Office. I have converted the Congressional Budget Office measure, which is still reported in 2009 dollars, to 2012 dollars so as to match real GDP. The output gap is typically measured in terms of percentage deviations—that is, the percent that real GDP is above or below real potential GDP. The original Taylor rule used the four-quarter percent change in the GDP price deflator.

[3] See Taylor and Weiland (2016). For an alternative perspective, see Laubach and Williams (2016).

[4] The FOMC raised the target range for the federal funds rate by 25 basis points to 2 to 2.25 percent at the conclusion of their September 25-26, 2018, meeting. However, the average rate for the quarter (using daily data) was 1.88 percent.

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