Monetary Policy Goals vs Strategies

Possible Monetary Policy **Goals**:
- Price Stability
- Employment
- Interest Rate Stability

Possible Monetary Policy **Strategies**
- Monetary Targeting
- Inflation Targeting
- Price Level Targeting
- Nominal GDP Targeting
- Implicit Nominal Anchors
Instrument Choice

- **Policy Instruments:**
  - Open market operations, Reserve requirements, Discount rate
- However, these do not tell us whether policy is tight/loose.
- An **operating instrument** is a variable that
  - responds to the CBs tools
  - indicates the stance of monetary policy

These are possibly

1. Reserve aggregates (e.g. MB, NBR)
2. Interest rates

- Interest-rate and reserve aggregate targets are incompatible. i.e. the CB must choose one or the other.
- NBR-targeting implies fluctuations in the funds rate iff (remember Volcker)
- iff-targeting implies fluctuations in NBR
Tactics: Choosing the Operating Instrument

- Interest-rate and reserve aggregate targets are incompatible. i.e. the CB must choose one or the other.
- NBR-targeting implies fluctuations in the funds rate $i^f$ (remember Volcker)
- $i^f$-targeting implies fluctuations in NBR
Figure 2  Result of Targeting on Nonborrowed Reserves
Figure 3: Result of Targeting on the Federal Funds Rate
Criteria for Choosing the Policy Instrument

1. Observability and Measurability
2. Controllability
3. Predictable effect on Goals

The link between short-term interest rates and inflation is tighter than the one between *NBR* or *MB* and inflation. This is one of the reasons CBs generally use short-term interest rates as operating instrument.

Interest Rate Targeting stabilizes output, the real interest rate, and the price level, as it offsets the shocks to the LM curve completely. Destabilizing if other shocks (IS) to the economy are more important, unless the Fed changes the target for the Fed funds rate.
Interest Rate Targeting: LM shocks
Interest Rate Targeting: IS shocks

[Graph showing IS and LM curves with points E, F, and H, and interest rates r1, r2, and r3.]
The Taylor Rule

- How to set the funds rate? Taylor rule:

\[
\text{interest rate}_{\text{target}} = \pi^* + r^* + 0.5(\pi - \pi^*) + 0.5(Y - \bar{Y})
\]

- \(\bar{r}\): real rate consistent with full employment
- \(\pi\): inflation
- \(\pi^*\): target rate of inflation
- \(GDP^*\): GDP at full employment/NAIRU
- \(i^f\) should respond to inflation gap \((\pi - \pi^*)\) but also to the output gap \((Y - \bar{Y})\)
  1. Stabilizing real output is an important concern
  2. Output gap is an indicator of future inflation (NAIRU)
- Taylor assumed \(\bar{r} = 2\%\) and \(\pi^* = 2\%\).
IS-MP-AS Model

\[ Y = \frac{1}{1 - MPC} \left( C^a(\bar{r}) - MPC \times T + I(\bar{r}) + G \right) \]  
(IS)

\[ r = (\bar{r} + \pi^*) - \pi^e + \phi_\pi (\pi - \pi^*) + \phi_y (Y - \bar{Y}) \]  
(MP/Taylor)

\[ \pi = \pi^e + b(Y - \bar{Y}) \]  
(Phillips Curve/AS)

Using Fisher equation \( i = r + \pi^e \), replace LM curve with the Taylor rule (MP curve).

\( \phi_\pi > 0 \) and \( \phi_y > 0 \) determine interest rate feedback.

AS curve is expectations augmented Phillips curve.
IS-MP
Aggregate Demand
An Increase in G (or decrease in T)
An Increase in $\pi^*$ (fixed $\pi^e$)
An Increase in $\pi^*$ ($\pi^e$ adjusts)
The Taylor Principle

\[ r = (\bar{r} + \pi^*) - \pi^e + \phi_\pi (\pi - \pi^*) + \phi_y (Y - \bar{Y}) \] (MP/Taylor)

Suppose \( \pi^e = \pi \). (Rational expectations implies \( \pi^e \approx \pi \)).

\[ r = \bar{r} + (\phi_\pi - 1)(\pi - \pi^*) + \phi_y (Y - \bar{Y}) \]

Effective stabilization requires Taylor principle: \( \phi_\pi > 1 \).

- Nominal interest must adjust more than one for one with inflation.
- If violated, AD curve may be upward sloping, and arbitrary shifts in \( \pi^e \) can cause self-fulfilling fluctuations consistent with rational expectations.
Divine Coincidence

Taylor principle prescribes sufficiently inflation aggressive interest rate policy.

\[ \pi = \pi^* + \frac{1}{(\phi_\pi - 1)} \left[ (r - \bar{r}) - \phi_y (Y - \bar{Y}) \right] , \quad \phi_\pi > 1 \]

For \( \phi_\pi \) very large (i.e. \( \phi_\pi \to \infty \))

\[ \pi = \pi^* \]

Inflation remains at its target level \( \pi^* \)
Divine Coincidence

A credible, strongly inflation aggressive interest rate policy achieves $\pi^e = \pi^* = \pi$ at all times.

**Divine Coincidence:** If $\pi^e = \pi^* = \pi$, then $Y = \bar{Y}$!

Focusing exclusively on achieving an inflation target results in perfect output stabilization in the sense of closing the *welfare relevant output gap* $Y - \bar{Y}$.

$$\pi = \pi^e + b(Y - \bar{Y}) \text{ and } \pi = \pi^e \Rightarrow Y = \bar{Y}$$

Since $\bar{Y}$ may vary over time, this does not mean that output or employment levels are constant.

Since $\bar{Y}$ is the efficient level, inflation targeting is welfare optimal!
Inflation Targeting

**Inflation Targeting**: anchoring expectations at a target $\pi^e = \pi^*$ and following up through an aggressive interest rate rule ($\phi_\pi$ large) such that $\pi = \pi^*$ making $\pi^e = \pi^*$ rational.

Divine coincidence suggest there is not inflation output trade-off and monetary policy suffices to achieve perfect stabilization.

No need for fiscal policies or any other stabilization tools!

Many economists credit (implicit or explicit) inflation targeting strategies for the low macro-economic volatility between 1984 and 2007 (Great Moderation).
Cost Push Shocks

In practice, an inflation-output trade-off remains in the presence of cost push shocks $u$.

$$\pi = \pi^e + b(Y - \bar{Y}) + u$$  \hspace{1cm} \text{(Phillips Curve/AS)}

In this case strict inflation targeting may not be optimal:

$$Y = \bar{Y} - \frac{1}{b}u$$  \hspace{1cm} (1)

Flexible inflation targeting that features an inflation and output gap objective is generally preferable.
Monetary Policy since 2007