How to Conduct Monetary Policy amid Higher Inflation and a Nonbinding Zero (Effective) Lower Bound?

Policy Session 1

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How Monetary Policy Got Behind the Curve—and How to Get Back

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HOW TO GET BACK ON TRACK

May 15, 2023
Fed Boosts Rates to a 16-Year High

Central-bank officials signal they could be done tightening after 10th straight increase

BY NICK TIMIRAGAS

WASHINGTON—Federal Reserve officials signaled they might be done raising interest rates for now after approving another increase at their meeting that concluded Wednesday.

"People did talk about pausing, but not so much at this meeting," Fed Chair Jerome Powell said at a news conference. "We feel like we're getting closer or maybe even there."

Wednesday's unanimous decision to lift rates by a quarter percentage point marked the Fed's 10th consecutive rate increase aimed at battling inflation. It will bring its benchmark federal-funds rate to a range between 5% and 5.25%, a 16-year high.

Stocks retreated after the decision after rising earlier in the day. The Dow Jones Industrial Average fell about 270 points, or 0.8%, while the S&P 500 and Nasdaq Composite indexes closed down 0.7% and 0.5%, respectively. U.S. government bonds rallied slightly, pushing the benchmark 10-year Treasury yield down to 3.401%, from 3.438% Tuesday.

The Fed has now raised its benchmark federal-funds rate by a cumulative 5 percentage points from near zero in March 2022, the most rapid series of increases since the 1980s. The rate influences other rates throughout the economy, such as on mortgages, credit cards and business loans.

"I think that policy is tight," Mr. Powell said. But he said, "we are prepared to do more if greater monetary policy restraint is warranted."

Until now, officials have been looking for clear signs of a slowdown to justify ending rate rises. But Mr. Powell indicated that calculation could shift now and that officials would need to see signs of stronger-than-expected growth, hiring and inflation to continue raising rates. The Fed's next meeting is June 13-14.
The Basic Story

- Move to monetary policy rules was proceeding, until pandemic hit:
  - Jay Powell, Fed Chair: “I find these rule prescriptions helpful”
  - Mario Draghi, President of the ECB: “we would all clearly benefit from…improving communication over our reaction functions…”
  - Raghu Rajan, Governor, Reserve Bank of India: “what we need are monetary rules,”
- Move was interrupted when pandemic hit in early 2020. Rules were out!
- But by Feb 2021, rules were back in Fed’s Monetary Policy Report
- But rules were out again in the Feb 25, 2022 Report.
- Jay Powell said on March 3 that rules would be back in
- And the Monetary Policy Report, released on June 17, 2022, policy rules were back in, including the Taylor rule as number 1 on the list
- And many changes were seen in actual monetary policy
  - But a gap still exists between rule-based policy and policy actions
  - Other central banks
- Thus, we are still living in a high inflation era
- Events in Ukraine recently raised inflation, but not the basic story
A. Monetary policy rules

<table>
<thead>
<tr>
<th>Rule Description</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taylor (1993) rule</td>
<td>$R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$</td>
</tr>
<tr>
<td>Balanced-approach rule</td>
<td>$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$</td>
</tr>
<tr>
<td>Balanced-approach (shortfalls) rule</td>
<td>$R_t^{BAS} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2\min{(u_t^{LR} - u_t), 0}$</td>
</tr>
<tr>
<td>Adjusted Taylor (1993) rule</td>
<td>$R_t^{T93adj} = \max{R_t^{T93} - Z_t, ELB}$</td>
</tr>
<tr>
<td>First-difference rule</td>
<td>$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$</td>
</tr>
</tbody>
</table>

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.

$R_t^{T93}$ denotes the midpoint of the target range for the federal funds rate for quarter $t-1$, $u_t$ is the unemployment rate in quarter $t$, and $r_t^{LR}$ is the level of the neutral real federal funds rate in the longer run that is expected to be consistent with sustaining maximum employment and inflation at the FOMC’s 2 percent longer-run objective, represented by $\pi^{LR}$. $\pi_t$ denotes the realized four-quarter price inflation for quarter $t$. In addition, $u_t^{LR}$ is the rate of unemployment expected in the longer run. $Z_t$ is the cumulative sum of past deviations of the federal funds rate from the prescriptions of the Taylor (1993) rule when that rule prescribes setting the federal funds rate below an effective lower bound of 12.5 basis points.

The Taylor (1993) rule and other policy rules generally respond to the deviation of real output from its full capacity level. In these equations, the output gap has been replaced with the gap between the rate of unemployment in the longer run and its actual level (using a relationship known as Okun's law) to represent the rules in terms of the unemployment rate. The rules are implemented as responding to core PCE inflation rather than to headline PCE inflation because current and near-term core inflation rates tend to outperform headline inflation rates as predictors of the medium-term behavior of headline inflation.
Using this rule:

\[ r = p + 0.5y + 0.5(p - 2) + 2 \]  

(1)

where

- \( r \) is the federal funds rate,
- \( p \) is the rate of inflation over the previous four quarters
- \( y \) is the percent deviation of real GDP from a target.


Using this rule:

\[ 2 + 2 = 4 \]
\[ 1 + 2 = 3 \]
\[ 1 + 3 + 0.5(3-2) = 4.5 \]
\[ 1 + 4 + 0.5(4-2) = 6 \]

Using the June 17, 2023, Monetary Policy Report “Taylor rule,” and plug in:

- an inflation rate over the past four quarters of 4%,
- a target inflation rate of 2%,
- an equilibrium interest rate of 1%,
- a gap between GDP and its potential of about 0%,

you get a federal funds rate of 6%.
2021Q3
\[
\begin{align*}
  r &= 4.575 + 1 + 0.5*(4.575 - 2) + 0.5*(-1.60) \\
     &= 6 \\
  r &= 4 + 1 + 0.5*(4-2) + 0.5*(-2) \\
     &= 5
\end{align*}
\]

Notes:
\[
\begin{align*}
  \text{pi21a} &= (\text{pi21} + \text{pi21}(-1) + \text{pi21}(-2) + \text{pi21}(-3))/4 \\
                &= (5.9 + 6.2 + 4.3 + 1.9)/4 = 4.575 \\
  \text{gap} &= 100*(\text{RGDP}-\text{POT})/\text{POT} = -1.60
\end{align*}
\]
Gross Domestic Product (chain-type price index)

Source: U.S. Bureau of Economic Analysis
Consumer Price Index: Harmonised Prices: All Items: Total for the Euro Area (19 Countries)

Source: Organization for Economic Co-operation and Development
Broader based
Inflation in Latin America has become broader based since the second half of 2021.
(year-over-year percent change)

Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: Peru refers to Lima.
Too low for too long

* Federal funds rate (%)
* FF rate implied by non-monetary variables*
* FF rate implied by Taylor Rule*

![Graph showing Federal funds rate and other rates over time from 1955 to 2020.]

* Non-monetary variables include the output gap, and growth in real GDP, non-farm payroll employment, real retail sales, and core PCE inflation. Taylor Rule estimates based on output gap and core PCE inflation. Source: John P Hussman

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See also “Overruling Mr. Taylor,” pp 10-11, Grant’s Interest Rate Observer, Vol. 40, No. 3, Feb. 18 2022
So, The Key Question:

*Are We Entering a New Era of High Inflation?*

- YES, unless policy makers maintain policy consistent with 2 percent inflation goal.
- More reasons now for central banks to be guided by a rules-based policy
- Here I outlined a method to do so.
  - Central banks should use rules that markets understand
  - The policy interest rate would increase if inflation rises
- It would of course be a contingency plan, as are all rules.
- Would greatly reduce chances of a large damaging change later.