Macroeconomics | Activity 6, Lecture 7

The Short Run: Leverage, Runs and the Financial Accelerator

Worked solutions

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Lesson of the day. Short-run downturns are amplified by the financial system. A bank funds long-term assets with short-term borrowing and holds only a thin layer of its own equity, so a small fall in asset values can wipe that equity out, and the scramble to sell, or to withdraw, turns a shock into a spiral.

Phase 1 – Concept checks

ANSWERS

ConcepTest 1. Answer. (c), 20. Leverage = assets/equity = 2,000/100 = 20. Each dollar of the bank's own money supports twenty dollars of assets.

ConcepTest 2. Answer. (b), about 5 per cent. Equity is wiped out when assets fall by 1/leverage = 1/20 = 5 per cent. High leverage means a small loss is fatal.

ConcepTest 3. Answer. (b). Insolvency is a balance-sheet fact: assets worth less than debts, so equity is negative. That is different from illiquidity, being unable to fund sound assets right now.

ConcepTest 4. Answer. (b). When everyone deleverages together, the selling pushes prices down, which cuts equity again and forces still more selling. This feedback is the financial accelerator.

Phase 2 – The desk problem

FULL WORKING

(a) Leverage (worked for you). $L = 2{,}000/100 = 20$.

(b) A 5 per cent loss. Assets fall to $2{,}000 \times 0.95 = \$1{,}900$; debt is unchanged at \$1,900, so equity $= 1{,}900 - 1{,}900 = \$0$. The equity is exactly **wiped out**: the bank is on the edge of insolvency. This is what a leverage of 20 means, a 5 per cent loss is fatal.

(c) A 4 per cent loss. Assets fall to $2{,}000 \times 0.96 = \$1{,}920$; equity $= 1{,}920 - 1{,}900 = \$20$. New leverage $= 1{,}920/20 =$ **96**. At leverage 96 the assets can fall only about $1/96 \approx 1$ per cent further before equity is gone. A single bad per cent now stands between the bank and insolvency.

(d) The way down. Forced selling by many banks at once pushes asset prices down further. Lower prices cut every bank's assets and equity again, raising their leverage and forcing yet more selling. A moderate first shock becomes a downward spiral, which is how a financial problem spills into the wider economy.

A 4 per cent loss took the bank from leverage 20 to leverage 96, one bad per cent from failure. Thin equity and short-term funding turn small shocks into large ones; that is the engine of a financial crisis.

The lender is Northern Rock, and the episode is the run of September 2007.

1. It was mainly a liquidity problem, not insolvency. The mortgages were largely sound; the trouble was that when wholesale lenders stopped rolling over the funding, the bank could not finance those sound assets. That is illiquidity, being unable to fund good assets right now, rather than a balance sheet already underwater.

2. Borrowing short to lend long means the funding must be replaced constantly while the assets stay locked up for years. In calm times the short-term lenders keep rolling over and all is well. If they step back together, the bank must find a large sum at once and cannot, even though the loans behind it are fine. This maturity mismatch is at the heart of banking, and of bank fragility.

3. They queued to take their money out. On the first day branches opened after the news, savers lined up outside branches across the country in the first run on a British bank in about 150 years. The withdrawals widened the funding hole and turned a wholesale-market problem into a visible public panic. The run stopped only when the government guaranteed the deposits, and the bank was taken into public ownership in February 2008.

4. It must act as a lender of last resort: lend freely against the sound assets, and if necessary guarantee deposits, to break the panic. A run can push even a solvent bank under, so the job is to supply the liquidity the market has withdrawn and restore confidence before the damage spreads to other banks.

Northern Rock's loans were mostly good; it failed because it could not fund them for a few weeks and its savers stopped believing. Solvency is about the assets; survival, in a panic, is about liquidity and confidence.

End of solutions. Sources: Jones, *Macroeconomics* 6e, Ch. 9–10; Bank of England and standard accounts of Northern Rock (2007–08). All figures verified.