

Q1. Five-round table (\$B).

Round n	1	2	3	4	5
R_n (redeemed)	1.80	1.62	1.46	1.31	1.18
U_n (UST)	16.20	14.58	13.12	11.81	10.63
L_n (LUNA cap)	38.20	36.58	35.12	33.81	32.63

Solution. Cumulative: **\$7.37B** UST redeemed and \$7.37B LUNA sold into the market over 5 rounds. The linear model loses about 18% of supply in 5 rounds, slow enough to look survivable, which is exactly the trap.

Q2. Why reality was worse, and the actual outcome.

Solution. (1) **Reflexive panic:** once the peg breaks (UST below \$0.98) the redemption rate jumps from 10% to 50 or 90% per round, not 10%. (2) **Thin order book:** minting hundreds of millions of new LUNA into shallow liquidity drops the price non-linearly. **Actual outcome:** UST depegged May 9; LUNA market cap fell from \$40B to roughly \$0 in 72 hours; LUNA supply expanded from 350M to about 6.5 trillion before the chain halted; \$40B+ of wealth destroyed. Regulators called it the 2022 crypto “Bear Stearns”, and the fallout ran through Celsius, 3AC and FTX. Any mechanism where redemption *expands* the backing asset’s supply is mortally unstable in a panic.

Q3. One-parameter fix.

Solution. An exogenous collateral ratio of 120%. Back UST with non-LUNA reserves (USDC, BTC, treasuries) worth 120% of supply, redeemable in the reserve asset at parity. This breaks the reflexive loop: a panic drains the reserve, not LUNA supply, so the peg holds while the reserve lasts and the protocol dies gracefully when it runs out. DAI and USDC use exactly this and survived the same week. Other defensible answers: a circuit-breaker that halts minting once the LUNA/UST cap ratio falls below 2×; a redemption premium that pays out in LUNA above a threshold; or simply banning algorithmic stablecoins (the MiCA 2024 approach). Note: the Luna Foundation Guard’s \$3.5B BTC reserve was only about 20% of UST and was exhausted in 2 days.