

Macroeconomics | Activity 7, Lecture 8

Steering the Economy: the IS Curve, Policy and Phillips

Worked solutions

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Lesson of the day. The central bank steers the economy by moving the real interest rate, which shifts spending along the IS curve and, through the output gap, moves inflation on the Phillips curve. Bringing inflation down usually costs output, the sacrifice ratio, unless expectations are so well anchored that they fall on their own.

Phase 1 – Concept checks

ANSWERS

ConceptTest 1. Answer. (b). A higher real rate makes borrowing dearer, cuts investment, and moves the economy to a lower level of output. This is how monetary policy reaches the real economy.

ConceptTest 2. Answer. (c), 2.5. The multiplier is $1/(1 - 0.6) = 1/0.4 = 2.5$. A first round of spending sets off further rounds that add up to 2.5 times the initial change.

ConceptTest 3. Answer. (b). Falling inflation needs a negative output gap, output below potential and higher unemployment, for a while. The output lost per point of inflation removed is the sacrifice ratio.

ConceptTest 4. Answer. (c). This is the Taylor principle. Only if the nominal rate rises by more than inflation does the real rate, which is what governs spending, actually go up. Raise it by less and policy loosens just as inflation climbs.

Phase 2 – The desk problem

FULL WORKING

(a) The multiplier (worked for you). $1/(1 - 0.6) = 2.5$; a \$200 billion fall in investment lowers output by $2.5 \times 200 = \$500$ billion.

(b) The cost of disinflation. To cut inflation by 3 points with $\Delta\pi = 0.5\tilde{Y}$ per year, the cumulative output gap must be

$$\sum \tilde{Y} = \frac{-3}{0.5} = -6 \text{ percentage-point-years,}$$

that is six point-years of output below potential (for example, output 2 per cent below potential for three years). Disinflation is not free.

(c) Today's interest rate. At $\pi = 5$, $\tilde{Y} = 0$:

$$i = 2 + 5 + 0.5(5 - 2) + 0.5(0) = 2 + 5 + 1.5 = \mathbf{8.5} \text{ per cent.}$$

(d) The Taylor principle. At $\pi = 6$, $\tilde{Y} = 0$:

$$i = 2 + 6 + 0.5(6 - 2) = 2 + 6 + 2 = \mathbf{10} \text{ per cent.}$$

Inflation rose by 1 point and the nominal rate rose by 1.5 points, so the real rate $i - \pi$ went from $8.5 - 5 = 3.5$ to $10 - 6 = 4$ per cent. The real rate rises, so policy genuinely tightens. The Taylor principle holds.

Cutting inflation by 3 points needs about six point-years of lost output, and the rule tells the bank to raise the nominal rate by more than inflation so the real rate bites. Disinflation is a policy choice with a real-output price tag.

Phase 3 – The case

WORKED ANSWERS

The episode is the United States inflation of 2021–23 and the Federal Reserve’s response.

1. A negative output gap means output below potential, which by Okun’s law means unemployment above its natural rate. To force inflation down the usual way, the economy has to run cold for a while, and that is a recession with higher unemployment. That is why a repeat of the early-1980s experience was widely expected.
2. If people trust that inflation will return to target, they set wages and prices on that basis, so expected inflation falls without first having to convince everyone through a long slump. Lower expected inflation shifts the Phillips curve down, so less lost output is needed per point of disinflation. Credibility does part of the work that a recession would otherwise have to do.
3. It did not, at least not over this period. Inflation fell from about 9 per cent in mid-2022 to around 3 per cent by mid-2023 while output kept growing and unemployment stayed low, an outcome widely described as a soft landing. Anchored expectations, together with the easing of the supply problems that had pushed prices up, let inflation fall at an unusually low cost in output.
4. When expectations are not anchored, the central bank has to prove its resolve the hard way, by holding the economy below potential until people finally lower their inflation expectations, which is what made the early-1980s disinflation so costly. When expectations are anchored, much of that cost disappears. The difference is credibility, built up over years, and it is worth a great deal, because it lowers the sacrifice ratio.

The textbook route to lower inflation runs through a recession. In 2022–23 the United States mostly avoided one, because decades of credibility kept expectations anchored. What a central bank has promised, and whether it is believed, changes the price of disinflation.

End of solutions. Sources: Jones, *Macroeconomics* 6e, Ch. 11–12; US Bureau of Labor Statistics and Federal Reserve, 2021–24. All figures verified.