

Macroeconomics | Lecture 8

Steering the Economy: the IS Curve, Policy and Phillips

Group Activity - 7 -

· SJTU Summer School · Fatih Kansoy

How this block runs. You work in your home group of three or four, textbook open. Roles rotate: **Scribe**, **Reporter**, **Sceptic**, **Timekeeper**. Money is in US dollars (\$); rates and gaps are in per cent.

- **Phase 1, Concept checks (~10 min).** Each group votes together, argues for 90 seconds, then settles on one answer.
- **Phase 2, Desk problem (~20 min).** One economy, run through the IS–MP–Phillips model, part by part.
- **Phase 3, Case (~25 min).** One real story, ending hidden. Your group commits a prediction, then we reveal what happened.

Word list. The **IS curve** links the real interest rate to the **output gap** $\tilde{Y}$ (output relative to potential): a higher real rate lowers investment and output. The **multiplier** is $1/(1-x)$, where x is the share of extra income that is re-spent. The **Phillips curve** says inflation rises when output is above potential and falls when it is below, $\Delta\pi = v\tilde{Y}$. The **sacrifice ratio** is the cumulative output lost to bring inflation down by one point. The **Taylor rule** sets the nominal rate from inflation and the output gap, raising the nominal rate by *more* than any rise in inflation so that the real rate rises: this last point is the **Taylor principle**.

Phase 1 – Concept checks

~10 MIN

ConceptTest 1. In the IS curve, a rise in the real interest rate set by the central bank leads to

- (a) higher investment and higher output.
- (b) lower investment and lower output.
- (c) no change in output.
- (d) higher inflation at once.

ConceptTest 2. Households and firms re-spend 60 cents of each extra dollar of income. The multiplier is

- (a) 0.6.
- (b) 1.6.
- (c) 2.5.
- (d) 6.

ConceptTest 3. On the Phillips curve, to bring inflation down a central bank must, for a time,

- (a) run output above potential.
- (b) run output below potential, opening a negative output gap.

- (c) keep output exactly at potential.
- (d) raise potential output.

ConcepTest 4. To actually cool the economy when inflation rises, a central bank must raise the nominal interest rate by

- (a) less than the rise in inflation.
- (b) exactly the rise in inflation.
- (c) more than the rise in inflation, so that the real rate rises.
- (d) it does not matter, any rise will do.

Phase 2 – The desk problem

~20 MIN

One economy, steered by the central bank

Use three tools from the lecture. The multiplier is $1/(1-x)$. The Phillips curve is $\Delta\pi = v\tilde{Y}$ each year, with $v = 0.5$ and the output gap $\tilde{Y}$ in per cent. The Taylor rule is

$$i = \bar{r} + \pi + 0.5(\pi - \pi^*) + 0.5\tilde{Y}, \quad \bar{r} = 2, \quad \pi^* = 2.$$

The economy starts with inflation $\pi = 5$ per cent and output at potential ($\tilde{Y} = 0$), and the re-spending share is $x = 0.6$.

(a) The multiplier (worked for you). $1/(1-0.6) = 1/0.4 = 2.5$. So a fall in autonomous investment of \$200 billion lowers output by $2.5 \times 200 = \$500$ billion. A demand shock is amplified.

(b) The cost of disinflation. The bank wants to bring inflation down from 5 to 2 per cent, a fall of 3 points. With $\Delta\pi = 0.5\tilde{Y}$ each year, what total (cumulative) output gap, in percentage-point-years, does that require?

(c) Today's interest rate. Use the Taylor rule to find the nominal rate the bank should set now, at $\pi = 5$ and $\tilde{Y} = 0$.

(d) The Taylor principle. Inflation rises from 5 to 6 per cent. Recompute the Taylor-rule rate, and check: did the nominal rate rise by more than 1 point, so that the real rate went up?

Phase 3 – The case

~25 MIN

The inflation nobody thought would go quietly

How to run this. Read the story with your group. The ending is hidden on purpose. Answer questions 1 and 2, commit a written prediction to question 3 before the reveal, and do not search the internet.

The story. In 2021 inflation in the United States climbed to rates not seen in forty years, reaching about 9 per cent in the middle of 2022. At first the central bank called the rise “transitory”; then, from early 2022, it changed course sharply and raised its interest rate faster than at any time since the early 1980s, from near zero to over 5 per cent. History offered a warning. The last time the United States had crushed a big inflation, in the early 1980s, it had taken a deep recession,

with unemployment near 11 per cent. Through 2022 many economists forecast that taming this inflation would once again require a recession and a large rise in unemployment.

The story stops here.

Four questions (commit your answer to question 3 in writing before the reveal):

1. On the Phillips curve, the usual way to bring inflation down is to open a negative output gap. What does that imply for unemployment, and why did forecasters expect a recession?
2. The cost of disinflation, the sacrifice ratio, is smaller when inflation expectations are well anchored, that is when people trust the central bank to return inflation to target. Explain why anchored expectations make disinflation cheaper.
3. **Predict.** As inflation fell back from about 9 per cent toward 3 per cent through 2023, did the United States suffer the widely forecast recession, or not?
4. Contrast this episode with a disinflation in which expectations are not anchored and must be broken by a slump. What does the comparison say about the value of a central bank's credibility?

End of activity handout. Solutions are distributed after the block.