

Macroeconomics | Lecture 9

Shocks, the Zero Lower Bound and the Deflation Trap

Group Activity - 8 -

· 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**. Rates 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 at the zero lower bound, read through the Fisher relation, 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. **Aggregate demand (AD):** higher inflation leads the central bank to raise the real rate and cut output, so AD slopes down in inflation-output space. **Aggregate supply** (the short-run Phillips curve): inflation rises when output is above potential. A **demand shock** shifts AD; a **supply shock**, such as an oil-price jump, shifts AS and can raise inflation while lowering output (**stagflation**). The **zero lower bound (ZLB):** the nominal interest rate cannot fall much below zero. The **Fisher relation:** the real rate $R = i - \pi^e$, the nominal rate minus expected inflation. **Deflation** is a falling price level (negative inflation). **Quantitative easing (QE)** is buying longer-term assets to lower long rates when the short rate is stuck at zero.

Phase 1 – Concept checks

~10 MIN

ConceptTest 1. An oil-price spike is a supply shock. In the short run it tends to

- (a) lower inflation and raise output.
- (b) raise inflation and lower output.
- (c) raise both inflation and output.
- (d) leave both unchanged.

ConceptTest 2. With the nominal interest rate stuck at zero, suppose people expect inflation of +3 per cent. The real interest rate is

- (a) +3 per cent.
- (b) 0 per cent.
- (c) -3 per cent.
- (d) +6 per cent.

ConceptTest 3. Now suppose instead there is deflation: people expect inflation of -2 per cent, with the nominal rate still at zero. The real interest rate is

- (a) -2 per cent.

- (b) 0 per cent.
- (c) +2 per cent.
- (d) it cannot be computed.

ConceptTest 4. When the policy interest rate is already at zero and the economy still needs support, a central bank can

- (a) cut the nominal rate far below zero without limit.
- (b) buy longer-term assets to push down long rates (quantitative easing).
- (c) do nothing at all.
- (d) raise the reserve requirement.

Phase 2 – The desk problem

~20 MIN

One economy, stuck at zero

The real interest rate that governs spending is $R = i - \pi^e$, the nominal policy rate minus expected inflation. In a deep slump the central bank would like to set R low, but it cannot push the nominal rate i much below zero.

(a) A helpful case (worked for you). A slump has pushed the bank to set $i = 0$. If expected inflation is +3 per cent, then $R = 0 - 3 = -3$ per cent. A negative real rate encourages borrowing and spending and helps pull the economy up, even though the nominal rate can go no lower.

(b) Deflation arrives. The slump instead brings mild deflation: expected inflation is -2 per cent, with i still at 0. Find the real rate R .

(c) The swing. Compare (a) and (b). Moving from +3 per cent expected inflation to -2 per cent deflation, by how many points does the real rate change, even though the central bank has not touched its nominal rate?

(d) The spiral. In one or two sentences, describe the deflationary spiral: how a slump that turns into deflation raises the real rate, which deepens the slump, which deepens the deflation, all while the nominal rate is stuck at zero.

Phase 3 – The case

~25 MIN

The slump that would not lift

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. After a great stock-market crash, one large economy fell into the deepest downturn in its history. Within four years output had fallen by roughly a third, and about one worker in four was jobless. The central bank had pushed short-term interest rates down close to zero. And yet, year after year, the economy kept sinking. There was one more fact that puzzled observers at the time: the general price level was not merely rising slowly, it was *falling*, by around a quarter over the four years of the slump.

The story stops here.

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

1. Nominal interest rates were near zero, which sounds like very loose policy. Using $R = i - \pi^e$ and the fact that prices were falling by several per cent a year, work out roughly what was happening to the *real* interest rate borrowers faced.
2. Explain in one or two sentences why a near-zero nominal rate can still mean tight, contractionary policy when prices are falling.
3. **Predict.** The economy did eventually turn up, and the recovery was one of the fastest on record. What kind of change do you think finally broke the fall: another small cut in the nominal rate, or something that changed what people expected prices to do?
4. State the general lesson for a central bank that has cut its rate to zero and still faces a slump with falling prices.

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